

7.2 Plan of Water Supply Facilities

7.2.1 System Design

Water supply systems for 30 IKKs, including the water sources, are the same as described in 6.1.4 in this report.

7.2.2 Summary of Water Supply Facilities

- (1) Summary of Water Supply Facilities for 30 IKKs in the First Stage is shown in Table 7.2.1.**
- (2) Summary of Water Supply Facilities for 30 IKKs in the Final Stage is shown in Table 7.2.2.**
- (3) Location plans of pipe line in each stage are shown in Supporting Report F.**

TABLE 7.2.1 SUMMARY LIST OF FEASIBILITY STUDY FOR 30 IKKS (FIRST STAGE) (1/3)

1	Name Code	1	2	3	4	5	6	7	8	9	10
2	Kabupaten	BREBES	CILACAP	PURWOREJO	BANJARNEGARA	BANJANEGARA	KEBUMEN	KEBUMEN	KENDAL	BLORA	PATI
3	Kecamatan	BULAKAMBA	JERUKLEGI	KEMIRI	MADUKARA	PUNGGELAN	KARANGGAYAM	PETANAHAN	SUKOREJO	JEPON	BATURSARI
4	I K K	BULAKAMBA	JERUKLEGI	KEMIRI	MADUKARA	PUNGGELAN	KARANGGAYAM	PETANAHAN	SUKOREJO	JEPON	BATANGAN
5	Total Population in the year 2000										
	A. Project Area	19,100	18,370	14,860	7,320	11,730	8,200	9,570	15,010	14,650	10,100
	B. Served Area	19,100	18,370	14,860	7,320	6,450	4,920	8,420	15,010	14,650	10,100
6	Served Population	100.0%	100.0%	100.0%	100.0%	55.0%	60.0%	88.0%	100.0%	100.0%	100.0%
7	%-tage of Population served by House Connections (H.C.)	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%
8	Water demand for H.C. (D = 90 l/cap/day) (l/day)	0	0	0	0	0	0	0	0	0	0
9	%-tage of Population served by Public Hydrants (P.H.)	100.0%	100.0%	100.0%	100.0%	100.0%	100.0%	100.0%	100.0%	100.0%	100.0%
10	Water demand for P.H. (D = 30 l/cap/day) (l/day)	573,000	551,100	445,800	219,600	193,500	147,600	252,600	450,300	439,500	303,000
11	Sub-total water demand (l/day)	573,000	551,100	445,800	219,600	193,500	147,600	252,600	450,300	439,500	303,000
12	Water demand for non domestic 5%×[11] (l/day)	28,650	27,555	22,290	10,980	9,675	7,380	12,630	22,515	21,975	15,150
13	Water demand for leakage and losses 15%×[11] (l/day)	85,950	82,665	66,870	32,940	29,025	22,140	37,890	67,545	65,925	45,450
14	Total average demand (l/day)	687,600	661,320	534,960	263,520	232,200	177,120	303,120	540,360	527,400	363,600
15	Total average demand (l/sec)	7.96	7.65	6.19	3.05	2.69	2.05	3.51	6.25	6.10	4.21
16	Max. day 1.1×[15] (l/sec)	8.75	8.42	6.81	3.36	2.96	2.26	3.86	6.88	6.71	4.63
17	Peak hour demand 1.4×[15] (l/sec)	11.14	10.72	8.67	4.27	3.76	2.87	4.91	8.76	8.55	5.89
18	Source capacity required for 24 hr operation/day(l/sec)	8.75	8.42	6.81	3.36	2.96	2.26	3.86	6.88	6.71	4.63
19	Potential source available	G.W.	EXT.	G.W.	SPR.	SPR.	EXT.	G.W.	SPR.	G.W.	EXT.
20	Water source capacity available	12×1	-	6×2	10	35	-	10	100	5×2	-
21	System	D-b	E-b	C	B-a	A-a	E-b	D-b	A-b	D-a	E-a
22	Source Pump (Submersible Pump)										
	A. Number of pump	1	-	2	-	-	-	1	-	2	-
	B. Capacity (l/sec)	15	-	10	-	-	-	10	-	5	-
	C. Head (m)	30	-	30	-	-	-	30	-	40	-
23	Main Distribution Pump (Submersible Pump)										
	A. Number of pump	2	2	2	2	2	2	2	-	-	2
	B. Capacity (l/sec)	15	15	10	5	5	5	5	-	-	5
	C. Head (m)	30	60	60	80	80	80	30	-	-	30
24	Booster Pump (Submersible Pump)										
	A. Number of pump	-	-	-	2	2	-	-	-	-	-
	B. Capacity (l/sec)	-	-	-	5	5	-	-	-	-	-
	C. Head (m)	-	-	-	60	60	-	-	-	-	-
25	Service Reservoir (m3)	150	200	160	60	20	80	60	40	160	90
26	Hydrophore										
	A. Capacity (m3)	-	9	9	-	-	5	-	-	-	-
	B. Working Pressure (kg/m2)	-	6	6	-	-	8	-	-	-	-
27	Break Pressure Tank										
	A. Number	-	-	-	2	5	-	-	2	2	-
	B. Capacity (m3)	-	-	-	6	6	-	-	10	10	-
28	Booster Pump Pit										
	A. Number	-	-	-	1	1	-	-	-	-	-
	B. Capacity (m3)	-	-	-	6	6	-	-	-	-	-
29	Elevated Tank										
	A. Capacity (m3)	50	-	-	20	-	-	20	-	-	30
	B. Height (m)	15	-	-	15	-	-	15	-	-	15
30	Generator Set										
	A. Number	2	2	2	2 : 2	2	2	2	-	2	2
	B. Power (KVA)	60	80	80	60 : 40	80	60	40	-	40	20
31	Water Treatment Facility (l/sec)	-	-	18	8	-	-	-	-	18	13
32	Chlorination Unit (l/hr)	2.7	-	2.7	2.7	2.7	-	2.7	2.7	2.7	2.7
33	Number of House Connections	0	0	0	0	0	0	0	0	0	0
34	Number of Public Hydrants	191	183	148	73	64	49	84	150	146	101

Note : No. 19 : Spring = SPR.
 (Abrev.list) Groundwater = G.W.
 Extension = EXT.

No. 20 : 10 × 2 : 10 = Capacity (l/sec)
 2 = Number of Well
 No. 21 : D-b etc. : Type of Water Supply System

TABLE 7.2.1 SUMMARY LIST OF FEASIBILITY STUDY FOR 30 IKKS (FIRST STAGE) (2/3)

1	Name Code	11	12	13	14	15	16	17	18	19	20
2	Kabupaten	SRAGEN	SRAGEN	MONOGYRI	SEMARANG	BOJONEGORO	BOJONEGORO	TUBAN	MADIUN	LAMONGAN	JOMBANG
3	Kecamatan	GONDANG	JENAR	GIRIWOYO	HARJOSARI	BALEN	BAURENO	JENU	JIWAN	KEMBANGBAHU	DIWEK
4	I K K	GONDANG	JENAR	GIRIWOYO	BAWEN	BALEN	BAURENO	JENU	JIWAN	KEMBANGBAHU	DIWEK
5	Total Population in the year 2000										
	A. Project Area	22,100	12,540	6,720	17,880	18,860	12,660	10,740	21,190	7,550	20,800
	B. Served Area	20,330	7,900	6,050	17,880	14,900	12,410	10,740	19,070	6,420	14,350
6	Served Population	92.0%	63.0%	90.0%	100.0%	79.0%	98.0%	100.0%	90.0%	85.0%	69.0%
7	%-tage of Population served by House Connections (H.C.)	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%
8	Water demand for H.C. (D = 90 l/cap/day) (l/day)	0	0	0	0	0	0	0	0	0	0
9	%-tage of Population served by Public Hydrants (P.H.)	100.0%	100.0%	100.0%	100.0%	100.0%	100.0%	100.0%	100.0%	100.0%	100.0%
10	Water demand for P.H. (D = 30 l/cap/day) (l/day)	609,900	237,006	181,500	536,400	447,000	372,300	322,200	572,100	192,600	430,500
11	Sub-total water demand (l/day)	609,900	237,006	181,500	536,400	447,000	372,300	322,200	572,100	192,600	430,500
12	Water demand for non domestic 5%×[11] (l/day)	30,495	11,850	9,075	26,820	22,350	18,615	16,110	28,605	9,630	21,525
13	Water demand for leakage and losses 15%×[11] (l/day)	91,485	35,551	27,225	80,460	67,050	55,845	48,330	85,815	28,890	64,575
14	Total average demand (l/day)	731,880	284,407	217,800	643,680	536,400	446,760	386,640	686,520	231,120	516,600
15	Total average demand (l/sec)	8.47	3.29	2.52	7.45	6.21	5.17	4.48	7.95	2.68	5.98
16	Max. day 1.1×[15] (l/sec)	9.32	3.62	2.77	8.20	6.83	5.69	4.92	8.74	2.94	6.58
17	Peak hour demand 1.4×[15] (l/sec)	11.86	4.61	3.53	10.43	8.69	7.24	6.26	11.12	3.75	8.37
18	Source capacity required for 24 hr operation/day (l/sec)	9.32	3.62	2.77	8.20	6.83	5.69	4.92	8.74	2.94	6.58
19	Potential source available	G.W.	G.W.	SPR.	SPR.	G.W.	G.W.	G.W.	G.W.	G.W.	G.W.
20	Water source capacity available	12×1	5×1	30	30	10×1	10×1	20	25	4.5×1	25
21	System	D-a	C	A-a	A-b	D-b	D-c	D-c	D-c	D-c	D-b
22	Source Pump (Submersible Pump)										
	A. Number of pump	1	1	-	-	1	1	1	1	1	1
	B. Capacity (l/sec)	15	5	-	-	10	10	15	25	5	20
	C. Head (m)	60	30	-	-	40	30	40	40	40	40
23	Main Distribution Pump (Submersible Pump)										
	A. Number of pump	-	2	2	-	2	3	2	2	2	2
	B. Capacity (l/sec)	-	5	5	-	10	5	5	15	5	10
	C. Head (m)	-	60	80	-	30	80	60	60	60	30
24	Booster Pump (Submersible Pump)										
	A. Number of pump	2	2	-	2 : 2	-	-	-	-	-	-
	B. Capacity (l/sec)	5	5	-	15 : 5	-	-	-	-	-	-
	C. Head (m)	60	30	-	80 : 40	-	-	-	-	-	-
25	Service Reservoir (m3)	200	80	20	200	120	120	120	200	80	120
26	Hydrophore										
	A. Capacity (m3)	3	5 : 3	-	3 : 6.5	-	6.5	6.5	9	5	-
	B. Working Pressure (kg/m2)	6	6 : 6	-	6 : 8	-	8	6	6	6	-
27	Break Pressure Tank										
	A. Number	-	-	-	1	-	-	-	-	-	-
	B. Capacity (m3)	-	-	-	12	-	-	-	-	-	-
28	Booster Pump Pit										
	A. Number	1	1	-	2	-	-	-	-	-	-
	B. Capacity (m3)	3	1.5	-	1.5	-	-	-	-	-	-
29	Elevated Tank										
	A. Capacity (m3)	-	-	-	-	40	-	-	-	-	40
	B. Height (m)	-	-	-	-	15	-	-	-	-	15
30	Generator Set										
	A. Number	2 : 2	2 : 2	2	2 : 2	2	2	2	2	2 : 2	2
	B. Power (KVA)	20:60	60:20	60	80 : 20	60	80	80	100	20 : 40	60
31	Water Treatment Facility (l/sec)										
32	Chlorination Unit (l/hr)	2.7	2.7	2.7	2.7	2.7	2.7	2.7	2.7	2.7	2.7
33	Number of House Connections	0	0	0	0	0	0	0	0	0	0
34	Number of Public Hydrants	203	79	61	178	148	124	107	190	64	143

Note : No. 19 : Spring = SPR.
 (Abrev.list) Groundwater = G.W.
 Extension = EXT.

No. 20 : 10 × 2 : 10 = Capacity (l/sec)
 2 = Number of Well
 No. 21 : D-b etc. : Type of Water Supply System

TABLE 7.2.1 SUMMARY LIST OF FEASIBILITY STUDY FOR 30 IKKS (FIRST STAGE) (3/3)

