## (5) Breakdown of Construction Cost (Cikunir Area)

## (5-1) Aggregate plant

	Item	Unit	Quantity	Unit Price (Rp)	Amount (Rpx10 <sup>6</sup> )		Local (Rpx106)
1.	Civil Work					To the second	
	(1) Main Work					aran ing salah	
	1-02	<sub>m</sub> 3	2,992	3,296	9.9	5.7	9.9
	4-02	. m <sup>3</sup> ,	1,669	153,581	256.3	4.9	201.2
	(2) Material				<u>.</u> 10		
	Metal	(t)	90	5,620,000	505.8	45.0	244
	(3) Placing	(t)	134	1,264,500	169.4	·	169.4
	Total				941.4	49.9	380.5

#### (5-2) Plant Operation Cost

1st stage

Item	Unit	Quantity	Unit Price (Rp)	Amount (Rpx10 <sup>6</sup> )	Foreign (Wx10 <sup>5</sup> )	Local (Rpx106)
Plant operation co	st m	0	224	0	0	0
Total				0	0	0

## (5-3) Excavation (2)

1st stage

<u> </u>	Item	Unit	Quantity	Unit Price (Rp)	Amount (Rpx10 <sup>6</sup> )	Foreign (Wx106)	Local (Rpx10 <sup>6</sup> )
1.	Civil Work						
	(1) Main Work						
	1-01	<sub>m</sub> 3	0	1,875	0	0	0
	5-04	<sub>m</sub> 3	0 .	1,284	0	0	0
	Total				0	0	0

# (5-4) Plant Operation Cost

2nd stage  Item Unit	Quantity	Unit Price (Rp)	Amount (Rpx10 <sup>6</sup> )	Foreign (%x10 <sup>6</sup> )	Local (Rpx10 <sup>6</sup> )
Plant operation cost m3	630,000	224	141.1		141.1
Total			141.1		141.1
(5-5) Excavation (2)		: ::			
Item Unit	Quantity	Unit Price (Rp)	Amount (Rpx10 <sup>6</sup> )	Foreign (¥x10 <sup>6</sup> )	Local (Rpx10 <sup>6</sup> )
1. Civil Work					11.4
(1) Main Work 1-01 m <sup>3</sup> 5-04 m <sup>3</sup>	630,000 630,000	1,875 1,284	1,181.2 808.9	61.7 35.3	490.1 414.5
Total			1,990.1	97.0	904.6

# (6) Breakdown of Construction Cost (Cikunir Area)

## (6-1) Excavation (1)

Unit	Quantity	Unit Price (Rp)	Amount (Rpx10 <sup>6</sup> )	Foreign (Yx100)	Local (Rpx106
	•				
	- * * ·		- 4 	er en	
<sub>m</sub> 3	1,370,000	1,875	2,568.8	133.7	L,065.9
m3	1,370,000	853	1,168.6		
v.			3,737.4		1,663.2
(3)					Prince of
	<sub>m</sub> 3	m <sup>3</sup> 1,370,000 m <sup>3</sup> 1,370,000	m <sup>3</sup> 1,370,000 1,875 m <sup>3</sup> 1,370,000 853	m <sup>3</sup> 1,370,000 1,875 2,568.8 m <sup>3</sup> 1,370,000 853 1,168.6	m <sup>3</sup> 1,370,000 1,875 2,568.8 133.7 3 m <sup>3</sup> 1,370,000 853 1,168.6 50.8

#### (6-2) Excavation (3)

	_
1st	STAGE

	Itøm	Unit	Quantity	Unit Price (Rp)	Amount (Rpx10 <sup>6</sup> )	Foreign (Yx10 <sup>6</sup> )	Local (Rpx10 <sup>6</sup>
_							
1.	Civil Work						
	(1) Main Work						
	1-01	m <sup>3</sup>	2,858,000	1,875	5,358.8	278.9	2,223.5
	5-03	<sub>m</sub> 3	2,858,000	1,052	3,006.6	130.7	1,537.6
,	Total				8,365.4	409.6	3,761.1

#### (6-3) Excavation (3)

2nd stage

	Item	Unit	Quantity	Unit Price (Rp)	Amount (Rpx106)	Foreign (%x10 <sup>6</sup> )	
1.	Civil Work						:
	(1) Main Work 1-01	m <sup>3</sup>	783,000	1,875	1,468.1	76.7	609.2
	5-03	<sub>m</sub> 3	783,000	1,052	823.7	36.0	421.3
	Total				2,291.8	112.7	1,030.5

# (7) Breakdown of Construction Cost (Cikunir Area) Diversion cannel

	Item	Unit	Quantity	Unit Price (Rp)	Amount (Rpx10 <sup>6</sup> )	Foreign (%x10 <sup>6</sup> )	Local (Rpx10 <sup>6</sup> )
1.	Civil Work						
	(1) Excavation						
	1-01	<sub>m</sub> 3	147,705	1,875	276.9	14.5	114.9
	5-01	m <sup>3</sup>	147,705	2,360	348.6	15.1	178.6
•	(2) Embankment						
	2-01	m3	147,705	2,562	378.4	19.1	163.8
	4-01	m3 ·	19,125	49,712	950.7	25.1	669.1
	Total				1,954.6	73.8	1,126.4

## (8) Breakdown of Construction Cost (Cikunir Area)

## (8-1) Consolidation dams

Item	Unit	Quantity	Unit Price (Rp)	Amount (Rpx10 <sup>6</sup> )	Foreign (¥x10 <sup>5</sup> )	Local (Rpx10 <sup>6</sup> )
1. Civil Worl	•				:	
(1) Dike		-			:	
1-01	<sub>m</sub> 3	34,320	1,875	64.4	3.4	26.7
2-01	<sub>m</sub> 3	34,320	2,562	88.0	4.4	38.1
4-01	m <sup>3</sup>	6,990	49,712	347.5	9.2	244.6
5-02	<sub>m</sub> 3	34,320	853	29.3	1.3	15.0
(2) Conso	lidation dams					
1-02	<sub>m</sub> 3	1,560	3,296	5.1	0	5.1
4-01	<sub>m</sub> 3	5,200	49,712	258.5	6.8	181.9
Total				792.8	25.1	511.4

# (8-2) Revetment works

	Item	Unit	Quantity	Unit Price (Rp)	Amount (Rpx10 <sup>6</sup> )	Foreign (¥x10 <sup>6</sup> )	Local (Rpx10 <sup>6</sup> )
1.	Civil Work		- <del></del>				
	(1) Main Work			- 1			
	1-01	<sub>m</sub> 3	10,817	1,875	20.3	1.1	8.4
	2-01	<sub>m</sub> 3	6,490	2,562	16.6	0.8	7.2
	4-01	m <sup>3</sup>	9,615	49,712	478.0	12.6	336.4
	4-02	<sub>m</sub> 3	2,975	153,581	456.9	8.7	358.6
	5-02	<sub>m</sub> 3	10,817	853	9.2	0.4	4.7
	Total		•		981.0	23.6	715.3

# (9) Breakdown of Construction Cost (Cikunir Area) Check dam

	Item	Unit	Quantity	Unit Price (Rp)	Amount (Rpx10 <sup>6</sup> )	Foreign (%x10 <sup>6</sup> )	Local (Rpx106)
1.	Civil Work						
	(1) Main Work 1-02 4-01	8 <sub>m</sub>	8,430 28,100	3,296 49,712		36.8	27.8 983.1
	Total			· .	1,424.7	36.8	1,010.9

## (10) Breakdown of Construction Cost (Cisaruni Area)

#### (10-1) Check dams 1st stage

	Item	Unit	Quantity	Unit Price (Rp)	Amount (Rpx10 <sup>5</sup> )	Foreign (¥x10 <sup>6</sup> )	Local (Rpx10 <sup>6</sup> )
1.	Civil Work						
	(1) Main Work	٠		21.19			
	1-02	<sub>m</sub> 3	1,380	3,296	4.5	· · · · · <u></u> ·	4.5
	4-01	· m3	4,600	49,712	228.7	6.0	160.9
	Total				233.2	6.0	165.4

#### (10-2) Check dams 2nd stage

	Item	Unit	Quantity	Unit Price (Rp)		Foreign (Wx10 <sup>6</sup> )	Local (Rpx10 <sup>6</sup> )
1.	Civil Work						
	(1) Main Work 1-02 5-02	<sub>m</sub> 3 <sub>m</sub> 3	12,630 42,100	3,296 49,712	41.6 2,092.9	- 55.2	41.6 1,473.0
	Total	***	12,100	43,114	2,134.5		1,514.6