1	Name Code	21	22	23	24	25	26	27	28	29	30
2	Kabupaten	MOJOKERTO	LUMAJANG	LUMAJANG	LUMAJANG	PROBOLINGGO	PROBOLINGGO	GIANYAR	GIANYAR	KARANGASEM	KARANGASEM
3	Kecamatan	KUTOREJO	TEMPEH	KUNIR	TEMPURSARI	BANYUANYAR	SUMBERASIH	TAMPAKSIRING	SUKAWATI	RENDANG	BEBANDEM
4	I K K	KUTOREJO	TEMPEH	KUNIR	TEMPURSARI	BANYUANYAR	SUMBERASIH	TAMPAKSIRING	KETEWEL	MENANGA	SIBETAN
5	Total Population in the year 2000										
	A. Project Area	22,750	22,460	24,030	17,130	21,770	10,720	8,730	9,250	5,760	9,710
	B. Served Area	16,150	14,150	19,220	11,480	16,330	9,860	8,730	9,250	5,760	9,710
6	Served Population	71.0%	63.0%	80.0%	67.0%	75.0%	92.0%	100.0%	100.0%	100.0%	100.0%
7	%-tage of Population served by House Connections (H.C.)	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%
8	Water demand for H.C. (D = 90 l/cap/day) (l/day)	0	0	0	0	0	0	0	0	0	0
9	%-tage of Population served by Public Hydrants (P.H.)	100.0%	100.0%	100.0%	100.0%	100.0%	100.0%	100.0%	100.0%	100.0%	100.0%
10	Water demand for P.H. (D = 30 l/cap/day) (l/day)	484,500	424,494	576,600	344,400	489,900	295,800	261,900	277,500	172,800	291,300
11	Sub-total water demand (l/day)	484,500	424,494	576,600	344,400	489,900	295,800	261,900	277,500	172,800	291,300
12	Water demand for non domestic 5%×[11] (l/day)	24,225	21,225	28,830	17,220	24,495	14,790	13,095	13,875	8,640	14,565
13	Water demand for leakage and losses 15%×[11] (l/day)	72,675	63,674	86,490	51,660	73,485	44,370	39,285	41,625	25,920	43,695
14	Total average demand (l/day)	581,400	509,393	691,920	413,280	587,880	354,960	314,280	333,000	207,360	349,560
15	Total average demand (l/sec)	6.73	5.90	8.01	4.78	6.80	4.11	3.64	3.85	2.40	4.05
16	Max. day 1.1×[15] (l/sec)	7.40	6.49	8.81	5.26	7.48	4.52	4.00	4.24	2.64	4.45
17	Peak hour demand 1.4×[15] (l/sec)	9.42	8.25	11.21	6.70	9.53	5.75	5.09	5.40	3.36	5.66
18	Source capacity required for 24 hr operation/day(l/sec)	7.40	6.49	8.81	5.26	7.48	4.52	4.00	4.24	2.64	4.45
19	Potential source available	G.W.	G.W.	G.W.	SPR.	G.W.	G.W.	SPR.	G.W.	SPR.	SPR.
20	Water source capacity available	25	20	25	50	8×1	15	300	20	50	12
21	System	D-c	D-c	D-b	B-b	D-c	D-b	B-a	D-b	B-b	B-a
22	Source Pump (Submersible Pump)										
	A. Number of pump	1	1	1	-	1	1	-	1	-	-
	B. Capacity (l/sec)	20	20	25	-	10	15	-	15	-	-
	C. Head (m)	40	40	40	-	40	40	-	40	-	-
23	Main Distribution Pump (Submersible Pump)										
	A. Number of pump	2	2	2	3	2	2	2	2	2	2
	B. Capacity (l/sec)	10	10	15	5	10	5	5	5	5	5
	C. Head (m)	60	30	30	60	40	30	40	40	80	80
24	Booster Pump (Submersible Pump)										
	A. Number of pump	-	-	-	-	-	-	-	-	2: 2: 2: 4	2
	B. Capacity (l/sec)	-	-	-	-	-	-	-	-	2.5:2.5:5.0:5.0	5
	C. Head (m)	-	-	-	-	-	-	-	-	60: 80: 60: 80	80
25	Service Reservoir (m3)	160	160	150	30	160	90	20	90	20	90
26	Hydrophore										
	A. Capacity (m3)	9	9	-	6.5	9	-	-	-	2: 3: 3: 3: 2: 5	-
	B. Working Pressure (kg/m2)	6	6	-	6	6	-	-	-	6: 6: 8: 8: 8: 8	-
27	Break Pressure Tank										
	A. Number	-	-	-	-	-	-	-	-	-	3
	B. Capacity (m3)	-	-	-	-	-	-	-	-	-	1.5
28	Booster Pump Pit										
	A. Number	-	-	-	-	-	-	-	-	3: 2	1
	B. Capacity (m3)	-	-	-	-	-	-	-	-	3: 1.5	9
29	Elevated Tank										
	A. Capacity (m3)	-	-	50	-	-	30	20	30	-	30
	B. Height (m)	-	-	15	-	-	15	11.5	10.5	-	11
30	Generator Set										
	A. Number	2	2	2	2	2	2	2	2	4: 6: 2	2
	B. Power (KVA)	80	60	80	60	60	60	40	60	20: 40: 60	100
31	Water Treatment Facility (l/sec)	-	-	-	-	-	-	-	-	-	-
32	Chlorination Unit (l/hr)	2.7	2.7	2.7	2.7	2.7	2.7	2.7	2.7	2.7	2.7
33	Number of House Connections	0	0	0	0	0	0	0	0	0	0
34	Number of Public Hydrants	161	141	192	114	163	98	87	92	57	97

Note : No. 19 : Spring = SPR.
 (Abrev. list) Groundwater = G.W.
 Extension = EXT.

No. 20 : 10 × 2 : 10 = Capacity (l/sec)
 2 = Number of Well
 No. 21 : D-b etc. : Type of Water Supply System

TABLE 7.2.2 SUMMARY LIST OF FEASIBILITY STUDY FOR 30 IKKS (FINAL STAGE) (1/3)

1	Name Code	1	2	3	4	5	6	7	8	9	10
2	Kabupaten	BREBES	CILACAP	PURWOREJO	BANJARNEGARA	BANJARNEGARA	KEBUMEN	KEBUMEN	KENDAL	BLORA	PATI
3	Kecamatan	BULAKAMBA	JERUKLEGI	KEMIRI	MADUKARA	PUNGGELAN	KARANGGAYAM	PETANAHAN	SUKOREJO	JEPON	BATURSARI
4	I K K	BULAKAMBA	JERUKLEGI	KEMIRI	MADUKARA	PUNGGELAN	KARANGGAYAM	PETANAHAN	SUKOREJO	JEPON	BATANGAN
5	Total Population in the year 2000										
	A. Project Area	19,100	18,370	14,860	7,320	11,730	8,200	9,570	15,010	14,650	10,100
	B. Served Area	19,100	18,370	14,860	7,320	6,450	4,920	8,420	15,010	14,650	10,100
6	Served Population	100.0%	100.0%	100.0%	100.0%	55.0%	60.0%	88.0%	100.0%	100.0%	100.0%
7	%-tage of Population served by House Connections (H.C.)	80.0%	70.0%	80.0%	70.0%	70.0%	70.0%	70.0%	70.0%	80.0%	80.0%
8	Water demand for H.C. (D = 90 l/cap/day) (l/day)	1,375,200	1,157,310	1,069,920	461,160	406,350	309,960	530,460	945,630	1,054,800	727,200
9	%-tage of Population served by Public Hydrants (P.H.)	20.0%	30.0%	20.0%	30.0%	30.0%	30.0%	30.0%	30.0%	20.0%	20.0%
10	Water demand for P.H. (D = 30 l/cap/day) (l/day)	114,600	165,330	89,160	65,880	58,050	44,280	75,780	135,090	87,900	60,600
11	Sub-total water demand (l/day)	1,489,800	1,322,640	1,159,080	527,040	464,400	354,240	606,240	1,080,720	1,142,700	787,800
12	Water demand for non domestic 5%×[11] (l/day)	74,490	66,132	57,954	26,352	23,220	17,712	30,312	54,036	57,135	39,390
13	Water demand for leakage and losses 15%×[11] (l/day)	223,470	198,396	173,862	79,056	69,660	53,136	90,936	162,108	171,405	118,170
14	Total average demand (l/day)	1,787,760	1,587,168	1,390,896	632,448	557,280	425,088	727,488	1,296,864	1,371,240	945,360
15	Total average demand (l/sec)	20.69	18.37	16.10	7.32	6.45	4.92	8.42	15.01	15.87	10.94
16	Max. day 1.1×[15] (l/sec)	22.76	20.21	17.71	8.05	7.10	5.41	9.26	16.51	17.46	12.04
17	Peak hour demand 1.4×[15] (l/sec)	28.97	25.72	22.54	10.25	9.03	6.89	11.79	21.01	22.22	15.32
18	Source capacity required for 24 hr operation/day(l/sec)	22.76	20.21	17.71	8.05	7.10	5.41	9.26	16.51	17.46	12.04
19	Potential source available	G.W.	EXT.	G.W.	SPR.	SPR.	EXT.	G.W.	SPR.	G.W.	EXT.
20	Water source capacity	12×1	-	6×1	-	-	-	-	-	5×2	-
21	System	D-b	E-b	C	B-a	A-a	E-b	D-b	A-b	D-a	E-a
22	Source Pump (Submersible Pump)										
	A. Number of pump	1	-	1	-	-	-	-	-	2	-
	B. Capacity (l/sec)	15	-	10	-	-	-	-	-	5	-
	C. Head (m)	30	-	30	-	-	-	-	-	40	-
23	Main Distribution Pump (Submersible Pump)										
	A. Number of pump	1	1	1	1	1	1	1	-	-	2
	B. Capacity (l/sec)	15	15	10	5	5	5	5	-	-	5
	C. Head (m)	30	60	60	80	80	80	30	-	-	30
24	Booster Pump (Submersible Pump)										
	A. Number of pump	-	-	-	1	1	-	-	-	-	-
	B. Capacity (l/sec)	-	-	-	5	5	-	-	-	-	-
	C. Head (m)	-	-	-	60	60	-	-	-	-	-
25	Service Reservoir (m3)	-	-	-	-	-	-	-	-	-	-
26	Hydrophore										
	A. Capacity (m3)	-	-	-	-	-	-	-	-	-	-
	B. Working Pressure (kg/m2)	-	-	-	-	-	-	-	-	-	-
27	Break Pressure Tank										
	A. Number	-	-	-	-	-	-	-	-	-	-
	B. Capacity (m3)	-	-	-	-	-	-	-	-	-	-
28	Booster Pump Pit										
	A. Number	-	-	-	-	-	-	-	-	-	-
	B. Capacity (m3)	-	-	-	-	-	-	-	-	-	-
29	Elevated Tank										
	A. Capacity (m3)	-	-	-	-	-	-	-	-	-	-
	B. Height (m)	-	-	-	-	-	-	-	-	-	-
30	Generator Set										
	A. Number	-	-	-	-	-	-	-	-	-	-
	B. Power (KVA)	-	-	-	-	-	-	-	-	-	-
31	Water Treatment Facility (l/sec)	-	-	-	-	-	-	-	-	-	-
32	Chlorination Unit (l/hr)	-	-	-	-	-	-	-	-	-	-
33	Number of House Connections	1,528	1,286	1,189	512	452	344	589	1,051	1,172	808
34	Number of Public Hydrants	-	-	-	-	-	-	-	-	-	-

Note : No. 19 : Spring = SPR.
(Abrev. list) Groundwater = G.W.
Extension = EXT.

No. 20 : 10 × 2 : 10 = Capacity (l/sec)
2 = Number of Well
No. 21 : D-b etc. : Type of Water Supply System

TABLE 7.2.2 SUMMARY LIST OF FEASIBILITY STUDY FOR 30 IKKS (FINAL STAGE) (2/3)

1	Name Code	11	12	13	14	15	16	17	18	19	20
2	Kabupaten	SRAGEN	SRAGEN	MONOGIRI	SEMARANG	BOJONEGORO	BOJONEGORO	TUBAN	MADIUN	LAMONGAN	JOMBANG
3	Kecamatan	GONDANG	JENAR	GIRIWOYO	HARJOSARI	BALEN	BAURENO	JENU	JIWAN	KEMBANGBAHU	DIWEK
4	I K K	GONDANG	JENAR	GIRIWOYO	BAWEN	BALEN	BAURENO	JENU	JIWAN	KEMBANGBAHU	DIWEK
5	Total Population in the year 2000										
	A. Project Area	22,100	12,540	6,720	17,880	18,860	12,660	10,740	21,190	7,550	20,800
	B. Served Area	20,330	7,900	6,050	17,880	14,900	12,410	10,740	19,070	6,420	14,350
6	Served Population	92.0%	63.0%	90.0%	100.0%	79.0%	98.0%	100.0%	90.0%	85.0%	69.0%
7	%-tage of Population served by House Connections (H.C.)	70.0%	70.0%	80.0%	80.0%	70.0%	80.0%	70.0%	80.0%	70.0%	80.0%
8	Water demand for H.C. (D = 90 l/cap/day) (l/day)	1,280,790	497,700	435,600	1,287,360	938,700	893,520	676,620	1,373,040	404,460	1,033,200
9	%-tage of Population served by Public Hydrants (P.H.)	30.0%	30.0%	20.0%	20.0%	30.0%	20.0%	30.0%	20.0%	30.0%	20.0%
10	Water demand for P.H. (D = 30 l/cap/day) (l/day)	182,970	71,102	36,300	107,280	134,100	74,460	96,660	114,420	57,780	86,100
11	Sub-total water demand (l/day)	1,463,760	568,802	471,900	1,394,640	1,072,800	967,980	773,280	1,487,460	462,240	1,119,300
12	Water demand for non domestic 5%×[11] (l/day)	73,188	28,440	23,595	69,732	53,640	48,399	38,664	74,373	23,112	55,965
13	Water demand for leakage and losses 15%×[11] (l/day)	219,564	85,320	70,785	209,196	160,920	145,197	115,992	223,119	69,336	167,895
14	Total average demand (l/day)	1,756,512	682,562	566,280	1,673,568	1,287,360	1,161,576	927,936	1,784,952	554,688	1,343,160
15	Total average demand (l/sec)	20.33	7.90	6.55	19.37	14.90	13.44	10.74	20.66	6.42	15.55
16	Max. day 1.1×[15] (l/sec)	22.36	8.69	7.21	21.31	16.39	14.79	11.81	22.73	7.06	17.10
17	Peak hour demand 1.4×[15] (l/sec)	28.46	11.06	9.18	27.12	20.86	18.82	15.04	28.92	8.99	21.76
18	Source capacity required for 24 hr operation/day(l/sec)	22.36	8.69	7.21	21.31	16.39	14.79	11.81	22.73	7.06	17.10
19	Potential source available	G.W.	G.W.	SPR.	SPR.	G.W.	G.W.	G.W.	G.W.	G.W.	G.W.
20	Water source capacity	12×1	5×1	-	-	10×1	10×1	-	-	4.5×1	-
21	System	D-a	C	A-a	A-b	D-b	D-c	D-c	D-c	D-c	D-b
22	Source Pump (Submersible Pump)										
	A. Number of pump	1	1	-	-	1	1	1	1	1	1
	B. Capacity (l/sec)	15	5	-	-	10	10	15	25	5	20
	C. Head (m)	60	30	-	-	40	30	40	40	40	40
23	Main Distribution Pump (Submersible Pump)										
	A. Number of pump	-	1	1	-	1	1	2	1	1	1
	B. Capacity (l/sec)	-	5	5	-	10	5	5	15	5	10
	C. Head (m)	-	60	80	-	30	80	60	60	60	30
24	Booster Pump (Submersible Pump)										
	A. Number of pump	-	-	-	-	-	-	-	-	-	-
	B. Capacity (l/sec)	-	-	-	-	-	-	-	-	-	-
	C. Head (m)	-	-	-	-	-	-	-	-	-	-
25	Service Reservoir (m3)	-	-	-	-	-	-	-	-	-	-
26	Hydrophore										
	A. Capacity (m3)	-	-	-	-	-	-	-	-	-	-
	B. Working Pressure (kg/m2)	-	-	-	-	-	-	-	-	-	-
27	Break Pressure Tank										
	A. Number	-	-	-	-	-	-	-	-	-	-
	B. Capacity (m3)	-	-	-	-	-	-	-	-	-	-
28	Booster Pump Pit										
	A. Number	-	-	-	-	-	-	-	-	-	-
	B. Capacity (m3)	-	-	-	-	-	-	-	-	-	-
29	Elevated Tank										
	A. Capacity (m3)	-	-	-	-	-	-	-	-	-	-
	B. Height (m)	-	-	-	-	-	-	-	-	-	-
30	Generator Set										
	A. Number	-	-	-	-	-	-	-	-	-	-
	B. Power (KVA)	-	-	-	-	-	-	-	-	-	-
31	Water Treatment Facility (l/sec)	-	-	-	-	-	-	-	-	-	-
32	Chlorination Unit (l/hr)	-	-	-	-	-	-	-	-	-	-
33	Number of House Connections	1,423	553	484	1,430	1,043	993	752	1,526	449	1,148
34	Number of Public Hydrants	-	-	-	-	-	-	-	-	-	-

Note : No. 19 : Spring = SPR.
(Abrev.list) Groundwater = G.W.
Extension = EXT.

No. 20 : 10 × 2 : 10 = Capacity (l/sec)
2 = Number of Well
No. 21 : D-b etc. : Type of Water Supply System

TABLE 7.2.2 SUMMARY LIST OF FEASIBILITY STUDY FOR 30 IKKS (FINAL STAGE) (3/3)

1	Name Code	21	22	23	24	25	26	27	28	29	30
2	Kabupaten	MOJOKERTO	LUMAJANG	LUMAJANG	LUMAJANG	PROBOLINGGO	PROBOLINGGO	GIANYAR	GIANYAR	KARANGASEM	KARANGASEM
3	Kecamatan	KUTOREJO	TEMPEH	KUNIR	TEMPURSARI	BANYUANYAR	SUMBERASIH	TAMPAKSIRING	SUKAWATI	RENDANG	BEBANDEM
4	I K K	KUTOREJO	TEMPEH	KUNIR	TEMPURSARI	BANYUANYAR	SUMBERASIH	TAMPAKSIRING	KETEWEL	MENANGA	SIBETAN
5	Total Population in the year 2000										
	A. Project Area	22,750	22,460	24,030	17,130	21,770	10,720	8,730	9,250	5,760	9,710
	B. Served Area	16,150	14,150	19,220	11,480	16,330	9,860	8,730	9,250	5,760	9,710
6	Served Population	71.0%	63.0%	80.0%	67.0%	75.0%	92.0%	100.0%	100.0%	100.0%	100.0%
7	%-tage of Population served by House Connections (H.C.)	70.0%	70.0%	70.0%	80.0%	80.0%	80.0%	70.0%	80.0%	80.0%	80.0%
8	Water demand for H.C. (D = 90 l/cap/day) (l/day)	1,017,450	891,450	1,210,860	826,560	1,175,760	709,920	549,990	666,000	414,720	699,120
9	%-tage of Population served by Public Hydrants (P.H.)	30.0%	30.0%	30.0%	20.0%	20.0%	20.0%	30.0%	20.0%	20.0%	20.0%
10	Water demand for P.H. (D = 30 l/cap/day) (l/day)	145,350	127,348	172,980	68,880	97,980	59,160	78,570	55,500	34,560	58,260
11	Sub-total water demand (l/day)	1,162,800	1,018,798	1,383,840	895,440	1,273,740	769,080	628,560	721,500	449,280	757,380
12	Water demand for non domestic 5%×[11] (l/day)	58,140	50,940	69,192	44,772	63,687	38,454	31,428	36,075	22,464	37,869
13	Water demand for leakage and losses 15%×[11] (l/day)	174,420	152,820	207,576	134,316	191,061	115,362	94,284	108,225	67,392	113,607
14	Total average demand (l/day)	1,395,360	1,222,558	1,660,608	1,074,528	1,528,488	922,896	754,272	865,800	539,136	908,856
15	Total average demand (l/sec)	16.15	14.15	19.22	12.44	17.69	10.68	8.73	10.02	6.24	10.52
16	Max. day 1.1×[15] (l/sec)	17.77	15.56	21.14	13.68	19.46	11.75	9.60	11.02	6.86	11.57
17	Peak hour demand 1.4×[15] (l/sec)	22.61	19.81	26.91	17.41	24.77	14.95	12.22	14.03	8.74	14.73
18	Source capacity required for 24 hr operation/day(l/sec)	17.77	15.56	21.14	13.68	19.46	11.75	9.60	11.02	6.86	11.57
19	Potential source available	G.W.	G.W.	G.W.	SPR.	G.W.	G.W.	SPR.	G.W.	SPR.	SPR.
20	Water source capacity	-	-	-	-	8×2	-	-	-	-	-
21	System	D-c	D-c	D-b	B-b	D-c	D-b	B-a	D-b	B-b	B-a
22	Source Pump (Submersible Pump)										
	A. Number of pump	1	1	1	-	2	1	-	1	-	-
	B. Capacity (l/sec)	20	20	25	-	10	15	-	15	-	-
	C. Head (m)	40	40	40	-	40	40	-	40	-	-
23	Main Distribution Pump (Submersible Pump)										
	A. Number of pump	1	1	1	1	1	2	1	2	1	2
	B. Capacity (l/sec)	10	10	15	5	10	5	5	5	5	5
	C. Head (m)	60	30	30	60	40	30	40	40	80	80
24	Booster Pump (Submersible Pump)										
	A. Number of pump	-	-	-	-	-	-	-	-	-	2
	B. Capacity (l/sec)	-	-	-	-	-	-	-	-	-	5
	C. Head (m)	-	-	-	-	-	-	-	-	-	80
25	Service Reservoir (m3)	-	-	-	-	-	-	-	-	-	-
26	Hydrophore										
	A. Capacity (m3)	-	-	-	-	-	-	-	-	-	-
	B. Working Pressure (kg/m2)	-	-	-	-	-	-	-	-	-	-
27	Break Pressure Tank										
	A. Number	-	-	-	-	-	-	-	-	-	-
	B. Capacity (m3)	-	-	-	-	-	-	-	-	-	-
28	Booster Pump Pit										
	A. Number	-	-	-	-	-	-	-	-	-	-
	B. Capacity (m3)	-	-	-	-	-	-	-	-	-	-
29	Elevated Tank										
	A. Capacity (m3)	-	-	-	-	-	-	-	-	-	-
	B. Height (m)	-	-	-	-	-	-	-	-	-	-
30	Generator Set										
	A. Number	-	-	-	-	-	-	-	-	-	-
	B. Power (KVA)	-	-	-	-	-	-	-	-	-	-
31	Water Treatment Facility (l/sec)	-	-	-	-	-	-	-	-	-	-
32	Chlorination Unit (l/hr)	-	-	-	-	-	-	-	-	-	-
33	Number of House Connections	1,131	991	1,345	918	1,306	789	611	740	461	777
34	Number of Public Hydrants	-	-	-	-	-	-	-	-	-	-

Note : No. 19 : Spring = SPR.
(Abrev. list) Groundwater = G.W.
Extension = EXT.

No. 20 : 10 × 2 : 10 = Capacity (l/sec)
2 = Number of Well
No. 21 : D-b etc. : Type of Water Supply System

7.3 Management Plan

7.3.1 Construction Plan

- (1) Construction schedule for 30 IKKs in the First Stage is shown in Table 7.3.1.
- (2) Construction schedule for 30 IKKs in the Final Stage is shown in Table 7.3.2.

7.3.2 Operation and Maintenance Plan

Operation and Maintenance plan, such as organization and number of persons in charge of operation and maintenance, is the same as shown in 6.2.2 in this report.

TABLE 7.3.1 CONSTRUCTION SCHEDULE FOR 30 IKKS (FIRST STAGE)

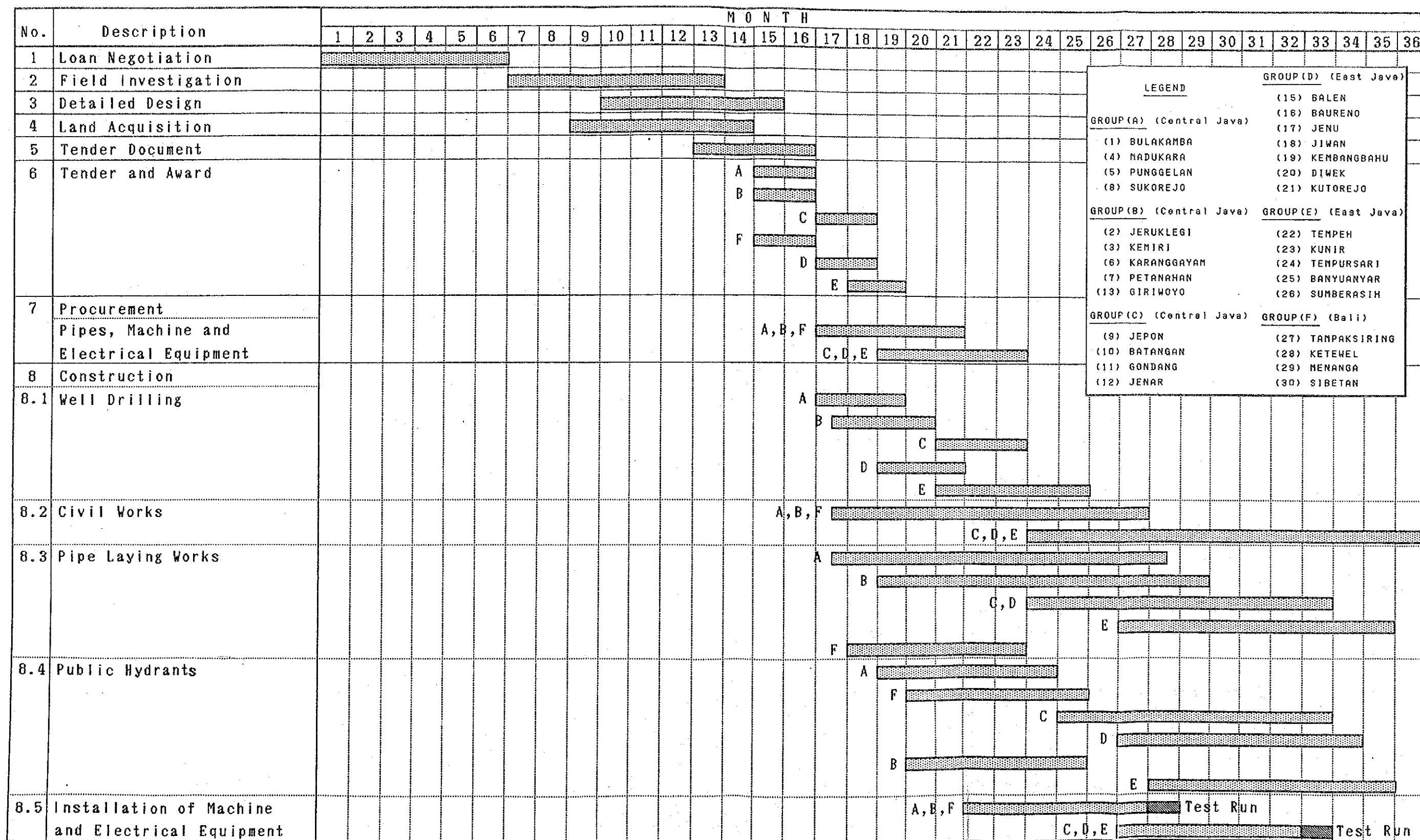


TABLE 7.3.2 CONSTRUCTION SCHEDULE FOR 30 IKKS (FINAL STAGE)

No.	Description	MONTH																																							
		36~50	51	52	53	54	55	56	57	58	59	60	61	62	63	64	65	66	67	68	69	70	71	72	73	74	75	76	77	78	79	80	81	82	83	84					
1	Loan Negotiation																																								
2	Field Investigation		////	////	////	////	////																																		
3	Detailed Design					////	////	////																																	
4	Land Acquisition			////	////	////	////	////																																	
5	Tender Document								////	////																															
6	Tender and Award								A~F	////	////																														
7	Procurement											A~F	////	////	////	////	////	////	////	////	////	////	////	////	////	////	////	////	////	////	////	////	////	////	////	////	////	////	////		
	Pipes, Machine and Electrical Equipment																																								
8	Construction																																								
8.1	Well Drilling											A~E	////	////	////	////	////	////	////	////	////	////	////	////	////	////	////	////	////	////	////	////	////	////	////	////	////	////	////		
8.2	Civil Works																																								
8.3	Pipe Laying Works																A~F	////	////	////	////	////	////	////	////	////	////	////	////	////	////	////	////	////	////	////	////	////	////	////	
8.4	House Connections												A~F	////	////	////	////	////	////	////	////	////	////	////	////	////	////	////	////	////	////	////	////	////	////	////	////	////	////	////	
8.5	Installation of Machine and Electrical Equipment																A~F	////	////	////	////	////	////	////	////	////	////	////	////	////	////	////	////	////	////	////	////	////	////	////	

LEGEND

GROUP (A) (Central Java)
 (1) BULAKAMBA
 (4) MADUKARA
 (5) PUNGELAN
 (8) SUKOREJO

GROUP (B) (Central Java)
 (2) JERUKLEGI
 (3) KEMIRI
 (6) KARANGGAYAM
 (7) PETANAHAN
 (13) GIRIWOYO

GROUP (C) (Central Java)
 (9) JEPON
 (10) BATANGAN
 (11) GONDANG
 (12) JENAR

GROUP (D) (East Java)
 (15) BALEN
 (16) BAURENO
 (17) JENU
 (18) JIWAN
 (19) KEMBANGBAHU
 (20) DIWEK
 (21) KUTOREJO

GROUP (E) (East Java)
 (22) TEMPEH
 (23) KUNIR
 (24) TEMPURSARI
 (25) BANYUANYAR
 (26) SUMBERASIH

GROUP (F) (Bali)
 (27) TAMPAKSIRING
 (28) KETEWEL
 (29) MENANGA
 (30) SIBETAN

7.3.3 Cost Estimates

(1) Basis of Cost Estimation

Same as 6.2.3, (1) in this report.

(2) Items of Cost Estimation

Same as 6.2.3, (2) in this report.

(3) Results of Cost Estimation

- 1) Summary of Construction Costs for 30 IKKs in the First Stage and the Final Stage are shown in Table 7.3.3 and Table 7.3.4 respectively.

Details of direct cost in each stage are shown in Supporting Report F.

- 2) Summary of Operation and Maintenance Costs for 30 IKKs in the First Stage (for two years after completion of the construction for the First Stage) and the Final Stage (for two years before completion of the construction of House Connections) are shown in Table 7.3.5 and Table 7.3.6 respectively.

Operation and Maintenance Cost shown in Table 7.3.6 was calculated on the assumption that about a half of the House Connections shown in Table 6.1.5 could be utilized.