# (11) Breakdown of Construction Cost (Cikupang Area)

# (11-1) Check dams 1st stage

	Item	Unit	Quantity	Unit Price (Rp)	Amount (Rpx10 <sup>6</sup> )	Foreign (¥x10 <sup>6</sup> )	Local (Rpx10 <sup>6</sup> )
1.	Civil Work			•		•	
	(1) Main Work 1-02	<sub>m</sub> 3	1,440	3,296	4.7		4.7
	4-01	<sub>m</sub> 3	4,800	49,712	238.6	5.1	167.9
<u></u>	Total	·			243.3	6.1	172.6

# (11-2) Check dams 2nd stage

	Item	Unit	Quantity	Unit Price (Rp)	Amount (Rpx10 <sup>6</sup> )	Foreign (¥x10 <sup>6</sup> )	Local (Rpx10 <sup>6</sup> )
1.	Civil Work						
	(1) Main Work 1-02	<sub>m</sub> 3	2,130	3,296	7.0	***	7.0
	4-01	<sub>m</sub> 3	7,100	49,712	353.0	9.3	248.4
	Total				360.0	9.3	255.4

## (12) Breakdown of Construction Cost (Cimerah Area)

#### (12-1) Check dams 1st stage

	Item	Unit	Quantity	Unit Price (Rp)	Amount (Rpx10 <sup>6</sup> )	Foreign (¥x10 <sup>6</sup> )	Local (Rpx10 <sup>6</sup> )
1.	Civil Work						
	(1) Main Work 1-02	m <sup>3</sup>	2,910	3,296	10.0	0	10.2
	4-01	. m <sup>3</sup>	9,700	49,712	482.2	12.7	339.4
	Total				492.2	12.7	349.4

## (12-2) Check dams 2nd stage

	Item	Unit	Quantity	Unit Price (Rp)	Amount (Rpx10 <sup>6</sup> )	Foreign (¥x10 <sup>6</sup> )	Local (Rpx10 <sup>6</sup> )
1.	Civil Work						
	(1) Main Work 1-02	<sub>m</sub> 3	23,040	3,296	75.9	0	75.9
	5-02	<sub>m</sub> 3	76,800	49,712	3,817.9	100.6	2,687.0
	Total				3,893.8	100.6	2,762.9

## 5. Breakdown of Construction Cost for Alternative-E

## (1) Breakdown of Construction Cost (Crater Lake Tunnel)

Item	Unit	Quantity	Unit Price (Rp)	Amount (Rpx10 <sup>6</sup> )	Foreign (¥x10 <sup>6</sup> )	Local (Rpx106
1. Civil Work	•				1.11444.4	
(1) Main Work					ana an ista.	
1-03	m <sup>3</sup>	1,069	36,637	39.2	1.9	17.8
1-04	<sub>m</sub> 3	3,672	38,304	140.7	6.9	63.1
1-05	<sub>m</sub> 3	228	53,419	12.2	0.4	7.7
1-06	m <sup>3</sup>	1,141	80,883	92.3	4.1	46.2
4-02	m <sup>3</sup>	1,260	153,581	193.5	3.7	151.9
7-01	m	665	2,217,039	1,474.3	129.6	17.6
7-02	m	665	575,789	382.9	25.9	91.8
8-01	'n	90	4,366,780	393.0	35.0	0
8-02	m	90	890,379	80.1	7.1	0
15-01	hour	6,600	5,800	38.3	- <b>1.</b> 2 ±	38.3
16-01	m	3,120	110,000	343.2	_	343.2
Cooling pl	ant	· · · · · · · · · · · · · · · · · · ·		601.3	53.5	0
Total				3,791.0	268.1	777.6
				<del></del>		<del></del>

# (2) Breakdown of Construction Cost (Ciloseh Area)

# (2-1) Dike Improvement

	Item	Unit	Quantity	Unit Price (Rp)	Amount (Rpx10 <sup>6</sup> )	Foreign (%x10 <sup>6</sup> )	Local (Rpx10 <sup>6</sup> )
1. Cis	/il Work						
(1)	Excavatio		•				
	1-01	<sub>m</sub> 3	19,956	1,875	37.4	2.0	15.5
	5-01	m <sup>3</sup>	19,956	2,360	47.1	2.0	24.1
(2)	Embankmen	it.					
•	2-01	<sub>m</sub> 3	19,956	2,562	51.1	2.6	22.1
	3-01	m <sup>3</sup>	2,646	27,974	74.0	2.7	43.5
	Total				209.6	9.3	105.2

## (2-2) Check Dams of Cimampang Area

	Item	Unit	Quantity	Unit Price (Rp)	Amount (Rpx10 <sup>6</sup> )	Foreign (¥x10 <sup>6</sup> )	Local (Rpx10 <sup>6</sup> )
1.	Civil Work						
	(1) Main Work						
	1-02	m <sup>3</sup>	2,640	3,296	8.7		8.7
	4-01	$\epsilon_m$	8,800	49,712	437.5	11.5	308.2
	Total				446.2	11.5	316.9
<del></del>							

# (2-3) Plant operation

Item	Unit	Quantity	Unit Price (Rp)	Amount (Rpx10 <sup>6</sup> )	Foreign (¥x10 <sup>6</sup> )	Local (Rpx10 <sup>6</sup> )
Plant operation	cost m3	394,000	224	88.3	0 .	88.3
Total				88.3	0	88.3

#### (2-4) Excavation (2)

(1st stage)

	Item	Unit	Quantity	Unit Price (Rp)	(Rpx10 <sup>6</sup> )	(Yx106)	(Rpx106)
1.	Civil Work						
	(1) Main Work 1-01	<sub>m</sub> 3	394,000	1,875	738.8	38.6	306.5
	5-01	<sub>m</sub> 3	394,000	2,360	929.8	40.2	476.3
	Total	····			1,668.6	78.8	782.8

Note: Excavation 2;

(3) Breakdown of Construction Cost (Cikunir Area)
Dike Improvement (without Ciponyo I Dalam)

	Item	Unit	Quantity	Unit Price (Rp)	Amount (Rpx10 <sup>6</sup> )	Foreign (¥x10 <sup>6</sup> )	Local (Rpx106
1.	Civil Work			•			
	(1) Excavation				en e	u vijet v	
	1-01	<sub>m</sub> 3	345,392	1,875	234.8	12.3	97.4
	5-01	, m3	345,392	2,360	295.6	12.8	151.4
	(2) Embankment						
	2-02	. m3	345,392	3,424	1,182.6	59.7	511.9
	4-01	<sub>m</sub> 3	41,263	49,712	2,051.3	54.1	1,443.7
	3-01	<sub>. m</sub> 3	16,139	27,974	451.5	16.6	265.3
	Total				5,148.1	199.6	2,907.2

# (4) Breakdown of Construction Cost (Cikunir Area) Rising Dike (Ciponyo I Dalam)

	Item	Unit	Quantity	Unit Price (Rp)	Amount (Rpx10 <sup>6</sup> )	Foreign (¥x10 <sup>6</sup> )	
1.	Civil Work		ė.		1.7		
	. :	÷					
	(1) Excavation						. •
	1-01	$m^3$	345,392	1,875	647.6	33.8	268.7
	5-01	<sub>m</sub> 3	345,392	2,360	85.1	35.4	417.6
	(2) Embankment				4.4	. Briston e dituta.	
	2-02	m3	345,392	3,424	1,182.6	59.7	511.9
	4-01	m3	41,263	49,712	2,051.3	54.1	1,443.7
	3-01	m3	16,139	27,974	451.5	16.6	265.3
	Total				5,148.1	199.6	2,907.2

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# (5) Breakdown of Construction Cost (Cikunir Area)

# (5-1) Aggregate plant

	Item	Unit	Quantity	Unit Price (Rp)	Amount (Rpx10 <sup>6</sup> )	Foreign (Yx10 <sup>6</sup> )	Local (Rpx106)
1.	Civil Work		· ·				
	(1) Main Work						
	1-02	<sub>m</sub> 3	0	3,296	0	0	0
	4-02	<sub>m</sub> 3	0	153,581	0	0	0
	(2) Material						
	Metal	∵(t)	E	5,620,000	0	0	0
	(3) Placing	(t)	0	1,264,500	0	0	0
	Total				0	0	0

# (5-2) Plant Operation Cost 1st stage

Item		Unit	Quantity	Unit Price (Rp)	Amount (Rpx10 <sup>6</sup> )	Foreign (¥x10 <sup>6</sup> )	Local (Rpx10 <sup>6</sup> )
Plant operation o	cost	m <sup>3</sup>	0	224	0	0	0
Total			<del></del>		0	0	0

#### (5-3) Excavation (2)

1st stage

Item	Unit	Quantity	(Rp)	(Rpx10 <sup>6</sup> )	(¥x10 <sup>6</sup> )	(Rpx10 <sup>6</sup> )
1. Civil Work						
(1) Main Work 1-01	<sub>m</sub> 3	0	1,875	0	0	0
5-04	m3	0	1,284	0	0	0
Total			·	0	0	0
		<i>:</i> .				