TABLE 7.3.3 SUMMARY LIST OF CONSTRUCTION COST (FIRST STAGE (1/3))

FIRST STAGE		UNIT:1,000 Rp.									
CODE		1	2	3	4	5	6	7	8	9	10
NAME OF I K K		BULAKAMBA	JERUKLEGI	KEMIRI	MADUKARA	PUNGGELAN	KARANGGAYAM	PETANAHAN	SUKOREJO	JEPON	BATANGAN
PROVINCE		CENTRAL JAVA	CENTRAL JAVA	CENTRAL JAVA	CENTRAL JAVA	CENTRAL JAVA	CENTRAL JAVA	CENTRAL JAVA	CENTRAL JAVA	CENTRAL JAVA	CENTRAL JAVA
POPULATION		19,100	18,370	14,860	7,320	6,450	4,920	8,420	15,010	14,650	10,100
A. DIRECT COST											
a.	Intake Facility for Spring	-	13,650	-	7,500	22,750	4,500	-	39,000	-	-
b.	Water Treatment Facility	-	-	184,100	110,700	-	-	-	-	184,100	226,277
c.	Well (Shallow / Deep)	32,585	-	49,980	-	-	-	36,660	-	101,958	-
d.	Pump + Generator	128,500	161,755	177,255	201,500	146,500	129,475	93,750	-	86,000	40,000
e.	Chorination Unit	2,460	-	2,460	2,460	2,460	-	2,460	2,460	2,460	-
f.	Reservoir / Elevated Tank	183,044	55,691	50,771	133,444	109,279	23,079	84,164	66,950	103,771	115,892
g.	Piping	624,933	546,951	199,116	591,607	226,644	260,804	112,283	981,297	842,061	940,592
h.	Public Taps	420,200	402,600	325,600	160,600	140,800	107,800	184,800	330,000	321,200	222,200
i.	House Connection	-	-	-	-	-	-	-	-	-	-
j.	Others	41,298	38,502	30,312	39,189	23,074	21,771	17,707	40,638	46,177	44,783
k.	Internal Transportation Fee of Imported Materials	6,540	4,515	5,895	3,563	4,892	4,477	3,752	4,500	4,588	658
TOTAL DIRECT COST		1,439,560	1,223,663	1,025,489	1,250,563	676,399	551,906	535,576	1,464,845	1,692,316	1,590,403
B. INDIRECT COST											
a.	Land Acquisition	24,473	20,802	17,433	21,260	11,499	9,382	9,105	24,902	28,769	27,037
b.	Administration	27,352	23,250	19,484	23,761	12,852	10,486	10,176	27,832	32,154	30,218
c.	Training	8,637	7,342	6,153	7,503	4,058	3,311	3,213	8,789	10,154	9,542
d.	Consultants	187,143	159,076	133,314	162,573	87,932	71,748	69,625	190,430	220,001	206,752
e.	Physical Contingency	143,956	122,366	102,549	125,056	67,640	55,191	53,558	146,484	169,232	159,040
TOTAL INDIRECT COST		391,560	332,836	278,933	340,153	183,981	150,118	145,677	398,438	460,310	432,590
TOTAL DIRECT AND INDIRECT COST (A + B)		1,831,121	1,556,500	1,304,422	1,590,716	860,380	702,024	681,252	1,863,283	2,152,625	2,022,992
C. PRICE ESCALATION		250,095	203,702	169,825	200,851	104,488	82,007	88,088	267,782	302,317	287,603
TOTAL COST (A + B + C)		2,081,216	1,760,201	1,474,247	1,791,567	964,868	784,031	769,340	2,131,065	2,454,943	2,310,595
Construction Cost / Person (Rupiah/Person)		108,964	95,819	99,209	244,750	149,592	159,356	91,371	141,976	167,573	228,772

TABLE 7.3.3 SUMMARY LIST OF CONSTRUCTION COST (FIRST STAGE (2/3))

FIRST STAGE UNIT:1,000 Rp.

CODE	11	12	13	14	15	16	17	18	19	20
NAME OF I K K	GONDANG	JENAR	GIRIWOYO	BAWEN	BALEN	BAURENO	JENU	JIWAN	KEMBANGBAHU	DIWEK
PROVINCE	CENTRAL JAVA	CENTRAL JAVA	CENTRAL JAVA	CENTRAL JAVA	EAST JAVA	EAST JAVA	EAST JAVA	EAST JAVA	EAST JAVA	EAST JAVA
POPULATION	20,330	7,900	6,050	17,880	14,900	12,410	10,740	19,070	6,420	14,350
A. DIRECT COST										
a. Intake Facility for Spring	-	-	19,500	19,500	-	-	-	-	-	-
b. Water Treatment Facility	-	-	-	-	-	-	-	-	-	-
c. Well (Shallow / Deep)	54,296	23,300	-	-	38,226	23,300	44,670	44,670	32,500	44,170
d. Pump + Generator	158,613	177,225	116,000	204,630	126,000	165,268	157,018	206,005	131,975	130,750
e. Chorination Unit	2,460	2,460	2,460	2,460	2,460	2,460	2,460	2,460	2,460	2,460
f. Reservoir / Elevated Tank	77,391	30,329	11,699	100,191	160,549	39,948	39,948	65,971	27,257	160,549
g. Piping	451,747	226,533	150,790	1,084,716	494,193	367,615	210,260	185,063	123,615	201,251
h. Public Taps	446,600	173,800	132,000	391,600	357,600	297,600	256,800	456,000	153,600	343,200
i. House Connection	-	-	-	-	-	-	-	-	-	-
j. Others	37,196	25,387	18,172	58,172	35,021	30,843	25,295	31,102	17,647	26,415
k. Internal Transportation Fee of Imported Materials	5,241	4,921	3,681	4,055	11,520	11,644	10,294	10,974	7,686	8,283
TOTAL DIRECT COST	1,233,544	663,956	454,302	1,865,324	1,225,570	938,678	746,744	1,002,244	496,740	917,079
B. INDIRECT COST										
a. Land Acquisition	20,970	11,287	7,723	31,711	20,835	15,958	12,695	17,038	8,445	15,590
b. Administration	23,437	12,615	8,632	35,441	23,286	17,835	14,188	19,043	9,438	17,424
c. Training	7,401	3,984	2,726	11,192	7,353	5,632	4,480	6,013	2,980	5,502
d. Consultants	160,361	86,314	59,059	242,492	159,324	122,028	97,077	130,292	64,576	119,220
e. Physical Contingency	123,354	66,396	45,430	186,532	122,557	93,868	74,674	100,224	49,674	91,708
TOTAL INDIRECT COST	335,524	180,596	123,570	507,368	333,355	255,320	203,114	272,610	135,113	249,445
TOTAL DIRECT AND INDIRECT COST (A + B)	1,569,068	844,552	577,872	2,372,692	1,558,925	1,193,999	949,859	1,274,855	631,854	1,166,524
C. PRICE ESCALATION	208,196	96,831	67,117	310,828	211,018	150,227	117,201	160,692	73,602	155,916
TOTAL COST (A + B + C)	1,777,264	941,383	644,989	2,683,520	1,769,943	1,344,225	1,067,060	1,435,547	705,456	1,322,440
Construction Cost / Person (Rupiah/Person)	87,421	119,162	106,610	150,085	118,788	108,318	99,354	75,278	109,884	92,156

TABLE 7.3.3 SUMMARY LIST OF CONSTRUCTION COST (FIRST STAGE (3/3))

FIRST STAGE UNIT:1,000 Rp.

CODE	21	22	23	24	25	26	27	28	29	30
NAME OF I K K	KUTOREJO	TEMPEH	KUNIR	TEMPURSARI	BANYUANYAR	SUMBERASIH	TAMPAKSIRING	KETEWEL	MENANGA	SIBETAN
PROVINCE	EAST JAVA	EAST JAVA	EAST JAVA	EAST JAVA	EAST JAVA	EAST JAVA	BALI	BALI	BALI	BALI
POPULATION	16,150	14,150	19,220	11,480	16,330	9,860	8,730	9,250	5,760	9,710
A. DIRECT COST										
a. Intake Facility for Spring	-	-	-	29,500	-	-	19,500	-	19,500	7,800
b. Water Treatment Facility	-	-	-	-	-	-	-	-	-	-
c. Well (Shallow / Deep)	44,170	33,910	44,670	-	30,485	33,910	-	-	-	-
d. Pump + Generator	173,005	155,005	148,250	141,018	150,255	125,000	84,500	125,000	494,088	175,000
e. Chlorination Unit	2,460	2,460	2,460	2,460	2,460	2,460	2,460	2,460	2,460	2,460
f. Reservoir / Elevated Tank	59,252	59,252	201,691	13,581	59,252	127,803	85,115	128,152	89,957	186,990
g. Piping	248,553	152,277	305,310	317,622	162,854	158,817	164,429	346,807	208,177	268,388
h. Public Taps	386,400	338,400	460,800	273,600	391,200	235,200	213,150	225,400	139,650	237,650
i. House Connection	-	-	-	-	-	-	-	-	-	-
j. Others	29,709	24,777	34,063	27,105	25,526	22,503	18,852	27,492	45,757	30,573
k. Internal Transportation Fee of Imported Materials	11,004	10,140	9,519	8,854	9,671	8,313	11,124	16,800	61,759	28,260
TOTAL DIRECT COST	954,553	776,221	1,206,762	813,739	831,703	714,007	599,129	872,111	1,061,348	937,120
B. INDIRECT COST										
a. Land Acquisition	16,227	13,196	20,515	13,834	14,139	12,138	10,185	14,826	18,043	15,931
b. Administration	18,137	14,748	22,928	15,461	15,802	13,566	11,383	16,570	20,166	17,805
c. Training	5,727	4,657	7,241	4,882	4,990	4,284	3,595	5,233	6,368	5,623
d. Consultants	124,092	100,909	156,879	105,786	108,121	92,821	77,887	113,374	137,975	121,826
e. Physical Contingency	95,455	77,622	120,676	81,374	83,170	71,401	59,913	87,211	106,135	93,712
TOTAL INDIRECT COST	259,638	211,132	328,239	221,337	226,223	194,210	162,963	237,214	288,687	254,897
TOTAL DIRECT AND INDIRECT COST (A + B)	1,214,192	987,353	1,535,001	1,035,076	1,057,926	908,217	762,093	1,109,326	1,350,034	1,192,017
C. PRICE ESCALATION	155,105	124,899	208,280	130,582	136,527	117,341	101,039	144,216	123,445	150,782
TOTAL COST (A + B + C)	1,369,297	1,112,251	1,743,282	1,165,658	1,194,453	1,025,557	863,132	1,253,541	1,473,480	1,342,799
Construction Cost / Person (Rupiah/Person)	84,786	78,604	90,701	101,538	73,145	104,012	98,870	135,518	255,812	138,290

TABLE 7.3.3 SUMMARY LIST OF CONSTRUCTION COST FOR EACH PROVINCE (FIRST STAGE)

FIRST STAGE		UNIT: 1,000 Rp.			
CODE		1-14	15-26	27-30	1-30
NAME OF I K K	ALL IN CENTRAL	ALL IN EAST	ALL IN	ALL THREE	
PROVINCE	JAVA PROVINCE	JAVA PROVINCE	BALI PROVINCE	PROVINCES	
POPULATION	171,360	165,080	33,450	369,890	
A. DIRECT COST					
a.	Intake Facility for Spring	126,400	29,500	46,800	202,700
b.	Water Treatment Facility	705,177	-	-	705,177
c.	Well (Shallow / Deep)	298,779	414,681	-	713,460
d.	Pump + Generator	1,821,203	1,809,548	878,588	4,509,338
e.	Chorination Unit	27,060	29,520	9,840	66,420
f.	Reservoir / Elevated Tank	1,145,696	1,015,052	490,214	2,650,961
g.	Piping	7,240,075	2,927,432	987,800	11,155,307
h.	Public Taps	3,759,800	3,950,400	815,850	8,526,050
i.	House Connection	-	-	-	-
j.	Others	482,377	330,007	122,675	935,059
k.	Internal Transportation Fee of Imported Materials	61,278	117,902	117,943	297,123
TOTAL DIRECT COST		15,667,845	10,624,041	3,469,709	29,761,594
B. INDIRECT COST					
a.	Land Acquisition	266,353	180,609	58,985	505,947
b.	Administration	297,689	201,857	65,924	565,470
c.	Training	94,007	63,744	20,818	178,570
d.	Consultants	2,036,820	1,381,125	451,062	3,869,007
e.	Physical Contingency	1,566,784	1,062,404	346,971	2,976,159
TOTAL INDIRECT COST		4,261,654	2,889,739	943,761	8,095,154
TOTAL DIRECT AND INDIRECT COST (A + B)		19,929,499	13,513,780	4,413,470	37,856,748
C. PRICE ESCALATION		2,639,731	1,741,390	519,482	4,900,603
TOTAL COST (A + B + C)		22,569,229	15,255,170	4,932,952	42,757,351
Construction Cost / Person (Rupiah/Person)		131,707	92,411	147,472	115,595

TABLE 7.3.4 SUMMARY LIST OF CONSTRUCTION COST (FINAL STAGE (1/3))

FINAL STAGE	UNIT:1,000 Rp.									
CODE	1	2	3	4	5	6	7	8	9	10
NAME OF I K K	BULAKAMBA	JERUKLEGI	KEMIRI	MADUKARA	PUNGGELAN	KARANGGAYAM	PETANAHAN	SUKOREJO	JEPON	BATANGAN
PROVINCE	CENTRAL JAVA	CENTRAL JAVA	CENTRAL JAVA	CENTRAL JAVA	CENTRAL JAVA	CENTRAL JAVA	CENTRAL JAVA	CENTRAL JAVA	CENTRAL JAVA	CENTRAL JAVA
POPULATION	19,100	18,370	14,860	7,320	6,450	4,920	8,420	15,010	14,650	10,100
A. DIRECT COST										
a. Intake Facility for Spring	-	-	-	-	-	-	-	-	-	-
b. Water Treatment Facility	-	-	-	-	-	-	-	-	-	-
c. Well (Shallow / Deep)	32,585	-	24,990	-	-	-	-	-	101,958	-
d. Pump + Generator	20,500	13,000	20,750	17,500	17,500	9,000	8,000	-	17,500	16,000
e. Chlorination Unit	-	-	-	-	-	-	-	-	-	-
f. Reservoir / Elevated Tank	-	-	-	-	-	-	-	-	-	-
g. Piping	35,836	52,460	36,051	18,586	4,254	13,595	41,363	25,882	29,786	41,577
h. Public Taps	-	-	-	-	-	-	-	-	-	-
i. House Connection	382,000	321,500	297,250	128,000	113,000	86,000	147,250	262,750	293,000	202,000
j. Others	13,126	11,741	10,764	5,615	5,460	5,783	7,470	9,218	12,455	10,817
k. Internal Transportation Fee of Imported Materials	6,540	4,515	5,895	3,563	4,892	4,477	3,752	4,500	4,588	658
TOTAL DIRECT COST	490,588	403,216	395,700	173,264	145,106	118,855	207,834	302,350	459,288	271,052
B. INDIRECT COST										
a. Land Acquisition	8,340	6,855	6,727	2,945	2,467	2,021	3,533	5,140	7,808	4,608
b. Administration	9,321	7,661	7,518	3,292	2,757	2,258	3,949	5,745	8,726	5,150
c. Training	-	-	-	-	-	-	-	-	-	-
d. Consultants	63,776	52,418	51,441	22,524	18,864	15,451	27,018	39,305	59,707	35,237
e. Physical Contingency	49,059	40,322	39,570	17,326	14,511	11,886	20,783	30,235	45,929	27,105
TOTAL INDIRECT COST	130,496	107,256	105,256	46,088	38,598	31,615	55,284	80,425	122,170	72,100
TOTAL DIRECT AND INDIRECT COST (A + B)	621,084	510,472	500,956	219,353	183,705	150,471	263,118	382,775	581,458	343,152
C. PRICE ESCALATION	306,462	251,998	245,652	104,998	87,601	72,861	128,889	192,376	287,565	167,016
TOTAL COST (A + B + C)	927,546	762,470	746,608	324,350	271,306	223,332	392,007	575,151	869,023	510,168
Construction Cost / Person (Rupiah/Person)	48,563	41,506	50,243	44,310	42,063	45,393	46,557	38,318	59,319	50,512