(5-4) Plant Operation Cost

2nd stage

	Item	Unit	Quantity	Unit Price (Rp)	Amount (Rpx10 <sup>6</sup> )	Foreign (Wx10 <sup>6</sup> )	Local (Rpx106)
Plant	operation cost	<sub>m</sub> 3	0	224	0	0	0
	Total				. 0	0	0

## (5-5) Excavation (2)

2nd stage

Item	Unit	Quantity	Unit Price (Rp)	Amount (Rpx106)		Local (Rpx10 <sup>6</sup> )
1. Civil Work	·		200 200 200			
(1) Main Work		•			the things	
1-01	<sub>m</sub> 3	0	1,875	0	0	0
5-04	m3	Ó	1,284	0	0	0
Total				0	0	0

# (6) Breakdown of Construction Cost (Cikunir Area)

# (6-1) Excavation (1)

Total

Item	Unit	Quantity	Unit Price (Rp)	Amount (Rpx10 <sup>6</sup> )	Foreign (¥x10 <sup>6</sup> )	Local (Rpx10 <sup>6</sup> )
1. Civil Work		:				1 +
(1) Main Work 1-01 5-02	8 m <sup>3</sup>	1,370,000 1,370,000		2,568.8 1,168.6	133.7 1 50.8	,065.9 597.3
Total	sant j	e de la companya de l	1. 1. 1. 1. 1. 1. 1. 1. 1. 1. 1. 1. 1. 1	3,737.4	184.5 1	,663.2
(6-2) Excavation ( 1st stage	3)	:				
Item	Unit	Quantity	Unit Price (Rp)	Amount (Rpx10 <sup>6</sup> )	Foreign (¥x10 <sup>6</sup> )	Local (Rpx10 <sup>6</sup> )
1. Civil Work (1) Main Work				a Sec		
1-01	m <sup>3</sup> m <sup>3</sup>	2,890,000	1,875	5,418.8 3,040.3	282.1 132.2	2,248.4
5-03 Total	m <sup>o</sup>	2,890,000	1,052	8,459.1	414.3	· · · · · · · · · · · · · · · · · · ·
(6-3) Excavation (	(3)		. :			wasta, gar- von Yek-tonasi di eks
2nd stage	Unit	Quantity	Unit Price (Rp)	Amount (Rpx10 <sup>6</sup> )	Foreign (¥x10 <sup>5</sup> )	Local (Rpx106
1. Civil Work						
(1) Main Work 1-01	m <sup>3</sup>	1,413,000	1,875	2,649.4	137.9	1,099.3

202.5 1,859.5

4,135.9

# (7) Breakdown of Construction Cost (Cikunir Area) Diversion cannel

	Item	Unit	Quantity	Unit Price (Rp)	Amount (Rpx10 <sup>6</sup> )	Foreign (¥x10 <sup>6</sup> )	Local (Rpx106
1.	Civil Work					1	
	(1) Excavation					1	
	1-01	m <sup>3</sup>	288,720	1,875	541.4	28.2	224.6
	5-01	<sub>m</sub> 3	288,720	2,360	681.4	29.6	349.1
	(2) Embankment						
	2-01	m <sup>3</sup>	288,720	2,562	739.7	37.3	320.2
	4-01	m3	25,947	49,712	1,288.0	33.8	907.8
	Total				3,250.5	128.9	1,801.7

## (8) Breakdown of Construction Cost (Cikunir Area)

# (8-1) Consolidation dams

Item	Unit	Quantity	Unit Price (Rp)	Amount (Rpx10 <sup>6</sup> )	Foreign (¥x10 <sup>6</sup> )	Local (Rpx10 <sup>6</sup> )
1. Civil Work						
(1) Dike					A Company	
1-01	<sub>m</sub> 3	34,320	1,875	64.4	3.4	26.7
2-01	E <sub>m</sub> 3	34,320	2,562	88.0	4.4	38.1
4-01	<sub>m</sub> 3	6,990	49,712	347.5	9.2	244.6
5-02	m3	34,320	853	29.3	1.3	15.0
(2) Consolidat:	ion dams					
1-02	m3	1,560	3,296	5.1	0	5.1
4-01	<sub>m</sub> 3	5,200	49,712	258.5	6.8	181.9
Total				792.8	25.1	511.4

## (8-2) Revetment works

				;		
Item	Unit	Quantity	Unit Price (Rp)	Amount (Rpx10 <sup>6</sup> )	Foreign (¥x10 <sup>6</sup> )	Local (Rpx10 <sup>6</sup> )
Civil Work						
(1) Main Work					en de la companya de La companya de la co	
1-01	<sub>m</sub> 3	10,817	1,875	20.3	1.1	8.4
2-01	<sub>m</sub> 3	6,490	2,562	16.6	0.8	7.2
4-01	m <sup>3</sup>	9,615	49,712	478.0	12.6	336.4
4-02	$\mathbf{\epsilon}_{m}$	2,975	153,581	456.9	8.7	358.6
5-02	<sub>m</sub> 3	10,817	853	9.2	0.4	4.7
Total				981.0	23.6	715.3
	Civil Work  (1) Main Work  1-01  2-01  4-01  4-02  5-02	Civil Work  (1) Main Work  1-01	Civil Work  (1) Main Work  1-01 m <sup>3</sup> 10,817  2-01 m <sup>3</sup> 6,490  4-01 m <sup>3</sup> 9,615  4-02 m <sup>3</sup> 2,975  5-02 m <sup>3</sup> 10,817	Civil Work  (1) Main Work  1-01	Teem Unit Quantity (Rp) (Rpx10 <sup>6</sup> )  Civil Work  (1) Main Work  1-01	Teem Unit Quantity (Rp) (Rpx10 <sup>6</sup> ) (¥x10 <sup>6</sup> )  Civil Work  (1) Main Work  1-01

# (9) Breakdown of Construction Cost (Cikunir Area) Check dam

	Item	Unit	Quantity	Unit Price (Rp)	Amount (Rpx10 <sup>6</sup> )	Foreign (¥x10 <sup>6</sup> )	Local (Rpx10 <sup>6</sup> )
1.	Civil Work						
	(1) Main Work 1-02	$\epsilon_m$	8,430	3,296	27.8	<b></b>	27.8
	4-01	<sub>m</sub> 3	28,100	49,712	1,396.9	36.8	983.1
	Total				1,424.7	36.8	1,010.9

# (10) Breakdown of Construction Cost (Cisaruni Area)

# (10-1) Check dams 1st stage

(10-		t stage					
	Item	Unit	Quantity	Unit Price (Rp)	Amount (Rpx10 <sup>6</sup> )	Foreign (¥x10 <sup>6</sup> )	Local (Rpx10 <sup>6</sup> )
1.	Civil Work					e e e e e e e e e e e e e e e e e e e	
	(1) Main Work 1-02	<sub>m</sub> 3	1,380	3,296	4.5	<del>-</del>	4.5
	4-01	 8 <sub>m</sub> 3		49,712	228.7	6.0	160.9
	Total				233.2	6.0	165.4

#### (10-2) Check dams 2nd stage

		Item	Unit	Quantity	Unit Price (Rp)	Amount (Rpx10 <sup>6</sup> )	Foreign (Wx10 <sup>6</sup> )	Local (Rpx10 <sup>6</sup> )
1.	Civ	il Work						
	(1)	Main Work	: <sub>m</sub> 3	12,630	3,296	41.6	_	41.6
٠.		5-02	m <sup>3</sup>	42,100	49,712	2,092.9	55.2	1,473.0
		Total				2,134.5	55.2	1,514.6

# (11) Breakdown of Construction Cost (Cikupang Area)

## (11-1) Check dams 1st stage

	Item	Unit	Quantity	Unit Price (Rp)	Amount (Rpx10 <sup>6</sup> )	Foreign (¥x10 <sup>6</sup> )	Local (Rpx10 <sup>6</sup> )
1.	Civil Work						
W	(1) Main Work 1-02	m <sup>3</sup>	1,440	3,296	4.7	•••	4.7
	4-01	m <sup>3</sup>	4,800	49,712	238.6	6.1	167.9
	Total				243.3	6.1	172.6

#### (11-2) Check dams 2nd stage

	Item	Unit	Quantity	Unit Price (Rp)	Amount (Rpx10 <sup>6</sup> )	Foreign (Yx106)	Local (Rpx106)
1.	Civil Work		en en Maria Grand de la companya				
	(1) Main Work 1-02 4-01	<sub>m</sub> 3 m3	2,130 7,100	3,296 49,712	7.0 353.0	9,3	7.0 248.4
	Total				360.0	9.3	255.4

## (12) Breakdown of Construction Cost (Cimerah Area)

#### (12-1) Check dams 1st stage

	Item	Unit	Quantity	Unit Price (Rp)			Local (Rpx10 <sup>6</sup> )
1.	Civil Work		A.				
	(1) Main Work						
	1-02	m <sup>3</sup>	2,910	3,296	10.0	10° <b>0</b> 15	10.2
	4-01	<i>m</i> 3	9,700	49,712	482.2	12.7	339.4
	Total				492.2	12.7	349.4

## (12-2) Check dams 2nd stage

	Item	Unit	Quantity	Unit Price (Rp)	Amount (Rpx10 <sup>6</sup> )	Foreign (¥x10 <sup>6</sup> )	Local (Rpx10 <sup>6</sup> )
1.	Civil Work						· · · · · · · · · · · · · · · · · · ·
	(1) Main Work						je 2
	1-02	m <sup>3</sup>	23,040	3,296	75.9	0	75.9
-	5-02	m <sup>3</sup>	76,800	49,712	3,817.9	100.6	2,687.0
	Total				3,893.8	100.6	2,762.9

## Annex-4

Breakdown of Unit Cost (Economic Cost)

Unit Cost of Construction Work (I) (Economic Cost)

Rubiah Evaluation	Local of Foreign (Rp)													
Unit Cost	Total Foreign (Rp)	1,435	1,954	36,370	38,037	53,336	80,645	2,003	2,675	25,386	45,190	138,401	1,726	\$79
		by (m <sup>3</sup> )	(m <sub>3</sub> )		(m <sub>3</sub> )	(m <sub>3</sub> )	(m <sup>3</sup> )	(m <sub>3</sub> )	(m)		(m <sub>3</sub> )	(m <sup>3</sup> )	0 km (m <sup>3</sup> )	ļ
	Work Description	Open-cut excavation of sand with gravel machinery Back-hoe (1.4 m³) including loading	Open-cut excavation by man-power for foundation of dam and other structure	Tunnel excavation of sand with gravel by man-power	Tunnel excavation of rock by man-power	Shaft excavation of sand with gravel by man-power	Shaft excavation of rock by man-power	Embankment, Furnishing, Spreading and Compacting of main board of dike Bulldozer 16 (t)	Height of Dike 25.0	Gabion work, Furnishing and placing wire net mattress and filling boulders in the net mattress	Furnishing and placing wet masonry for dam	Furnishing and placing plain concrete	Transportation of riverbed material from Sand Pocket to aggregate plant L=5.0 km	1

Unit Cost of Construction Work (I) (Economic Cost)

				Unit Cost		Rupish E	Rupiah Evaluation
Item No.	Work Description	·	Total (Rp)	Foreign (¥)	Local (Rp)	of Foreign (Rp)	ign (Rp)
5-03	Transportation of riverbed material from Sand Pocket to aggregate plant L=1.0 km (m)	n <sup>3</sup> )	732				
\$0-S	Transportation of riverbed material from Sand Pocket to addregate plant L=	a <sup>3</sup> )	958				
6-01		(m³)	1,665				
7-01	Corrugated pipe 2,000 mm Furnishing and placing Corrugated pipe		2,216,571				
7-02	Corrugated pipe 4,000 mm Furnishing and placing Corrugated pipe	(m)	4,366,780				
8-01	H-Beem 2,000 mm Furnishing and placing H-Beem	(m)	575,460				
8-02	H-Beem 4,000 mm Furnishing and placing H-Beem	(w)	890,379				
9-01	Transportation of aggregate by train	(m <sup>3</sup> )	5,875				
10-0.	10-01 Loading (unloading)	(m <sup>3</sup> )	1,022				

# Breakdown of Unit Cost

# 1. Excavation by Machine (1-01)

- Sand with gravel, Production: 84 m<sup>3</sup>/hr
- Back hoe 1.4 m
- Allotment: 1/84 = 0.0119

Work Item	Allotment	Unit	Unit Cost (Rp)	Total	Amount Foreign	Local
Depreciation cost	0.0119	hr/m <sup>3</sup>	43,505	518		
Owner ship cost	0.0119		0	0		
Fuel oil cost	0.0119		6,456	77		
Operator & labour	0.0119		1,752	21		
Repair & maintenance	0.0119		43,505	518	• ,	\$
Sub Total (Rp/m <sup>3</sup> )				1,134		
Total (Sub Total x 1.	265)			1,435		

## Breakdown of Equipment Cost

Equ	sipment <u>Back hoe 1.4</u>	3	and the states		in the second
a	Economic life			5	year
b	Operation time per yea	r		2,000	hour/year
C	Basic price			483,392,000	Rp
đ	Tire cost			-	Rp
е	Residual value, 0.1 x	(c-d)		48,339,200	Rp
£	Depreciation cost, c-	<u>d-ө</u> b	<u>.</u>	43,505	Rp
ĝ	Ownership cost, 0.2 x	(a+1) x c 2ab	:	29,004	Rp/hr
h	Operation cost, i+j+k+	1	* 1	7,670	Rp/hr
ì	Fuel 0.129 1/hr	209 ps x 200 Rp/1		5,380	Rp/hr
j	Lubricant, i x 20%			1,076	Rp/hr
k	Tire cost			y late was Santa ana santa	Rp/hr
1	Operator			2,038	Rp/hr
	Operator	$0.143 \times 7,000$			Rp/hr
,	Assistant operator	$0.143 \times 1/2 \times 4,500$			Rp/hr
	Foreman	0.143 x 1/5 x 5,000			Rp/hr
	Common labour	0.143 x 2 x 2,000			Rp/hr
m	Repair and maintenance	cost, (c-d) x n		43,505	Rp/hr
n	Ratio of repair and mai	intenance cost	÷ •	90%	
0	Direct cost, f+g+h+m			123,684	Rp/hr
q P	Indirect cost, 15% of a Equipment cost, 0+p	direct cost		18,553 142,237	

#### Production/hour

$$Q = \frac{3,600 \times q \times E}{cm}$$

$$q = 1.37 \text{ m}^3, E = 0.6, cm = 35 \text{ sec (swing angle = 180°)}$$

$$Q = \frac{3,600 \times 1.37 \times 0.6}{35} = 84 \text{ m}^3/\text{hr}$$

# 2. Excvation by Manpower (1-02)

Excavation depth H  $\leq$  1 m Transportation Distance L  $\leq$  30 m

	Work Item	Allotment	Unit	Unit Cost (Rp)	Total	Amount Foreign	Local (Rp)
	Excavation		19.5				
	Common labour	0.75	man.day	1,000	750		
Common	Foreman	0.025	man.day	5,000	125		
soil	Transportation			1 1		100	
- ,	Common labour	0.33	man.day	1,000	330		
	Foreman	0.01	man.day	5,000	50		
	Total (Rp/m <sup>3</sup> )	ж 1.265			1,255		
	10001		·····	· · · · · · · · · · · · · · · · · · ·	1,588		·
	Excavation						
	Common labour	1	man.day	1,000	1,000		
	Foreman	0.033	man.day	5,000	165		
Hard	Transportation						
soil	Common labour	0.33	man.day	1,000	330		
	Foreman	0.01	man.day	5,000	50		
	3,	- 665			1,545		
	Total (Rp/m')	x 1.265			1,954		

- 3. Excavation of Crater Lake Tunnel (1-03 1-06)
- 3.1 Drainage Tunnel

#### 3.1.1 Condition

- 1) Dimension Diameter: 2.0 m

  Length: 665 m
- 2) Soil condition a: Soil with gravelb: Rock
- 3) Lining
  - Shorting: H-sections will be used and it is erected at intervals of 1.0 m.
  - Lining material:

Prefabricated corrugated steel pipe will be used as it has features of;

- . Light weight
- . Simple execution
- . Easy transportation

Divided units of pipe are assembled to complete tunnel section at the place.

- 4) Tunnel section
  Circular section will be applied.
- 5) Excavation
  - Labour formation

The work will be executed with following formation.