TABLE 7.3.4 SUMMARY LIST OF CONSTRUCTION COST (FINAL STAGE (2/3))

FINAL STAGE		UNIT:1,000 Rp.									
CODE		11	12	13	14	15	16	17	18	19	20
NAME OF I K K		GONDANG	JENAR	GIRIWOYO	BAWEN	BALEN	BAURENO	JENU	JIWAN	KEMBANGBAHU	DIWEK
PROVINCE		CENTRAL JAVA	CENTRAL JAVA	CENTRAL JAVA	CENTRAL JAVA	EAST JAVA	EAST JAVA	EAST JAVA	EAST JAVA	EAST JAVA	EAST JAVA
POPULATION		20,330	7,900	6,050	17,880	14,900	12,410	10,740	19,070	6,420	14,350
A. DIRECT COST											
a.	Intake Facility for Spring	-	-	-	-	-	-	-	-	-	-
b.	Water Treatment Facility	-	-	-	-	-	-	-	-	-	-
c.	Well (Shallow / Deep)	54,296	23,300	-	-	38,226	23,300	-	-	52,500	-
d.	Pump + Generator	13,000	17,250	9,000	-	18,750	18,250	17,000	13,000	17,500	9,250
e.	Chorination Unit	-	-	-	-	-	-	-	-	-	-
f.	Reservoir / Elevated Tank	-	-	-	-	-	-	-	-	-	-
g.	Piping	23,942	19,558	17,366	18,405	38,127	26,487	27,247	51,272	15,311	54,211
h.	Public Taps	-	-	-	-	-	-	-	-	-	-
i.	House Connection	355,750	138,250	121,000	357,500	281,610	268,110	203,040	412,020	121,230	309,960
j.	Others	12,214	7,631	6,421	10,415	10,660	9,852	8,468	12,063	6,203	10,377
k.	Internal Transportation Fee of Imported Materials	5,241	4,921	3,681	4,055	11,520	11,644	10,294	10,974	7,686	8,283
TOTAL DIRECT COST		464,443	210,910	157,468	390,375	398,893	357,643	266,049	499,329	220,430	392,081
B. INDIRECT COST											
a.	Land Acquisition	7,896	3,585	2,677	6,636	6,781	6,080	4,523	8,489	3,747	6,665
b.	Administration	8,824	4,007	2,992	7,417	7,579	6,795	5,055	9,487	4,188	7,450
c.	Training	-	-	-	-	-	-	-	-	-	-
d.	Consultants	60,378	27,418	20,471	50,749	51,856	46,494	34,586	64,913	28,656	50,970
e.	Physical Contingency	46,444	21,091	15,747	39,038	39,889	35,764	26,605	49,933	22,043	39,208
TOTAL INDIRECT COST		123,542	56,102	41,887	103,840	106,106	95,133	70,769	132,822	58,634	104,293
TOTAL DIRECT AND INDIRECT COST (A + B)		587,985	267,013	199,355	494,215	504,999	452,776	336,818	632,151	279,064	496,374
C. PRICE ESCALATION											
TOTAL COST (A + B + C)		880,410	396,134	296,764	743,253	753,184	675,214	500,965	945,713	414,390	742,258
Construction Cost / Person (Rupiah/Person)		43,306	50,144	49,052	41,569	50,549	54,409	46,645	49,592	64,547	51,725

TABLE 7.3.4 SUMMARY LIST OF CONSTRUCTION COST (FINAL STAGE (3/3))

FINAL STAGE		UNIT:1,000 Rp.								
CODE	21	22	23	24	25	26	27	28	29	30
NAME OF I K K	KUTOREJO	TEMPEH	KUNIR	TEMPURSARI	BANYUANYAR	SUMBERASIH	TAMPAKSIRING	KETEWEL	MENANGA	SIBETAN
PROVINCE	EAST JAVA	EAST JAVA	EAST JAVA	EAST JAVA	EAST JAVA	EAST JAVA	BALI	BALI	BALI	BALI
POPULATION	16,150	14,150	19,220	11,480	16,330	9,860	8,730	9,250	5,760	9,710
A. DIRECT COST										
a.	Intake Facility for Spring	-	-	-	-	-	-	-	-	-
b.	Water Treatment Facility	-	-	-	-	-	-	-	-	-
c.	Well (Shallow / Deep)	-	-	-	-	60,970	-	-	-	-
d.	Pump + Generator	11,500	9,250	10,000	8,500	28,250	16,000	8,000	16,000	9,000
e.	Chorination Unit	-	-	-	-	-	-	-	-	-
f.	Reservoir / Elevated Tank	-	-	-	-	-	-	-	-	-
g.	Piping	26,647	34,658	33,810	23,639	27,393	19,561	25,603	19,421	20,584
h.	Public Taps	-	-	-	-	-	-	-	-	-
i.	House Connection	305,370	267,570	363,150	247,860	352,620	213,030	175,968	213,120	132,768
j.	Others	9,627	9,155	11,612	8,480	12,362	8,322	7,428	8,319	6,694
k.	Internal Transportation Fee of Imported Materials	11,004	10,140	9,519	8,854	9,671	8,313	11,124	16,800	61,759
TOTAL DIRECT COST		364,149	330,772	428,091	297,333	491,266	265,226	228,122	273,660	230,805
B. INDIRECT COST										
a.	Land Acquisition	6,191	5,623	7,278	5,055	8,352	4,509	3,878	4,652	3,924
b.	Administration	6,919	6,285	8,134	5,649	9,334	5,039	4,334	5,200	4,385
c.	Training	-	-	-	-	-	-	-	-	-
d.	Consultants	47,339	43,000	55,652	38,653	63,865	34,479	29,656	35,576	30,005
e.	Physical Contingency	36,415	33,077	42,809	29,733	49,127	26,523	22,812	27,366	23,080
TOTAL INDIRECT COST		96,864	87,985	113,872	79,091	130,677	70,550	60,681	72,794	61,394
TOTAL DIRECT AND INDIRECT COST (A + B)		461,012	418,758	541,963	376,423	621,942	335,776	288,803	346,454	292,199
C. PRICE ESCALATION		228,555	207,498	269,601	186,795	305,013	164,246	142,560	169,650	144,205
TOTAL COST (A + B + C)		689,567	626,256	811,564	563,218	926,955	500,023	431,363	516,104	436,404
Construction Cost / Person (Rupiah/Person)		42,698	44,258	42,225	49,061	56,764	50,712	49,412	55,795	75,765

TABLE 7.3.4 SUMMARY LIST OF CONSTRUCTION COST FOR EACH PROVINCE (FINAL STAGE)

FINAL STAGE		UNIT:1,000 Rp.			
CODE		1-14	15-26	27-30	1-30
NAME OF I K K PROVINCE		ALL IN CENTRAL JAVA PROVINCE	ALL IN EAST JAVA PROVINCE	ALL IN BALI PROVINCE	ALL THREE PROVINCES
	POPULATION	171,380	165,080	33,450	369,890
A. DIRECT COST					
a.	Intake Facility for Spring	-	-	-	-
b.	Water Treatment Facility	-	-	-	-
c.	Well (Shallow / Deep)	237,129	174,996	-	412,125
d.	Pump + Generator	179,000	177,250	69,000	425,250
e.	Chorination Unit	-	-	-	-
f.	Reservoir / Elevated Tank	-	-	-	-
g.	Piping	378,663	378,362	88,353	845,377
h.	Public Taps	-	-	-	-
i.	House Connection	3,205,250	3,345,570	745,632	7,296,452
j.	Others	129,131	117,181	33,320	279,631
k.	Internal Transportation Fee of Imported Materials	61,278	117,902	117,943	297,123
TOTAL DIRECT COST		4,190,450	4,311,261	1,054,248	9,555,959
B. INDIRECT COST					
a.	Land Acquisition	71,238	73,291	17,922	162,451
b.	Administration	79,619	81,914	20,031	181,563
c.	Training	-	-	-	-
d.	Consultants	544,759	560,464	137,052	1,242,275
e.	Physical Contingency	419,045	431,126	105,425	955,596
TOTAL INDIRECT COST		1,114,660	1,146,795	280,430	2,541,885
TOTAL DIRECT AND INDIRECT COST (A + B)		5,305,110	5,458,056	1,334,678	12,097,844
C. PRICE ESCALATION		2,613,412	2,691,252	650,832	5,955,496
TOTAL COST (A + B + C)		7,918,522	8,149,308	1,985,510	18,053,340
Construction Cost / Person (Rupiah/Person)		46,210	49,366	59,358	48,807

TABLE 7.3.5 SUMMARY LIST OF OPERATION AND MAINTENANCE COST FOR 30 IKK (FIRST STAGE)

FIRST STAGE UNIT:1,000 Rp.

CODE	1	2	3	4	5	6	7	8	9	10
NAME OF I K K	BULAKAMBA	JERUKLEGI	KEMIRI	MADUKARA	PUNGGELAN	KARANGGAYAM	PETANAHAN	SUKOREJO	JEPON	BATANGAN
PROVINCE	CENTRAL JAVA	CENTRAL JAVA	CENTRAL JAVA	CENTRAL JAVA	CENTRAL JAVA	CENTRAL JAVA	CENTRAL JAVA	CENTRAL JAVA	CENTRAL JAVA	CENTRAL JAVA
POPULATION	19,100	18,370	14,860	7,320	6,450	4,920	8,420	15,010	14,650	10,100
OPERATION AND MAINTENANCE COST										
TYPE OF W.S.S	D-b	E-b	C	B-a	A-a	E-b	D-b	A-b	D-a	E-a
No. OF OPERATOR	3	3	5	3	3	3	3	3	5	3
1. Operation (per year)	4,284	4,284	7,140	4,284	4,284	4,284	4,284	4,284	7,140	4,284
2. Power & Fuel (per year)	7,388	10,675	9,853	13,369	10,682	8,028	5,340	-	4,924	2,463
3. Chemical (per year)	2,414	2,323	1,879	927	817	624	1,065	1,898	1,852	1,278
4. Maintenance (per year)	6,548	8,088	8,986	10,198	7,448	6,474	4,811	123	4,423	2,000
TOTAL COST OF OPERATION AND MAINTENANCE PER YEAR	20,634	25,370	27,858	28,778	23,231	19,409	15,500	6,305	18,338	10,025

FIRST STAGE UNIT:1,000 Rp.

CODE	11	12	13	14	15	16	17	18	19	20
NAME OF I K K	GONDANG	JENAR	GIRIWOYO	BAWEN	BALEN	BAURENO	JENU	JIWAN	KEMBANGBAHU	DIWEK
PROVINCE	CENTRAL JAVA	CENTRAL JAVA	CENTRAL JAVA	CENTRAL JAVA	EAST JAVA	EAST JAVA	EAST JAVA	EAST JAVA	EAST JAVA	EAST JAVA
POPULATION	20,330	7,900	6,050	17,880	14,900	12,410	10,740	19,070	6,420	14,350
OPERATION AND MAINTENANCE COST										
TYPE OF W.S.S	D-a	C	A-a	A-b	D-b	D-c	D-c	D-c	D-c	D-b
No. OF OPERATOR	5	5	3	3	3	3	3	3	3	3
1. Operation (per year)	7,140	7,140	4,284	4,284	4,284	4,284	4,284	4,284	4,284	4,284
2. Power & Fuel (per year)	10,680	10,674	7,383	12,325	8,008	9,858	10,674	12,315	8,003	7,395
3. Chemical (per year)	2,572	999	764	2,263	1,885	1,570	1,358	2,412	811	1,816
4. Maintenance (per year)	8,054	8,984	5,923	10,355	6,423	8,386	7,974	10,423	6,722	6,661
TOTAL COST OF OPERATION AND MAINTENANCE PER YEAR	28,445	27,797	18,354	29,226	20,600	24,098	24,290	29,434	19,820	20,155

FIRST STAGE UNIT:1,000 Rp.

CODE	21	22	23	24	25	26	27	28	29	30
NAME OF I K K	KUTOREJO	TEMPEH	KUNIR	TEMPURSARI	BANYUANYAR	SUMBERASIH	TAMPAKSIRING	KETEWEL	MENANGA	SIBETAN
PROVINCE	EAST JAVA	EAST JAVA	EAST JAVA	EAST JAVA	EAST JAVA	EAST JAVA	BALI	BALI	BALI	BALI
POPULATION	16,150	14,150	19,220	11,480	16,330	9,860	8,730	9,250	5,760	9,710
OPERATION AND MAINTENANCE COST										
TYPE OF W.S.S	D-c	D-c	D-b	B-b	D-c	D-b	B-a	D-b	B-b	B-a
No. OF OPERATOR	3	3	3	3	5	3	3	3	5	3
1. Operation (per year)	4,284	4,284	4,284	4,284	7,140	4,284	4,284	4,284	7,140	4,284
2. Power & Fuel (per year)	10,670	8,010	10,678	7,389	7,387	7,393	5,338	7,394	27,117	12,319
3. Chemical (per year)	2,042	1,791	2,431	1,451	2,064	1,247	1,104	1,170	728	1,228
4. Maintenance (per year)	8,773	7,873	7,536	7,174	7,636	6,373	4,348	6,373	24,827	8,873
TOTAL COST OF OPERATION AND MAINTENANCE PER YEAR	25,769	21,958	24,929	20,298	24,226	19,297	15,074	19,221	59,813	26,704

FIRST STAGE UNIT:1,000 Rp.