	Labour	Man	Work
Inside	Skilled tunnel labour	2	Excavation
the	Tunnel labour	2	Excavation, Loading, Transport
Tunnel	Tunnel foreman	1	Planning, Safety Control
Outside	Skilled labour	1	Operation of machines
the Tunnel	Common labour	1	Miscellaneous works

#### - Working hour per 1 day

Work	Working hour
Preparation, go in and out of tunnel	30 min
Rest in tunnel	30 min
Excavation and lining	420 min

- Cycle time	(min/l cyc	ele time)
Work	Sand with gravel	Rock
Transportation of excavated soil	t <sub>2</sub> =205	t <sub>2</sub> =228
Placing of rail and ventilation pipe	2 15	<sup>2</sup> 15
Check, survey	3	3
Excavation work	t <sub>3</sub> =196	t <sub>3</sub> =196
Total (min/1 cycle)	T=419	T=442

# - Time for transportation of excavated soil per 1 cycle (t2)

Description	Unit	Sand with Gravel	Rock
Carrying volume per 1 cycle	3 m <sub>2</sub>	7.13	7.13
Carrying volume per 3 trollies	m <sup>3</sup>	1.2	1.08
Loading unloading time per 1 trip	min	30	30
No. of trip (n)	trip	7.13/1.2=5.94	7.13/1.08=6.60
t <sub>2</sub> =n x (t + 30)	min	205	228

t: Trip time t=150/66.7 x 2 = 4.5 min

Average transport distance L = 150 m

Trip speed V = 4 Km/hr = 66.7 m/min

#### - Time for excavation work per 1 cycle

$$t_3 = A \times P \times \frac{60}{q \times N} - (t + 3)$$
A: Excavation area 7.13 m<sup>3</sup>
P: Spacing of shoring 1 m
q: Performance of 1 hammer 0.7 m<sup>3</sup>/hr
N: No. of hammer N=3
$$t_3 = 7.13 \times 1 \times \frac{60}{0.7 \times 3} - (4.5 + 3) = 196 \text{ min}$$

#### - Machines to be employed

Machine		No.
 Pick hammer	8 kg	3
Air compress	or 3.5 m/min	1
Trolly	0.5 m	3
Fan	1.5 Kw	1
Diesel gener	ator 30 kvA	1

- Operating time of machines
Operating time of machines per 1 day operation is settled
7 hours.

#### - Labour cost

The unit cost of labours exclusively employed in tunnel work are estimated in reference of the standard in Japan.

The unit costs are listed in the table below.

Labour	Unit	Amount		
Skilled tunnel labour	Rp/man.day	7,000		
Tunnel labour	61	5,000		
Skilled labour	A	3,500		
Tunnel foremen	10	7,000		

# 3.1.2 Unit Cost of Tunnel Excavation (1-03)

## \_ Sand with gravel

T=419 min

Work Item	Allot	nent	Unit	Unit Cost (Rp)	Total	Amount foreign	Local (Rp)
Skilled tunnel labour	3.0	1)	man.day	7,000	21,000		
runnel labour	3.0	1)	•	5,000	15,000		
Tunnel foreman	1.5	1)	**	7,000	10,500		
Skilled labour	1.5	1)	Ħ	3,500	5,250		
Common labour	1.5	1)	* H	1,000	1,500		
Compressor (3.5 m³/min)	4.43	2)	hr	5,566	24,657		
Pick hammer 8 kg	1.5	3)	day	2,506	3,759		
Fan 1.5 Kw	0.9	4)	day	23,632	21,269		
Trolly 0.5 m	3.0	4)	day	13,664	40,992		
Diesel generator 30 kvA	0.9		day	47,824	43,042		•
Temporary facilities	1.0		meter	18,028	18,028		
Total (Rp/1 cycle 1 me	ter)				204,997		
	x 1.26	5	.61		259,321		
m/m <sup>3</sup> (	7.13)	3 m			36,370		

- Rock (1-04)

T=442 min

Work item	Allotment	Unit	Unit cost (Rp)	Total	Amount foreign	Local
Skilled tunnel labour	3.156	man.day	7,000	22,092		
Tunnel labour	3.156	16	5,000	15,780		
Tunnel foreman	1.579	tŧ	7,000	11,053		
Skilled labour	1.579	11	3,500	5,526		
Common labour	1.579	Ð	1,000	1,579		
Compressor (3.5 m <sup>3</sup> /min)	4.321	hr	5,566	24,657		
Pick hammer 8 kg	1.5	day	2,506	2,405		
Fan 1.5 Kw 3	0.95	day	23,632	22,450		
Trolly 0.5 m <sup>3</sup>	3.0	đay	13,664	25,825		
Diesel generator 30 kvA	0.95	day	47,824	45,443		
Temporary facilities	1.0	meter	18,028	18,028	tradition and the state of the	
Total (Rp/1 cycle 1 me				160,603		
$Rp/m^3$ (7.13 $m^3/m$ ) $\times$ 1.265				38,037		

Note: 1) Labour formation  $\times \frac{T}{420}$ 

2)  $(64 + t_3)/60$ 

3)  $2 \times t_3/420$ 

4) No x T/420

#### 3.1.3 Equipment Cost

3.5 m<sup>3</sup>/min Equipment Compressor 33 PS

Basic Price 1,620 kY

Economic life 5 year

Operation time/year 2000 hour/year

Repair & maintenance cost ratio :

	Total	Amount (Y/h Foreign	r) Local
Depreciation	146	146	- · · · · ·
Ownership	97	and the second	97
Fuel, oil	98	49	49
Repair & maintenance	146	88	58
Miscellaneous	10	0	10
Total Y/hr	497	283	214
Rp/hr	5,566	3,170	2,396
1\$ = 1.630	$R_D = 145V$ .	11.2  Rp = 1	v

#### 3.1.4 Unit Cost of Lining (7-01)

- Corrugated pipe 2,000 mm

- 1 cycle (1 meter) 155 mm

					the second second second	
Work Item	Allot- ment	Unit	Unit Cost (Rp)	Total	Amount Foreign	Loca (Rp)
Corrugated pipe 2,000 mm	1.0	meter	1,332,800	1,332,800		
R-ring H-100 @ 1.5 m	1.0	*1	374,800	374,800		
Skilled tunnel labour	0.74	man.day	7,000	5,180		
Tunnel labour	0.74		5,000	3,700		*
Tunnel foreman	0.37	**	7,000	2,590		
Skilled labour	0.37	* <b>u</b>	3,500	1,295		·
Common labour	0.37	•	1,000	370		
Fan 1.5 Kw	0.37	day	23,632	8,744	POPART GAR	
Trolly 0.5 m <sup>3</sup>	0.37	day	13,632	5,056		•
Generator 30 kvA	0.37	day	47,824	17,695	Parkal Control (1987) The Control (1988)	٠
Total Rp/1 meter				1,752,230		
× 1.265				2,216,571		
				E/EIU/3/I	¥194,880	

Erection time = 155 min = 0.37 day/m Note:

# 3.1.5 Shoring H-beam for Corrugated Pipe 2,000 mm (8-01)

- H-1.25 x 1.25 x 6.5 x 9

- Spacing 1 m

Work Item	Allot- ment	Unit	Unit Cost (Rp)	Total	Amount Foreign	Loca (Rp)
H-beam	152.6	kg	2,133	325,496		
H-125x125x6.5x9-3.207		3				
Wood	0.26	3 m	75,000	19,500		
Skilled tunnel labour	0.52	man.day	7,000	3,640		
Tunnel labour	0,52	**	5,000	2,600		
Tunnel foreman	0.26	11	7,000	1,820		
Skilled labour	0.26	n	3,500	910		
Common labour	0.26	**	1,000	260		
Fan 1.5 Kw	0.26	day	23,632	6,144		
Trolly 0.5 m	0.52	day	13,664	7,105	•	
Generator 30 kvA	0.26	đay	47,824	12,434		
Fabrication of steel	1.00	kg	750	75,000		
Sub Total Rp/1 meter				454,909		· · · · · · · · · · · · · · · · · · ·
Total x 1.265			· · · · · · · · · · · · · · · · · · ·	575,460		

Note: Erection time for shoring = 110 min = 0.26 day

H-125 x 125 x 6.5 x 9 - 3.207 m x 2

3.207 x 23.8 kg/m

= 76.3 kg

66,000¥/t x 250% x 1.15 = ¥189,750 x 11.24Rp/¥ = 2,132,790 Rp/t

≟ 2,133 Rp/kg

#### 3.2 Shaft

#### 3.2.1 Condition

Diameter: Dimension 4.0 m

> Depth 90 m

2) Soil condition Sand with gravel a:

> b: Rock

3) Excavation

- Labour formation

Labour	Man	Work
Skilled tunnel labour	4	Excavation, installation of lining material
Skilled labour	1	Winch operating
Common labour	1	Work outside of pit
Poreman	1	Instruction

- Excavation progress per 1 day Sand with gravel: 0.50 m/day

: 0.35 m/day

- Equipment for excavation

Use	Name	Specifications	No.
Excavation of excavated Soil	Scaffolding	With 10 Kw motor, 1 ton winch	1
Hanging of lining material			1
Ventilation	Fan	ф 200 mm, 0.75 Kw	1
Transportation of	Belt	7 m length with	1
evacuated soil	conveyor	1 Kw motor	
Drainage	Submersible	φ 50 mm, 3.7 Kw	1
Excavation	pump		
for sand with gravel	Pick hammer	8 kg	4
for rock	Pick hammer	8 kg	1
·	Hand hammer	15 kg	3
	Air compressor	10 m <sup>3</sup> /min	1
Power source	Diesel	30 kvA	1
	Generator		

<sup>-</sup> Disposal of excavated soil

<sup>-</sup> Excavated soil is planned to be put at about 5 m distance from the side wall of the shaft.