CODE	1-14	15-26	27-30	1-30
NAME OF I K K PROVINCE	ALL IN CENTRAL JAVA PROVINCE	ALL IN EAST JAVA PROVINCE	ALL IN BALI PROVINCE	ALL THREE PROVINCES
POPULATION	171,360	165,080	33,450	369,890
OPERATION AND MAINTENANCE COST				
TYPE OF W.S.S	-	-	-	-
No. OF OPERATOR	50	38	14	102
1. Operation (per year)	71,400	54,264	19,992	145,656
2. Power & Fuel (per year)	113,783	107,780	52,168	273,731
3. Chemical (per year)	21,675	20,878	4,230	46,783
4. Maintenance (per year)	92,413	91,953	44,421	228,788
TOTAL COST OF OPERATION AND MAINTENANCE PER YEAR	299,272	274,875	120,811	694,958

TABLE 7.3.6 SUMMARY LIST OF OPERATION AND MAINTENANCE COST FOR 30 IKK (FINAL STAGE)

FINAL STAGE		UNIT:1,000 Rp.									
CODE		1	2	3	4	5	6	7	8	9	10
NAME OF I K K		BULAKAMBA	JERUKLEGI	KEMIRI	MADUKARA	PUNGGELAN	KARANGGAYAM	PETANAHAN	SUKOREJO	JEPON	BATANGAN
PROVINCE		CENTRAL JAVA	CENTRAL JAVA	CENTRAL JAVA	CENTRAL JAVA	CENTRAL JAVA	CENTRAL JAVA	CENTRAL JAVA	CENTRAL JAVA	CENTRAL JAVA	CENTRAL JAVA
POPULATION		19,100	18,370	14,860	7,320	6,450	4,920	8,420	15,010	14,650	10,100
OPERATION AND MAINTENANCE COST											
TYPE OF W.S.S		D-b	E-b	C	B-a	A-a	E-b	D-b	A-b	D-a	E-a
No. OF OPERATOR		3	3	5	3	3	3	3	3	5	3
1. Operation (per year)		4,284	4,284	7,140	4,284	4,284	4,284	4,284	4,284	7,140	4,284
2. Power & Fuel (per year)		13,303	18,149	17,738	22,699	18,153	13,623	9,076	-	8,868	4,435
3. Chemical (per year)		4,347	3,950	3,383	1,574	1,388	1,058	1,810	3,227	3,335	2,300
4. Maintenance (per year)		7,573	8,738	10,023	11,073	8,323	6,924	5,211	123	5,298	2,800
TOTAL COST OF OPERATION AND MAINTENANCE PER YEAR		29,507	35,121	38,284	39,630	32,148	25,889	20,381	7,634	24,640	13,819

FINAL STAGE		UNIT:1,000 Rp.									
CODE		11	12	13	14	15	16	17	18	19	20
NAME OF I K K		GONDANG	JENAR	GIRIWOYO	BAWEN	BALEN	BAURENO	JENU	JIWAN	KEMBANGBAHU	DIWEK
PROVINCE		CENTRAL JAVA	CENTRAL JAVA	CENTRAL JAVA	CENTRAL JAVA	EAST JAVA	EAST JAVA	EAST JAVA	EAST JAVA	EAST JAVA	EAST JAVA
POPULATION		20,330	7,900	6,050	17,880	14,900	12,410	10,740	19,070	6,420	14,350
OPERATION AND MAINTENANCE COST											
TYPE OF W.S.S		D-a	C	A-a	A-b	D-b	D-c	D-c	D-c	D-c	D-b
No. OF OPERATOR		5	5	3	3	3	3	3	3	3	3
1. Operation (per year)		7,140	7,140	4,284	4,284	4,284	4,284	4,284	4,284	4,284	4,284
2. Power & Fuel (per year)		18,152	18,148	13,300	22,177	13,613	17,740	18,149	22,172	13,610	13,306
3. Chemical (per year)		4,371	1,698	1,377	4,071	3,204	2,826	2,308	4,342	1,380	3,267
4. Maintenance (per year)		8,704	9,847	6,373	10,355	7,361	9,299	8,824	11,073	7,597	7,123
TOTAL COST OF OPERATION AND MAINTENANCE PER YEAR		38,366	36,834	25,334	40,887	28,461	34,149	33,565	41,871	26,870	27,980

FINAL STAGE		UNIT:1,000 Rp.									
CODE		21	22	23	24	25	26	27	28	29	30
NAME OF I K K		KUTOREJO	TEMPEH	KUNIR	TEMPURSARI	BANYUANYAR	SUMBERASIH	TAMPAKSTRING	KETEWEL	MENANGA	SIBETAN
PROVINCE		EAST JAVA	EAST JAVA	EAST JAVA	EAST JAVA	EAST JAVA	EAST JAVA	BALI	BALI	BALI	BALI
POPULATION		16,150	14,150	19,220	11,480	16,330	9,860	8,730	9,250	5,760	9,710
OPERATION AND MAINTENANCE COST											
TYPE OF W.S.S		D-c	D-c	D-b	B-b	D-c	D-b	B-a	D-b	B-b	B-a
No. OF OPERATOR		3	3	3	3	5	3	3	3	5	3
1. Operation (per year)		4,284	4,284	4,284	4,284	7,140	4,284	4,284	4,284	7,140	4,284
2. Power & Fuel (per year)		18,147	13,614	18,151	13,303	13,302	13,305	9,075	13,306	48,790	22,174
3. Chemical (per year)		3,473	3,044	4,132	2,613	3,717	2,245	1,876	2,105	1,311	2,210
4. Maintenance (per year)		9,348	8,336	8,036	7,599	9,048	7,173	4,748	7,173	25,277	10,673
TOTAL COST OF OPERATION AND MAINTENANCE PER YEAR		35,252	29,277	34,602	27,799	33,207	27,007	19,983	26,868	82,518	39,341

FINAL STAGE UNIT:1,000 Rp.

CODE	1-14	15-26	27-30	1-30
NAME OF I K K	ALL IN CENTRAL	ALL IN EAST	ALL IN	ALL THREE
PROVINCE	JAVA PROVINCE	JAVA PROVINCE	BALI PROVINCE	PROVINCES
POPULATION	171,360	165,080	33,450	369,890
OPERATION AND MAINTENANCE COST				
TYPE OF W.S.S	-	-	-	-
No. OF OPERATOR	50	38	14	102
1. Operation (per year)	71,400	54,264	19,992	145,656
2. Power & Fuel (per year)	197,818	188,411	93,344	479,573
3. Chemical (per year)	37,891	36,550	7,503	81,943
4. Maintenance (per year)	101,363	100,816	47,871	250,050
TOTAL COST OF OPERATION AND MAINTENANCE PER YEAR	408,472	380,040	168,710	957,223

7.4 Project Evaluation

7.4.1 General

The financial economic evaluations of the project for the present supplementary plan are basically conducted using the same method as those for the original plan. However, annual cost and revenue (or benefit) which will accrue for the period 1993 - 1999 are altered due to a change in the construction schedule of public hydrants (PH) and house connections (HC) in the water supply system.

The supplementary plan is scheduled so that the construction works of the project are completed in three years from 1993 to 1995 for the public hydrants and in the years 1998 and 1999 for the house connections. Accordingly, the operation and maintenance cost (OM cost) would be appropriated for public hydrant facilities during the period 1994 - 1998 and for the said public hydrant facilities and a part of house connection facilities in 1999. The project revenue (or benefit) also would accrue for the same facilities and years as cases of the OM cost.

The annual OM cost and revenue (or benefit) which will accrue from 1999 to the end of the project life would take the same values as those of the original plan, except the house connection fee to be repaid from each household to the BPAM or PDAM after the house connection facilities.

The project life is taken as 30 years after completion of construction works at the first stage, because the main facilities of the water supply system would be completed when the public hydrants are equipped.

Other conditions and assumptions necessary for the financial and economic evaluations are given in Annex 1 of Chapter 6.

7.4.2 Financial Evaluation

Project Cost

Construction cost of the project is in detail given for each IKK in Table 7.3.3 and 7.3.4, and the total cost for the whole 30-IKK is estimated at Rp. 60,810 million, taking account of the annual price escalation of 4.7 % for foreign currency portion and 8 % for local currency portion.

The OM cost for each IKK is indicated at the 1991 price level in Table 7.3.5 and 7.3.6. During the period of project life the OM cost would amount to Rp. 196,630 million for the whole 30-IKK, taking the said price escalation into account. Cash flow of the OM cost together with the construction cost is given in Table 7.4.1.

Project Revenue

As mentioned in Section 6.3.1, two alternatives are prepared for estimating the project revenue, and the result is given by IKK in Table 7.4.2, under the conditions and assumptions described in Annex 1 of Chapter 6, and the total annual revenue at the 1991 price level is summarized below:

Total Annual Revenue (at the 1991 Price Level)

Tariff to be applied	Year				
	1996	1997	1998	1999	after 1999
(1) Current Tariff	389	393	396	927	1,469
(2) 4 % - Affordability	1,147	1,158	1,169	2,722	4,311

Unit : Million Rps. per Annum

In the above table, values in 1996, 1997 and 1998 show revenues for only public hydrants, taking the population served in each year into account, and the 1999 revenue is taken into account that a part of revenue from the public hydrants is converted to that from the house connections. The annual revenue after 1999 would take the same value as that in the original plan indicated in table 6.3.2. Annual flow of the revenue for the whole 30-IKK for the period of project life is shown in Table 7.4.1.

Cost - Revenue Analysis

The FIRR is estimated under the conditions and assumptions stated in Annex 1 of Chapter 6, and the result is summarized in Table 7.4.3. In case where the 4 % - affordability is applied, the FIRR for the whole 30-IKK comes to 12.8 %, which decreases by about 20 % compared with the original FIRR shown in Table 6.3.3, due to increase in the construction cost and time lag of occurrence of revenue from the house connections. However, this rate still indicates that the project is feasible financially.

In case where the current tariff is used for estimating the revenue, the FIRR comes to negative for the whole 30-IKK and for 13 IKKs (See Table 7.4.3).

From result of the above - mentioned financial analysis, it is estimated that the FIRR for the whole 30-IKK will attain to 10 % and 5 % by raising the average current tariff (Rp. 150/m³) to Rp. 330/m³ (120 % up) and to Rp. 220/m³ (45 % up), respectively.

A cash flow statement of cost and revenue for the whole 30-IKK is provided under the same conditions as those of the original plan for the foreign loan and revenue. The result is given in Table 7.4.4. The statement shows that the project will be borne to repay the loan without any problem. However, the FIRR would be somewhat low compared with the original plan, i.e. 7.3 %.

7.4.3 Economic Evaluation

Economic Cost

The economic cost of the project is converted from the financial cost under the same conditions and assumptions as those of the original plan, and the result is given for each IKK as shown in Table 7.4.5. For the whole 30-IKK, the total economic construction cost amounts to Rp. 44,105 million and the annual economic OM cost is estimated at Rp. 627 million for each year of 1996, 1997 and 1998, Rp. 861 million for 1999 and Rp. 1,079 million for the period from 2000 to the end of the project life. Annual flows of these costs are given in Table 7.4.7.

Economic Benefit

The economic benefit of the project is estimated under the same concept and method as those of the original plan. The economic annual benefits in 1996, 1997 and 1998 accrue from only the public hydrant facilities and are estimated at Rp. 3,181 million, Rp. 3,215 million and Rp. 3,246 million respectively for the whole 30-IKK, taking the population served into account.

House connection facilities is constructed in 1998 and 1999 according to the present supplementary plan, and a part of public hydrant facilities is converted to house connection facilities. Accordingly, in 1999 and 2000 the house connection benefit is newly added and to the contrary the public hydrant benefit is decreased, in proportion to respective populations served. The economic annual benefit for the whole 30-IKK is estimated at Rp. 4,314 million in 1999 and Rp. 5,408 million in 2000, and the same benefit as that in 2000 would accrue every year during the period of project life. Where, the annual benefit for the

period from 2000 to the end of project life coincides with that of the original plan. The annual benefits for each IKK and the whole 30-IKK are given in Tables 7.4.6 and 7.4.7.

Cost - Benefit Analysis

The EIRRs for the whole 30-IKK and each IKK are given in Table 7.4.3. The EIRR for the whole 30-IKK is estimated at 7.9 %, which is a comparatively high as a water supply project, though it is low by about 20 % compared with that of the original plan.

Sensitivity Test of EIRR

The result of sensitivity test of EIRR for the whole 30-IKK, under the conditions of 5 % - and 10 % - increases in the economic cost and/or 5 % - and 10 % - decreases in the economic benefit, is given as follows:

Sensitivity Test of EIRR (%)

Increase in Cost	Decrease in Benefit		
	0 %	-5 %	-10 %
0 %	7.9	7.3	6.7
+5 %	7.3	6.7	6.1
+10 %	6.8	6.2	5.6

The EIRR would come to 5.6 % for a pessimistic condition which combines 10 % - increase in the cost and 10 % - decrease in the benefit. Although this percentage is lower by about 25 % than that in the original plan, still it seems to maintain the socio-economic feasibility as a regional water supply project, taken into consideration "Socio-Economic Impacts" described in Section 6.3.3.

7.4.4 Summary of Project Evaluation

The supplementary plan is modified a little to the original plan on the project evaluation. Result of the project evaluation is summarized as follows:

- (1) In case where the 4 % - affordability is applied for the financial evaluation, the FIRR for whole 30-IKK indicates 12.8 %, which the project is feasible financially, although it is low by about 20 % compared with the rate (15.7 %) in the original plan.

- (2) On the other hand, in case where the current tariff is used, the FIRR comes to a negative for the whole 30-IKK. Accordingly, to get the FIRR of 10 % or 5 %, average water tariff will have to be raised from Rp. 150/m³ to Rp. 330/m³ (120 % up) or Rp. 220/m³ (45 % up). The supplementary plan is severer than the original plan on the rise in tariff.
- (3) The EIRR for the whole 30-IKK shows 7.9 % which is a comparatively high rate as a basic human needs project, though the rate is low by about 20 % compared with that of the original plan. As a result, it is judged that the project is feasible from the socio-economic point of view.
- (4) As regards the individual IKKs, the EIRR has a tendency to give a comparatively high figure for the IKK where it is difficult to fetch water. For example, the IKK Menanga shows a the high EIRR of 18.9 %, despite the FIRR is a negative. On the other hand, almost all of IKKs with the lower EIRR than 5 % indicate a high FIRR, under condition of the 4 % - affordability.
- (5) In conclusion, the project as a whole of 30-IKK is feasible financially (by raising the average current tariff by about 45 %) and socio-economically. The sub-project for individual IKKs also would be feasible, under a condition which the project should satisfy the feasibility of either financial or economic aspect.

Table 7.4.1 CASH FLOW OF FINANCIAL COST AND
BENEFIT FOR THE WHOLE 30-IKK

Unit: Million Rps.

Year	Financial Cost			Financial Revenue		
	Const.	OMR	Total	Case (A)	Case (B)	
1	1993	5,538	0	5,538	0	0
2	1994	26,615	0	26,615	0	0
3	1995	10,606	0	10,606	0	0
4	1996	0	1,021	1,021	571	1,686
5	1997	0	1,104	1,104	623	1,838
6	1998	9,028	1,192	10,220	679	2,004
7	1999	9,028	1,774	10,802	2,035	5,358
8	2000	0	2,396	2,396	3,583	9,264
9	2001	0	2,587	2,587	3,818	9,954
10	2002	0	2,794	2,794	4,072	10,698
11	2003	0	3,018	3,018	4,020	11,177
12	2004	0	3,259	3,259	3,996	11,725
13	2005	0	3,520	3,520	4,315	12,663
14	2006	0	3,802	3,802	4,661	13,676
15	2007	0	4,106	4,106	5,033	14,770
16	2008	0	4,434	4,434	5,436	15,952
17	2009	0	4,789	4,789	5,871	17,228
18	2010	0	5,172	5,172	6,341	18,606
19	2011	0	5,586	5,586	6,848	20,095
20	2012	0	6,033	6,033	7,396	21,702
21	2013	0	6,515	6,515	7,987	23,439
22	2014	0	7,036	7,036	8,626	25,314
23	2015	0	7,599	7,599	9,317	27,339
24	2016	0	8,207	8,207	10,062	29,526
25	2017	0	8,864	8,864	10,867	31,888
26	2018	0	9,573	9,573	11,736	34,439
27	2019	0	10,339	10,339	12,675	37,194
28	2020	0	11,166	11,166	13,689	40,169
29	2021	0	12,059	12,059	14,784	43,383
30	2022	0	13,024	13,024	15,957	46,854
31	2023	0	14,066	14,066	17,244	50,602
32	2024	0	15,191	15,191	18,624	54,650
33	2025	0	16,406	16,406	20,114	59,022
Total		60,815	196,630	257,445	240,991	702,215

Note: Case (A): Current Tariff Basis.

Case (B): 4 % Criterion of Household Income.

Table 7.4.2 VOLUME AND REVENUE OF SUPPLIED WATER AT THE 1991 PRICE LEVEL
(1) H.C. & P.H. (during the Project Life Period after the Year 2000)

NO.	IKK	Revenue (Million Rps./Year)															
		Supplied Water (m ³ /year)					(1) Average Current Tariff						(2) 4 %-Household Income Criterion				
		H.C. & Non-Domestic	P.H.	H.C. & Non-Domestic	P.H.	Total	H.C. & Non-Domestic	P.H.	Total	Effective (95 %)	H.C. & Non-Domestic	P.H.	Total	Effective (95 %)			
1	BuJakamba	529,137	41,829	79.37	4.18	83.55	79.38	232.82	12.34	245.16	232.90						
2	Jeruklegi	446,556	60,345	66.98	6.03	73.02	69.37	196.48	17.80	214.29	203.57						
3	Kemiri	411,674	32,543	61.75	3.25	65.01	61.76	181.14	9.60	190.74	181.20						
4	Madukora	177,942	24,046	26.69	2.40	29.10	27.64	78.29	7.09	85.39	81.12						
5	Punggelan	156,793	21,188	23.52	2.12	25.64	24.36	68.99	6.25	75.24	71.48						
6	Karanggayam	119,600	16,162	17.94	1.62	19.56	18.58	52.62	4.77	57.39	54.52						
7	Petananahan	204,682	27,660	30.70	2.77	33.47	31.79	90.06	8.16	98.22	93.31						
8	Sukorejo	364,878	49,308	54.73	4.93	59.66	56.68	150.55	14.55	175.09	166.34						
9	Jepon	405,856	32,084	60.88	3.21	64.09	60.88	178.58	9.46	188.04	178.64						
10	Batangan	279,805	22,119	41.97	2.21	44.18	41.97	123.11	6.53	129.64	123.16						
11	Gondang	494,202	56,784	74.13	6.68	80.81	76.77	217.45	19.70	237.15	225.29						
12	Jenar	192,041	25,962	28.81	2.60	31.40	29.83	84.50	7.66	92.15	87.55						
13	Giriwoyo	167,606	13,250	25.14	1.32	26.47	25.14	73.75	3.91	77.66	73.77						
14	Bawen	495,339	39,157	74.30	3.92	78.22	74.31	217.95	11.55	229.50	218.03						
15	Balen	362,204	48,947	54.33	4.89	59.23	56.26	159.37	14.44	173.81	165.12						
16	Baureno	343,800	27,178	51.57	2.72	54.29	51.57	151.27	8.02	159.29	151.33						
17	Jenu	261,079	35,281	39.16	3.53	42.69	40.56	114.87	10.41	125.28	119.02						
18	Kembangbahu	156,064	21,090	23.41	2.11	25.52	24.24	68.67	6.22	74.89	71.15						
19	Diewk	397,545	31,427	59.63	3.14	62.77	59.64	174.92	9.27	184.19	174.98						
20	Jiwan	528,306	41,763	79.25	4.18	83.42	79.25	232.45	12.32	244.77	232.54						
21	Kutorejo	392,590	53,053	58.89	5.31	64.19	60.98	172.74	15.65	188.39	178.97						
22	Tempoh	343,972	46,483	51.60	4.65	56.24	53.43	151.35	13.71	165.06	156.81						
23	Kunir	467,219	63,138	70.08	6.31	76.40	72.58	205.58	18.63	224.20	212.99						
24	Tempursari	318,036	25,141	47.71	2.51	50.22	47.71	139.94	7.42	147.35	139.98						
25	Banyuanar	452,398	35,763	67.86	3.58	71.44	67.86	199.06	10.55	209.61	199.12						
26	Sumberasih	273,157	21,593	40.97	2.16	43.13	40.98	120.19	6.37	126.56	120.23						
27	Tampak Siring	212,218	28,678	31.83	2.87	34.70	32.97	93.38	8.46	101.84	96.74						
28	Ketewel	256,257	20,258	38.44	2.03	40.46	38.44	112.75	5.98	118.73	112.79						
29	Menanga	159,572	12,614	23.94	1.26	25.20	23.94	70.21	3.72	73.93	70.24						
30	Sibetan	269,001	21,265	40.35	2.13	42.48	40.35	118.36	6.27	124.63	118.40						
	Total	9,639,530	1,006,097	1,445.93	100.61	1,546.54	1,469.21	4,241.39	296.80	4,538.19	4,311.28						

(II) P.H (for the Period 1996-1998)

NO.	IKK	Supplied Water (m ³ /year)		Revenue (Million Rps./year)-2000		Annual Revenue (Mil. Rps./year)						
		P.H. & Non- Domestic	P.H.	(1) Average		(1) Average		(1) Average		(2) 4%-Household		
				Current Tariff	Income Criterion	Current Tariff	Income Criterion	Current Tariff	Income Criterion	Current Tariff	Income Criterion	
				P.H. Effective	P.H. Effective	1996	1997	1998	1996	1997	1998	
1	Bulakamba	209,145	219,602	21.96	20.86	64.78	61.54	20.57	20.64	20.72	60.69	61.11
2	Jeruklegi	201,152	211,209	21.12	20.06	62.31	59.19	18.85	19.15	19.45	55.62	57.38
3	Kemiri	162,717	170,853	17.09	16.23	50.40	47.88	15.14	15.41	15.68	44.67	46.25
4	Madukora	80,154	84,162	8.42	8.00	24.83	23.59	7.66	7.74	7.82	22.59	23.08
5	Punggelan	70,628	74,159	7.42	7.05	21.88	20.78	6.67	6.76	6.86	19.68	20.23
6	Karanggayam	53,874	56,568	5.66	5.37	16.69	15.85	5.13	5.19	5.25	15.12	15.48
7	Petabuhan	92,199	96,809	9.68	9.20	28.56	27.13	9.08	9.11	9.14	26.79	26.96
8	Sukorejo	164,360	172,577	17.26	16.39	50.91	48.36	15.97	16.07	16.18	47.11	47.73
9	Jepon	160,418	168,438	16.84	16.00	49.69	47.20	15.04	15.23	15.51	44.37	45.77
10	Batangan	110,595	116,125	11.61	11.03	34.26	32.54	10.63	10.73	10.83	31.36	31.95
11	Gondang	222,614	233,744	23.37	22.21	68.95	65.51	21.35	21.56	21.77	62.98	64.23
12	Jenar	86,505	90,830	9.08	8.63	26.79	25.46	8.31	8.39	8.47	24.50	24.97
13	Giriwoyo	66,248	69,560	6.96	6.61	20.52	19.49	6.54	6.56	6.58	19.30	19.40
14	Bawen	195,786	205,575	20.56	19.53	60.64	57.61	18.50	18.75	19.01	54.58	56.08
15	Balen	163,155	171,313	17.13	16.27	50.54	48.01	15.64	15.80	15.95	46.14	47.06
16	Baureno	135,890	142,684	14.27	13.55	42.09	39.99	13.03	13.16	13.29	38.43	39.20
17	Jenu	117,603	123,483	12.35	11.73	36.43	34.61	11.21	11.34	11.47	33.06	33.82
18	Kembangbahu	70,299	73,814	7.38	7.01	21.78	20.69	6.78	6.83	6.89	19.99	20.34
19	Djawk	157,133	164,989	16.50	15.67	48.67	46.24	15.01	15.18	15.34	44.29	45.26
20	Jiwan	208,817	219,257	21.93	20.83	64.68	61.45	20.67	20.71	20.75	60.98	61.21
21	Kutorejo	176,843	186,685	18.57	17.64	54.78	52.04	16.73	16.95	17.18	49.34	50.67
22	Tempel	154,943	162,690	16.27	15.46	47.99	45.59	15.11	15.20	15.28	44.59	45.09
23	Kunir	210,459	220,982	22.10	20.99	65.19	61.93	20.53	20.64	20.76	60.56	61.24
24	Tempursari	125,706	131,991	13.20	12.54	38.94	36.99	12.26	12.33	12.40	36.17	36.58
25	Banyuwang	178,814	187,754	18.78	17.84	55.39	52.62	17.03	17.23	17.43	50.25	51.42
26	Sumberasih	107,967	113,365	11.34	10.77	33.44	31.77	10.28	10.40	10.52	30.34	31.05
27	Tampak Siring	95,594	100,373	10.04	9.54	29.61	28.13	9.18	9.27	9.35	27.07	27.60
28	Ketewel	101,288	106,352	10.64	10.10	31.37	29.81	9.72	9.82	9.91	28.69	29.24
29	Menanga	63,072	66,226	6.62	6.29	19.54	18.56	6.07	6.13	6.18	17.91	18.23
30	Sibetan	106,325	111,641	11.16	10.61	32.93	31.29	10.24	10.33	10.42	30.20	30.74
	Total	4,050,296	4,252,810	425.28	404.02	1,254.58	1,191.85	388.93	392.64	396.39	1,147.36	1,169.35

(III) H.C. & P.H. (in 1999)

NO.	IKK	Revenue (Million Rps./Year)							
		(1) Average Current Tariff				(2) 4 %-Household Income Criterion			
		H.C. & Non-Domestic	P.H. & Non-Domestic	Total	Effective (95 %)	H.C. & Non-Domestic	P.H. & Non-Domestic	Total	Effective (95 %)
1	Bulakamba	39.53	13.18	52.70	49.89	115.95	38.87	154.82	146.57
2	Jeruk legi	33.27	13.73	46.99	43.95	97.58	40.50	138.08	129.15
3	Kemiri	30.75	10.25	41.00	38.28	90.21	30.24	120.45	112.46
4	Madukora	13.26	5.47	18.73	17.60	38.88	15.14	55.02	51.71
5	Punggejan	11.68	4.82	16.50	15.46	34.26	14.22	48.48	45.43
6	Karanggayam	8.91	3.68	12.59	11.82	26.13	10.85	36.98	34.72
7	Petabuhan	15.25	6.29	21.54	20.40	44.73	18.56	63.29	59.93
8	Sukorejo	27.18	11.22	38.40	36.24	79.73	33.09	112.82	106.48
9	Jepon	30.32	10.11	40.43	37.81	88.94	29.81	118.75	111.08
10	Batangan	20.90	6.97	27.87	26.23	61.31	20.55	81.87	77.06
11	Gondang	36.81	15.19	52.01	48.92	107.99	44.82	152.81	143.75
12	Jenar	14.31	5.90	20.21	19.02	41.96	17.42	59.38	55.87
13	Giriwoyo	12.52	4.17	16.69	15.82	36.73	12.31	49.04	46.47
14	Bawen	37.00	12.33	49.34	46.24	108.54	36.39	144.93	135.84
15	Balen	26.98	11.14	38.12	35.85	79.15	32.85	112.00	105.34
16	Baureno	25.68	8.56	34.24	32.21	75.34	25.26	100.59	94.62
17	Jenu	19.45	8.03	27.48	25.80	57.05	23.68	80.73	75.82
18	Kembangbahu	11.63	4.80	16.42	15.47	34.10	14.15	48.26	45.45
19	Diwik	29.70	9.90	39.60	37.22	87.11	29.20	116.32	109.32
20	Jiwan	39.47	13.16	52.62	49.90	115.77	38.81	154.58	146.57
21	Kutorejo	29.25	12.07	41.31	38.73	85.79	35.61	121.39	113.80
22	Tempoh	25.62	10.57	36.20	34.20	75.16	31.20	106.36	100.48
23	Kunir	34.80	14.36	49.17	46.45	102.09	42.37	144.47	136.48
24	Tempursari	23.76	7.92	31.68	29.93	69.69	23.36	93.05	87.91
25	Banyuanyar	33.80	11.27	45.06	42.32	99.13	33.23	132.37	124.31
26	Sumberasih	20.41	6.80	27.21	25.55	59.86	20.07	79.92	75.06
27	Tampak Siring	15.81	6.52	22.33	21.01	46.37	19.25	65.62	61.75
28	Ketewel	19.14	6.38	25.52	24.02	56.15	18.82	74.98	70.55
29	Menanga	11.92	3.97	15.89	14.97	34.97	11.72	46.69	43.96
30	Sibetan	20.10	6.70	26.79	25.23	58.95	19.76	78.71	74.11
	Total	719.19	265.46	984.65	926.54	2,109.63	783.11	2,892.74	2,722.03

Table 7.4.3 RESULT OF PROJECT EVALUATION

IKK	FIRR (%)		EIRR (%)
	Current	4 % Af-Tariff fordability	
(1) BULAKAMBA	4.3	14.8	N
(2) JERUKLEGI	4.2	14.7	3.4
(3) KEMIRI	0.2	14.3	2.9
(4) MADUKARA	N	4.3	15.1
(5) PUNGGELAN	N	7.4	22.0
(6) KARANGGAYAM	N	6.7	N
(7) PETANAHAN	N	14.2	0.6
(8) SUKOREJO	5.5	13.6	9.5
(9) JEPON	2.1	11.7	2.6
(10) BATANGAN	1.9	10.3	10.1
(11) GONDANG	3.0	15.4	4.0
(12) JENAR	N	9.1	14.2
(13) GIRIWOYO	N	11.6	16.5
(14) BAWEN	0.2	12.0	8.8
(15) BALEN	1.5	12.8	5.3
(16) BAURENO	N	13.2	21.3
(17) JENU	N	12.4	N
(18) JIWAN	2.9	16.6	0.0
(19) KENBANGBAHU	N	9.8	22.2
(20) DIHEK	3.4	15.4	N
(21) KUTOREJO	1.4	15.0	1.4
(22) TENPEH	2.5	15.8	4.3
(23) KUNIR	3.1	15.2	N
(24) TEHPURSARI	1.0	14.4	3.0
(25) BANYUANYAR	3.9	16.9	10.7
(26) SUMBERASIH	N	13.7	4.2
(27) TAMPAKSIRING	0.3	13.5	14.7
(28) KETEWEL	N	11.6	7.7
(29) MENANGA	N	N	18.9
(30) SIBETAN	N	9.8	11.7
WHOLE	N	12.8	7.9

Note : "N" means a negative FIRR.