# 3.2.2 Unit Cost of Shaft Excavation (1-05)

## \_ Sand with gravel

Work Item	Allotment	Unit	Unit Cost (Rp)	Total	Amount Foreign	Local (Rp)
Skilled tunnel labour	4	man.day	7,000	28,000		
Skilled labour	1	91	3,500	3,500	-	
Common labour	1	11	1,000	1,000		
Foreman	1	<b>\$</b> \$	5,000	5,000		
Pick hammer 8 kg	4	Unit	2,506	10,024		
Compressor 10 m3/min	1	, я	104,818	104,818		
Diesel generator 30 kvA	1	й .	47,824	47,824		
Temporary facilities	1	day	119,982	119,982	4.4	
rotal Rp/day	9 (19 - 19 - 19 - 19 - 19 - 19 - 19 - 19		-	320,148		
Unit cost for 1 meter ex	cavation (0	).5 m/day)		640,296		<del></del>
Unit cost for 1 m excav	ation (15.2	21 m <sup>3</sup> /m)		42,097		
01120 0000 1102 0		1.265		53,336		
		· · · · · · · · · · · · · · · · · · ·				
- Rock (1-06)						

Work Item	Allotment	Unit	Unit Cost (Rp)	Total	Amount Foreign	Loca (Rp)
Skilled tunnel labour	4	man.day	7,000	28,000		
Skilled labour	1	11	3,500	3,500		
Common labour	1	19	1,000	1,000		
Foreman	1	11	5,000	5,000		
Hand hammer 15 kg	3	Unit	10,661	31,983		
Pick hammer 8 kg	. 1	**	2,506	2,506		
Compressor 10 m <sup>3</sup> /min	1		104,818	104,818		
Diesel generator 30 kvA	1		47,824	47,824		
Temporary facilities	1	day	114,749	114,749		**************************************
Total Rp/day				339,380		·
Unit cost for 1 meter ex	) Rp/m	969,657				
Unit cost for 1 m3 excav		63,751				
Rp/m <sup>3</sup>	K	1.265		80,645		

## 3.2.3 Equipment Cost of 1 Day Operation

- Excavation machines

Equipment	Pick Hammer 8 kg			Han	Hand Hammer 15 kg		
Basic price	¥33,000			¥140,000			
Economic life		2 3	years		2	years	
Operation time		800 1	hrs		800		
Repair & Maintenance	: .	35%			35%		
Cost ratio	•						
	3	aunt (V/h			nount (¥/h		
		ount (¥/hi	-		•		
	Total	Foreign	Local	Total	Foreign	Loca	
Depreciation	19	19		79	79		
Ownership	6	-	б	26	<b></b>	2	
Repair & Maintenance	. 7	4	3	31	19	1.	
Total (\(\forall / \hr\)	32	23	9	136	98	3	
(Rp/day)	2,506	1,806	700	10,061		2,97	

					• •
Equipment	Air Comp	ressor 10.	5 m <sup>3</sup> /min	Diesel	Generator 30 kvA
Basic price	¥	4,144 k	•		¥2,321 k
Economic life		5 year	s ·		5 years
Operation		2,000 hrs			2,000 hrs
R & M cost ratio	••	90 %			65 %
	Am	ount (Y/hr	)	· A	mount (W/hr)
	Total	Foreign	Local	Total	Foreign Local
Depreciation	370	370	-	209	209 -
Ownership	249	<u> </u>	249	139	_ 139
Fuel	263	132	131	84	42 42
0il	53	27	26	17	9 8
R & M	370	222	148	151	91 60
Miscellaneous	32	-	32	10	_ 10
Total (¥/hr)	1337	751	586	610	351 259
(Rp/day)	104,818	58,877	45,941	47,824	27,517 20,307

Operating time of machine = 7 hours/day

Equipment Cost for a day operation

Equipment		Trolly (0.5 m <sup>3</sup> )	Fan (1.5 kw)
a) Intial Cost (¥)		460,000	1,390,000
b) Economic life (year)		5	6
c) Operation days (day/year)		140	170
d) Depreciation Ration (%)		90	90
e) Repair & Maintenance Ratio (%)		70	35
f) Yearly Management Cost Ratio (%)	A Williams	5	5
g) Depreciation Cost (¥/day)	a x d b x c	593	1,226
h) Repair & Maintenance Cist (¥/day)	axc bxc	462	476
i) Yearly Management Cost (\(\forall / \)day)	a x f	165	408
j) Hire Cost (¥/day)	g+h+i	1,220	2,110
(Rp/day)		13,664	23,632

#### 3.2.4 Unit Cost of Lining (7-02)

# - Coruggated pipe 4,000 mm

Work Item	Allotment	Unit	Unit Cost (Rp)	Total	Amount Foreign	Local
Liner plate φ 4,000 mm, t=3.2 mm	1	meter	3,452,000	3,452,000		
Total Rp/1 meter x 1.265				3,452,000 4,366,780		

# 3.2.5 Unit Cost of Reinforcing H-beam (8-02)

- H 125 x 125 x 6.5 x 9 - 311 kg/1 ring @ 1.0 m

11000						
Work Item	Allotment	Unit	Unit Cost	Total	Amount Foreign	Local
Skilled tunnel labour	0.4	man.day	3,500	1,400	1	
Skilled labour	0.1	11	3,000	300		
Common labour	0.1	R	1,000	100		
Foreman	0.1	30	2,500	250		
H-beam	329	kg	2,133	701,757		
H-125 x 125 x 6.5 x 9					* * * * * * * * * * * * * * * * * * *	
Total Rp/l ring				703,857	14.7. 4.4.4.	
Unit cost for 1 meter (1.0 m/1 ring)	excavation	(Rp/m)		890,379		

φ 4,000 mm t=3.2

 $4161,000 + 106,000 = 4267,000/m \times 1.15 = 4307,050/m$ 

= 3,451,242

= 3,452,000

 $H-125 \times 125 \times 6.5 \times 9 - 13.82 \text{ m} \times 23.8 \text{ kg/m} = 328.9 \text{ kg}$ 

# 4. Embankment by machine

- Bulldozer 16 ton

- Production: Excavation 71 m<sup>3</sup>/hr Spreading & compaction 38 m3/hr

# 4.1 Height of Dike <5.0 m (2-01)

Work Item	Allotment	Unit	Unit Cost (Rp)	Total	Amount Foreign	Local
Depreciation cost	0.0404	hr/m <sup>3</sup>	16,410	663		
Ownership cost	0.0404		0	0		
Fuel oil cost	0.0404		4,320	175		
Operator & labour	0.0404		2,038	82		
Repair & Maintenance	0.0404		16,410	663		
Total (Rp/m <sup>3</sup> )	<del></del>			1,583		
x 1.265				2,003	: .	.*

Production/hour

Excavation  $Q = \frac{60 \times Q \times E}{Cm}$ , Cm = 0.038L + 0.2 (min), L=20 m, Cm=0.96 min

$$Q = \frac{60 \times 1.75 \times 0.65}{0.96} = 71 \text{ m}^3/\text{hr}$$

Spreading  $Q_1 = 10E (11D+8) = 10 \times 0.6 \times (11 \times 0.3+8) = 68 \text{ m}^3/\text{hr}$ 

E: Work efficiency

D: Height after compaction 0.3 m

Compaction Q = 
$$\frac{V \text{ W D E}}{N} = \frac{3,500 \times 0.7 \times 0.3 \times 0.6}{5} = 88 \text{ m}^3/\text{hr}$$

V=3,500 m/hr, W=0.7 m, D=0.3 m, E=0.6, N=5

Spreading and compaction

$$Q = \frac{Q_1 \times Q_2}{Q_1 + Q_2} = \frac{68 \times 88}{68 + 88} = 38 \text{ m}^3/\text{hr}$$

Allotment 
$$\frac{1}{38} + \frac{1}{71} = 0.0404$$

#### 4.2 Height of dike 25.0 m (2-02)

- Bulldozer 16 ton

- Production: Excavation 71 m<sup>3</sup>/hr
Spreading & compaction 25 m<sup>3</sup>/hr

Work Item	Allotment	Unit	Unit Cost (Rp)	Total	Amount Local Foreign (Rp)
Depreciation cost	0.054	hr/m <sup>3</sup>	16,410	886	
Ownership cost	0.054	*	0	. 0	
Fuel oil cost	0.054		4,320	233	
Operator & labour	0.054		2,038	110	
Repair & Maintenance	0.054		16,410	886	
Total (Rp/m <sup>3</sup> ) x 1.265				2,115 2,675	

Production/hour Excavation Q = 
$$\frac{60 \times q \times E}{Cm}$$
 Cm = 0.038L + 0.2 (min), L=20 m, Cm=0.96 min Q =  $\frac{60 \times 1.75 \times 0.65}{0.96}$  = 71 m<sup>3</sup>/hr

Spreading  $Q_1 = 10E (10D+8) = 10 \times 0.6 \times (11 \times 0.15+8) = 58 \text{ m}^3/\text{hr}$ 

E: Work efficiency

0.6

D: Height after compaction

0.15 m

Compaction Q = 
$$\frac{V \text{ W D E}}{N} = \frac{3.500 \times 0.7 \times 0.15 \times 0.6}{5} = 44 \text{ m}^3/\text{hr}$$

V=3,500 m/hr, W=0.7 m, D=0.15 m, E=0.6, N=5

Spreading and compaction

$$Q = \frac{Q_1 \times Q_2}{Q_1 + Q_2} = \frac{58 \times 44}{58 + 44} = 25 \text{ m}^3/\text{hr}$$

Allotment

$$A = \frac{1}{25} + \frac{1}{71} = 0.054$$

# Breakdown of Equipment Cost

12001	aipment Bulldozer 16 ton		
a a	Economic life	5	year
b	Operation time/year	2,000	hour/year
 C	Basic price	182,336,000	Rp
đ	Tire cost	<u>.</u>	Rp
е	Residual value, 0.1 x (c-d)	18,233,600	Rp
f	Depreciation cost, <u>c-d-e</u> ab	16,410	Rp
đ	Ownership cost, $\frac{0.2 \times (a+1) \times c}{2ab}$	10,960	Rp/hr
h	Operation cost, i+j+k+l	5,534	Rp/hr
i	Fuel 18.3 1/hr 150 ps x 200 Rp/l	3,600	Rp/hr
j	Lubricant, i x 20%	720	Rp/hr
k	Tire cost		Rp/hr
1	Operator .	2,038	Rp/hr
	Operator	7,000	Rp/hr
	Assistant operator	4,500	Rp/hr
	Foreman	5,000	Rp/hr
	Common labour	2,000	Rp/hr
m	Repair and maintenance cost, $\frac{(c-d) \times n}{ab}$	16,410	Rp/hr
n	Ratio of repair and maintenance cost	90	٠,
0	Direct cost, f+g+h+m	49,314	Rp/hr
p	Indirect cost, 15% of direct cost	7,397	Rp/hr
q	Equipment cost, o+p	56,711	Rp/hr

### 5. Gabion Work (3-01)

- 1 m<sup>3</sup> gabion mattres
- 4 mm wire for frame 20%
- 3 mm wire for net 80%

Work Item	Allotment	Unit	Unit Cost (Rp)	Total	Amount Local Foreign (Rp)
Plait	,				
Wire	9.6	kq	950	9,120	
Gabion net maker	0.68	man.day	3,000	2,040	
Common labour	0.546		1,000	546	
Foreman	0.0267	11	5,000	134	
Stone filling		•		ng nganggan Palabatan Tanggan	
Stone	1	m <sup>3</sup>	5,000	5,000	
Common labour	1.5	man.day	1,000	1,500	ereko er ett green sekter om de. Opportungs
Foreman	0.025	n T	5,000	125	
Transportation of stone	1	LS	818	818	en e
L_75 m					
Filter	1	LS	785	785	
Total (Rp/m <sup>3</sup> )				20,068	
x 1.265				25,386	

### 6. Stone Masonry (4-01)

- 1 m<sup>3</sup> stone masonry, C:S=1:4

Work Item	Allotment	Unit	Unit Cost (Rp)	Total	Amount Loca Foreign (Rp)
Stone	1.2	m <sup>3</sup>	5,000	6.000	
Cement	4.07	baq	4,400	17,908	
Sand	0.522	- m3	5,000	2,610	and the second of the second
Mason	1.2	man.day	3,500	4,200	
Chief mason	0.12	`# <sup></sup>	4,000	480	
Common labour	3.6	11	1,000	3,600	
Foreman	0.18	11	5,000	900	
Total (Rp/m <sup>3</sup> )				35,698	
x 1.265		•		45,190	

## 7. Plain Concrete (4-02)

- 1 m<sup>3</sup> Plain concrete, C:S:G=1:2:3

	Work Item	Allotment	Unit	Unit Cost (Rp)	Total	Amount Foreign	Local
1)	Concrete material						
-,	Gravel	0.82	<sub>m</sub> 3	8,000	6,560		
	Sand	0.54	11	5,000	2,700		
	Cement	6.8	bag	4,400	29,920	والمراجعة المتعادلة المتعا	
	Sub Total (Rp/m <sup>3</sup> )				39,180		
2)	Labour for mixing and	en Francisco en		•			
	placing	6	man.day	1,000	6,000		
	Common labour	0.3	man.day	5,000	1,500		
	Foreman	1	13	3,500	3,500		
	Mason	0.1	**	4,000	400		.**
	Chief mason	V. L		4,000	400	<u></u>	
	Sub Total (Rp/m <sup>3</sup> )				6,600		
3)	Form work material	•				•	
	Wood Nail	0.4	kg m3	75,000 1,000	30,000 4,000		·
	Sub Total (Rp/m <sup>3</sup> )	•			34,000		
4)	Labour for form making and removal						
	Chief carpenter	0.5	man.day	3,500	1,750		
	Foreman	0.1	11	5,000	500		
	Carpenter	5	11	3,500	17,500	•	
	Common labour	2	**	1,000	2,000		
	Common labour (removal		Ħ	1,000	4,000		
	Sub Total (Rp/m <sup>3</sup> )				31,750		
5)	Equipment						
	Mixer (250 1t)		LS	1,885	1,885		-
	Vibrator	-	LS	458	458		
	Belt conveyor		LS	6,172	6,172		····
	Sub Total (Rp/m <sup>3</sup> )				8,515		
6)	Fuel, Oil		LS		1,363		
	Total (Rp/m <sup>3</sup> ) x 1.265				109,408 138,401		

#### 8. Transportation of Riverbed Material

Long distance 5 km (5-01)

r				$Q=12.0 \text{ m}^3/\text{hr}$
Work Item	Allotment	Jiau	Unit Cost (Rp)	Total Amount Local Foreign (Rp)
Dump truck 11 ton,	-1		en e	
production 9.4 m <sup>3</sup> /				
hr=0.106 hr/m <sup>3</sup>				
Depreciation cost	0.083	hr/m <sup>3</sup>	5,944	493
Ownership cost	0.083		0	O
Fuel, oil	0.083		2,904	241
Tire cost	0.083	•	1,100	91
Driver	0.083		571	47
Repair & Maintenance	0.083		5,944	493
Indirect cost	<b>t</b> an			
Total (Rp/m <sup>3</sup> )	The state of the s			1,365
x 1.265				1,726

$$Q = \frac{60 \times q \times E}{cm} \qquad q=6.1 \text{ m}^3, E=0.9$$

$$Cm = \frac{n \times Cms}{60 \times Es} + \frac{1}{v_1} + \frac{1}{v_2} + t_1 + t_2$$

$$\frac{n \times Cms}{60 \times Es} \stackrel{?}{=} 5 \text{ min.}, 1=5 \text{ Km, } v_1 = 30 \text{ Km/hr} = 500 \text{ m/min}$$

$$v_2 = 40 \text{ Km/hr} = 666 \text{ m/min, } t_1 = 3 \text{ min, } t_2 = 2 \text{ min}$$

$$Cm = 5 + \frac{5000}{666} + \frac{5000}{500} + 3 + 2 = 27.5 \text{ min}$$

$$Q = \frac{60 \times 6.1 \times 0.9}{27.5} = 12.0 \text{ m}^3/\text{hr}$$

Dump truck 11 ton, production 7.0 m <sup>3</sup> /hr=0.106 hr/m <sup>3</sup>	·					
production 7.0 m <sup>3</sup> /						
production 7.0 m <sup>2</sup> /				•	4	
Depreciation cost	0.03	hr/m <sup>3</sup>	5,944	178		
Ownership cost	0.03		6,036	0		
Fuel, oil	0.03		2,904	87		
Tire cost	0.03		1,100	33		
Driver	0.03		571	17		
Repair & Maintenance	0.03		5,944	178		
Indirect cost	· <b></b>				<del>-</del> ·.	

$$Q = \frac{60 \times Q \times E}{cm} \qquad q=6.1 \text{ m}^3, E=0.9$$

$$Cm = \frac{n \times Cms}{60 \times Es} + \frac{1}{v_1} + \frac{1}{v_2} + t_1 + t_2$$

$$\frac{n \times Cms}{60 \times Es} = 5 \text{ min., } 1=0.5 \text{ Km, } v_1 = 30 \text{ Km/hr} = 500 \text{ m/min}$$

$$v_2 = 40 \text{ Km/hr} = 666 \text{ m/min, } t_1 = 3 \text{ min, } t_2 = 2 \text{ min}$$

$$Cm = 5 + \frac{500}{666} + \frac{500}{500} + 3 + 2 = 11.8 \text{ min}$$

$$Q = \frac{60 \times 6.1 \times 0.9}{11.8} = 28.0 \text{ m}^3/\text{hr}$$

Work Item	Allotment	Unit	Unit Cost (Rp)		unt Local eign (Rp)
Dump truck 11 ton,					
production 7.0 m <sup>3</sup> /					i .
hr=0.106 hr/m <sup>3</sup>					
Depreciation cost	0.037	$hr/m^3$	5,944	219	
Ownership cost	0.037		0	7 <b>0</b>	
Fuel, oil	0.037		2,904	107	11.1
Tire cost	0.037		1,100	40	
Driver	0.037		571	21	
Repair & Maintenance	0.037	•	5,944	219	1.1
Indirect cost					A 22 4
	The second section		n seath and in	Arte a succession	
Total (Rp/m <sup>3</sup> ) x 1.265				579 732	

$$Q = \frac{60 \times Q \times E}{cm} \qquad q=6.1 \text{ m}^3, E=0.9$$

$$Cm = \frac{n \times Cms}{60 \times Es} + \frac{1}{v_1} + \frac{1}{v_2} + t_1 + t_2$$

$$\frac{n \times Cms}{60 \times Es} \stackrel{?}{=} 5 \text{ min., } 1=1.0 \text{ Km, } v_1 = 30 \text{ Km/hr} = 500 \text{ m/min}$$

$$v_2 = 40 \text{ Km/hr} = 666 \text{ m/min, } t_1 = 3 \text{ min, } t_2 = 2 \text{ min}$$

$$Cm = 5 + \frac{1000}{666} + \frac{1000}{500} + 2 + 2 = 12.5 \text{ min}$$

$$Q = \frac{60 \times 6.1 \times 0.9}{12.5} = 26.4 \text{ m}^3/\text{hr}$$

Near distance 2000 m (5-04)

Work Item	Allotment	Unit	Unit Cost (Rp)	Total	Amount Foreign	Loca: (Rp)
Dump truck 11 ton,						
production 7.0 m <sup>3</sup> /	•					
1r=0.106 hr/m <sup>3</sup>	•			v.*		
Depreciation cost	0.045	hr/m <sup>3</sup>	5,944	268		
Ownership cost	0.045		6,036	0		
Fuel, oil	0.045		2,904	131		
Tire cost	0.045		1,100	50		
priver	0.045		571	26		
Repair & Maintenance	0.045		5,944	268		
Indirect cost	**************************************	· · · · · · · · · · · · · · · · · · ·		_		
	Control of the second of the s			757		
Total (Rp/m <sup>3</sup> ) x 1.265			•	958	•	
V 1. 202						

$$Q = \frac{60 \times Q \times E}{cm} \qquad q=6.1 \text{ m}^3, E=0.9$$

$$Cm = \frac{n \times Cms}{60 \times Es} + \frac{1}{v_1} + \frac{1}{v_2} + t_1 + t_2$$

$$\frac{n \times Cms}{60 \times Es} \stackrel{?}{=} 5 \text{ min., } 1=0.5 \text{ Km, } v_1 = 30 \text{ Km/hr} = 500 \text{ m/min}$$

$$v_2 = 40 \text{ Km/hr} = 666 \text{ m/min, } t_1 = 3 \text{ min, } t_2 = 2 \text{ min}$$

$$Cm = 5 + \frac{2000}{666} + \frac{2000}{500} + 1 + 2 = 15.0 \text{ min}$$

$$Q = \frac{60 \times 6.1 \times 0.9}{15.0} = 22.0 \text{ m}^3/\text{hr}$$

# Breakdown of Equipment Cost

			•
Equ	ipment Dump truck 11 ton		
a	Economic life		year
b	Operation time per year	2,000	hour/year
c	Basic price	107,314,000	Rp
đ	Tire cost	1,650,000	Rp
е	Residual value, 0.1 x (c-d)	10,566,400	Rp
f	Depreciation cost, c-d-e ab	5,944	Rp
g	Ownership cost, 0.2 x (a+1) x c 2ab	6,036	Rp/hr
h	Operation cost, i+j+k+l	4,575	Rp/hr
i	Fuel 0.039 1/hr x 310 ps x 200 Rp/1	2,420	Rp/hr
j	Lubricant, i x 20%	484	Rp/hr
, <b>k</b>	Tire cost	1,100	Rp/hr
1	Operator	1,001	Rp/hr
	Operator	0.143 x 7,000	Rp/hr
	Assistant operator	4,500	Rp/hr
	Foreman	5,000	Rp/hr
	Common labour	2,000	Rp/hr
m	Repair and maintenance cost, (c-d) x n ab	5,944	Rp/hr
n	Ratio of repair and maintenance cost	90	<b>&amp;</b>
0	Direct cost, f+g+h+m	22,499	Rp/hr
q	Indirect cost, 15% of direct cost	3,375	Rp/hr
q	Equipment cost, o+p	25,874	Rp/hr

### g, Loading

, was

机线点流流 医二次

						77 m <sup>3</sup> /h
Work Item	Allotment	Unit	Unit Cost (Rp)	Total	Amount Foreign	Local
Depreciation cost	0.013	hr/m <sup>3</sup>	21,173	275	275	<b>-</b>
Ownership cost	0.013		12,704	165	· <u>-</u>	165
Fuel, oil cost	0.013		6,625	86	43	43
Operator & labour	0.013		572	7		7
Repair & Maintenance	0.013		21,173	275	165	110
Total (Rp/m <sup>3</sup> )			·	808 1,022	483	325

### Breakdown of Equipment Cost

Eq	uipment Tractor Shovel		1.8	m <sup>3</sup>
a	Economic life			year
b	Operation time per year			hour/year
c	Basic price		211,728,000	
d	Tire cost			Rp
ø	Residual value, 0.1 x (c-d)	•	21,172,800	Rp
£	Depreciation cost, c-d-e ab		21,173	Rp
g	Ownership cost, $\frac{0.2 \times (a+1) \times c}{2ab}$	The second secon	12,704	Rp/hr
h	Operation cost, i+j+k+l		7,839	Rp/hr
i	Fuel 0.129 1/hr x 214 ps x 200 Rp/1		5,521	Rp/hr
j	Lubricant, i x 20%		1,104	Rp/hr
k ·	Tire cost		· · · · · · · · · · · · · · · · · · ·	Rp/hr
1	Operator			Rp/hr
	Operator		0.143 x 4,000	Rp/hr
	Assistant operator			Rp/hr
	Foreman			Rp/hr
	Common labour		÷ 1,114	Rp/hr
m	Repair and maintenance cost, (c-d) x n		21,173	Rp/hr
n	Ratio of repair and maintenance cost		90	*
0	Direct cost, f+g+h+m		22,499	Rp/hr
р	Indirect cost, 15% of direct cost		3,375	Rp/hr
q	Equipment cost, o+p		25,874	Rp/hr

#### Annex-5

## Breakdown of Construction Cost (Economic Cost)

Alternative - A Cikunir Area

B Cikunir Area

C Cikunir Area

D Cikunir Area

E Cikunir Area

Economic Cost of Construction

		λ	В	C	D	Е
1-01	Crater Lake	3,674.4	3,674.4	3,674.4	3,674.4	3,674.4
2-01	