Table 7.4.4 CASH FLOW STATEMENT

Unit: US\$ 1,000

Year	Capital Cost			Loan Payment		OM Cost	Total Cost	Construction Fund	Revenue	Total Revenue	Surplus or Accumulation
	F.C.	L.C.	Total	Interest	Capital						
1991		3,370	(1998)	3,267	(1999)	608.32391			2188.467		0
1993	393	2,271	2,664	0	0	0	2,664	2,664	0	2,664	0
1994	3,799	8,845	12,645	80	0	0	12,725	12,645	0	12,645	(80)
1995	842	4,012	4,854	459	0	0	5,313	4,854	0	4,854	(539)
1996	0	0	0	505	0	444	1,049	0	733	733	(855)
1997	0	0	0	505	0	465	1,070	0	774	774	(295)
1998	391	3,319	3,710	605	0	487	4,801	3,710	819	4,529	(273)
1999	391	3,319	3,710	716	0	701	5,128	3,710	2,122	5,832	704
2000	0	0	0	827	0	920	1,747	0	3,557	3,557	1,809
2001	0	0	0	827	0	963	1,790	0	3,705	3,705	1,914
2002	0	0	0	827	0	1,008	1,836	0	3,860	3,860	2,024
2003	0	0	0	827	1,379	1,056	3,262	0	3,910	3,910	647
2004	0	0	0	786	1,379	1,105	3,270	0	3,976	3,976	706
2005	0	0	0	745	1,379	1,157	3,281	0	4,163	4,163	882
2006	0	0	0	703	1,379	1,212	3,294	0	4,359	4,359	1,064
2007	0	0	0	662	1,379	1,268	3,310	0	4,563	4,563	1,254
2008	0	0	0	621	1,379	1,328	3,328	0	4,778	4,778	1,450
2009	0	0	0	579	1,379	1,391	3,349	0	5,002	5,002	1,654
2010	0	0	0	538	1,379	1,456	3,373	0	5,238	5,238	1,865
2011	0	0	0	496	1,379	1,524	3,400	0	5,484	5,484	2,084
2012	0	0	0	455	1,379	1,596	3,430	0	5,741	5,741	2,311
2013	0	0	0	414	1,379	1,671	3,464	0	6,011	6,011	2,547
2014	0	0	0	372	1,379	1,749	3,501	0	6,294	6,294	2,793
2015	0	0	0	331	1,379	1,832	3,542	0	6,590	6,590	3,048
2016	0	0	0	290	1,379	1,918	3,587	0	6,899	6,899	3,313
2017	0	0	0	248	1,379	2,008	3,635	0	7,224	7,224	3,588
2018	0	0	0	207	1,379	2,102	3,688	0	7,563	7,563	3,875
2019	0	0	0	165	1,379	2,201	3,746	0	7,919	7,919	4,173
2020	0	0	0	124	1,379	2,305	3,808	0	8,291	8,291	4,483
2021	0	0	0	83	1,379	2,413	3,875	0	8,680	8,680	4,806
2022	0	0	0	41	1,379	2,526	3,947	0	9,088	9,088	5,142
2023	0	0	0	0	0	2,645	2,645	0	9,516	9,516	6,871
2024	0	0	0	0	0	2,769	2,769	0	9,963	9,963	7,193
2025	0	0	0	0	0	2,899	2,899	0	10,431	10,431	7,532
Total	5,817	21,766	27,583	14,241	27,583	47,119	116,526	27,583	167,251	194,834	78,308

Table 7.4.5 (1/2) ECONOMIC CONSTRUCTION COST

Unit: Million Rps.

IKK	Construction Cost														
	1993			1994			1995			1996			1997		
	F.C.	L.C.	Total	F.C.	L.C.	Total	F.C.	L.C.	Total	F.C.	L.C.	Total	F.C.	L.C.	Total
1. BURALKAMBA	49	226	275	297	783	1,080	25	233	258	0	0	0	0	0	0
2. JERUKLEGI	41	176	217	244	409	653	93	416	509	0	0	0	0	0	0
3. KEMIRI	35	147	182	209	341	550	80	345	426	0	0	0	0	0	0
4. MADUKARA	42	182	224	365	615	980	32	182	214	0	0	0	0	0	0
5. PUNGGELAN	23	95	118	224	317	541	20	93	113	0	0	0	0	0	0
6. KARANGGAYAM	19	71	90	159	161	320	64	160	224	0	0	0	0	0	0
7. PETANAHAN	18	77	95	113	177	290	43	179	222	0	0	0	0	0	0
8. SUKOREJO	50	241	291	216	848	1,064	16	254	270	0	0	0	0	0	0
9. JEPON	16	164	180	302	782	1,084	57	566	623	0	0	0	0	0	0
10. BATANGAN	15	156	171	260	745	1,005	51	540	591	0	0	0	0	0	0
11. GONDANG	12	112	124	303	531	834	47	385	432	0	0	0	0	0	0
12. JENAR	6	50	56	267	238	505	31	172	203	0	0	0	0	0	0
13. GIRIWOYO	15	59	74	133	132	265	54	130	184	0	0	0	0	0	0
14. BAWEN	63	281	344	471	963	1,434	41	285	326	0	0	0	0	0	0
15. BALEN	41	188	229	265	664	929	22	194	216	0	0	0	0	0	0
16. BAURENO	32	134	166	277	463	740	25	134	159	0	0	0	0	0	0
17. JERU	25	105	130	236	360	596	21	104	125	0	0	0	0	0	0
18. JYHAN	34	143	177	295	496	791	26	144	170	0	0	0	0	0	0
19. KEMBANGGAHU	17	66	83	185	223	408	17	63	80	0	0	0	0	0	0
20. DIHEK	31	139	170	212	489	701	18	143	161	0	0	0	0	0	0
21. KUTOREJO	32	138	170	267	481	748	23	140	163	0	0	0	0	0	0
22. TEMPEH	8	86	94	126	394	520	138	128	266	0	0	0	0	0	0
23. KUNIR	12	146	158	149	672	821	159	215	374	0	0	0	0	0	0
24. TEMPURSARI	8	90	98	133	413	546	145	133	278	0	0	0	0	0	0
25. BANYUANYAR	9	94	103	125	434	559	137	141	278	0	0	0	0	0	0
26. SUMBERASIH	7	81	88	107	373	480	117	120	237	0	0	0	0	0	0
27. TAMPAKSIRING	20	124	144	144	281	425	12	93	105	0	0	0	0	0	0
28. KETEHEL	28	177	205	228	400	628	20	131	151	0	0	0	0	0	0
29. MENANGA	35	147	182	619	304	923	58	94	152	0	0	0	0	0	0
30. SIBETAN	31	185	216	273	415	688	24	136	160	0	0	0	0	0	0
TOTAL	774	4,081	4,855	7,204	13,906	21,110	1,616	6,055	7,671	0	0	0	0	0	0

Table 7.4.5 (2/2) ECONOMIC CONSTRUCTION COST

Unit: Million Rps.

IKK	1998						1999						Total	
	F.C.		L.C.		Total	F.C.		L.C.		Total	F.C.	L.C.		Total
	F.C.	L.C.	F.C.	L.C.	Total	F.C.	L.C.	F.C.	L.C.	Total	F.C.	L.C.		Total
1. BURALKAMBA	32	236	268	32	236	268	435	1,714	2,149					
2. JERUKLEGI	26	195	221	26	195	221	430	1,391	1,821					
3. KEMIRI	29	187	216	29	187	216	382	1,208	1,590					
4. MADUKARA	18	77	95	18	77	95	475	1,134	1,609					
5. PUNGGELAN	16	65	81	16	65	81	299	634	933					
6. KARANGGAYAM	11	54	65	11	54	65	264	501	765					
7. PETANAHAN	16	99	115	16	99	115	206	629	835					
8. SUKOREJO	12	152	164	12	152	164	306	1,648	1,954					
9. JEPOH	29	223	252	29	223	252	433	1,957	2,390					
10. BATANGAN	22	126	148	22	126	148	370	1,692	2,062					
11. GONDANG	26	228	254	26	228	254	414	1,483	1,897					
12. JENAR	19	96	115	19	96	115	342	652	994					
13. GIRIMOYO	12	74	86	12	74	86	226	469	695					
14. BAWEN	15	197	212	15	197	212	605	1,923	2,528					
15. BALEN	28	190	218	28	190	218	384	1,427	1,811					
16. BAURENO	25	171	196	25	171	196	384	1,073	1,457					
17. JENU	22	124	146	22	124	146	326	817	1,143					
18. JIWAN	29	243	272	29	243	272	413	1,269	1,682					
19. KEMBANGBAHU	20	102	122	20	102	122	259	557	816					
20. DIWEK	24	190	214	24	190	214	309	1,152	1,461					
21. KUTOREJO	22	178	200	22	178	200	366	1,114	1,480					
22. TEMPEH	20	161	181	20	161	181	312	930	1,242					
23. KUNIR	24	211	235	24	211	235	368	1,455	1,823					
24. TEMPURSARI	18	145	163	18	145	163	322	927	1,249					
25. BANYUANYAR	37	234	271	37	234	271	345	1,137	1,482					
26. SUMBERASIH	20	125	145	20	125	145	271	824	1,095					
27. TAMPAKSIRING	15	110	126	16	110	126	208	719	927					
28. KETEWEL	20	129	149	20	129	149	316	967	1,283					
29. MENANGA	16	111	127	16	111	127	744	768	1,512					
30. SIBETAN	35	144	179	35	144	179	398	1,023	1,421					
TOTAL	659	4,576	5,235	659	4,576	5,235	10,912	33,193	44,105					

Table 7.4.6 ESTIMATES OF ECONOMIC BENEFIT

NO.	IKK	Household Served (after 2000)			Saving Time (hr/hh/day) (after 2000)			Annual Benefit (Mil. Rps.)							
		H.C.	P.H.	Total	H.C.	P.H.	Total	P.H.							
								1996	1997	1998	1999	2000	1999	2000	
1	Bulakamba	3,553	888	1,777	0	1,777	0	0	0	0	0	0	0	57	115
2	Jeruklegi	2,990	1,282	2,093	256	2,350	52	53	54	35	102	152	152	102	152
3	Kemiri	2,765	691	1,935	138	2,073	42	43	43	26	88	134	134	88	134
4	Madukora	1,192	511	3,694	1,328	5,022	275	278	281	185	303	326	326	303	326
5	Punggelan	1,050	450	3,150	1,125	4,275	230	233	237	156	257	277	277	257	277
6	Karanggayam	801	343	721	137	858	28	29	29	19	42	56	56	42	56
7	Petabuhan	1,371	587	822	59	881	13	13	13	8	35	57	57	35	57
8	Sukorejo	2,443	1,047	2,932	733	3,665	154	155	156	102	197	238	238	197	238
9	Jepon	2,726	681	2,180	204	2,385	62	63	64	39	109	155	155	109	155
10	Batangan	1,879	470	3,382	611	3,993	191	193	194	118	226	259	259	226	259
11	Gondang	3,310	1,418	2,317	284	2,600	59	60	60	39	114	169	169	114	169
12	Jenar	1,286	551	2,315	717	3,031	149	150	152	100	174	197	197	174	197
13	Giriwoyo	1,126	281	2,026	366	2,392	117	118	118	71	136	155	155	136	155
14	Bawen	3,327	832	4,324	655	4,990	204	207	210	128	266	324	324	266	324
15	Balen	2,426	1,040	2,183	416	2,599	86	87	88	58	128	168	168	128	168
16	Baureno	2,309	577	5,079	981	6,061	306	309	312	189	352	393	393	352	393
17	Jenu	1,748	749	1,049	75	1,124	15	16	16	10	44	73	73	44	73
18	Kembangbahu	1,045	448	2,613	896	3,509	187	189	190	125	209	227	227	209	227
19	Diewk	2,670	667	1,335	0	1,335	0	0	0	0	43	87	87	43	87
20	Jiwan	3,548	887	1,774	0	1,774	0	0	0	0	57	115	115	57	115
21	Kutorejo	2,629	1,127	1,577	113	1,690	23	23	24	16	66	110	110	66	110
22	Tempoh	2,303	987	1,612	197	1,810	42	42	42	28	80	117	117	80	117
23	Kunir	3,129	1,341	1,564	0	1,564	0	0	0	0	50	101	101	50	101
24	Tempursari	2,136	534	1,495	107	1,602	34	34	34	21	69	104	104	69	104
25	Baryuanyar	3,038	760	3,038	380	3,418	118	119	120	73	170	222	222	170	222
26	Sumberasih	1,834	459	1,468	138	1,605	43	43	44	26	73	104	104	73	104
27	Tampak Siring	1,421	609	2,132	609	2,741	127	128	129	85	153	178	178	153	178
28	Ketewel	1,721	430	2,065	301	2,366	94	95	96	58	124	153	153	124	153
29	Menanga	1,072	268	5,144	1,152	6,296	360	364	367	222	387	408	408	387	408
30	Sibetan	1,807	452	3,071	542	3,613	170	171	173	104	203	234	234	203	234
	Total	64,653	21,368	70,870	12,529	83,399	3,181	3,213	3,245	2,041	4,316	5,407	5,407	4,316	5,407

Table 7.4.7 FLOW OF ECONOMIC COST AND BENEFIT

Unit: Million Rps.

Year	Economic Cost			Economic Benefit	
	Const.	OM	Total		
1	1993	4,854	0	4,854	0
2	1994	21,108	0	21,108	0
3	1995	7,670	0	7,670	0
4	1996	0	627	627	3,181
5	1997	0	627	627	3,215
6	1998	5,236	627	5,863	3,246
7	1999	5,236	861	6,097	4,314
8	2000	0	1,079	1,079	5,408
9	2001	0	1,079	1,079	5,408
10	2002	0	1,079	1,079	5,408
11	2003	0	1,079	1,079	5,408
12	2004	0	1,079	1,079	5,408
13	2005	0	1,079	1,079	5,408
14	2006	0	1,079	1,079	5,408
15	2007	0	1,079	1,079	5,408
16	2008	0	1,079	1,079	5,408
17	2009	0	1,079	1,079	5,408
18	2010	0	1,079	1,079	5,408
19	2011	0	1,079	1,079	5,408
20	2012	0	1,079	1,079	5,408
21	2013	0	1,079	1,079	5,408
22	2014	0	1,079	1,079	5,408
23	2015	0	1,079	1,079	5,408
24	2016	0	1,079	1,079	5,408
25	2017	0	1,079	1,079	5,408
26	2018	0	1,079	1,079	5,408
27	2019	0	1,079	1,079	5,408
28	2020	0	1,079	1,079	5,408
29	2021	0	1,079	1,079	5,408
30	2022	0	1,079	1,079	5,408
31	2023	0	1,079	1,079	5,408
32	2024	0	1,079	1,079	5,408
33	2025	0	1,079	1,079	5,408
Total		44,104	30,796	74,900	154,564

7.5 Recommendations

Same as 6.4 in this Main Report. As for financial and economic evaluation, refer to 7.4 in this report.

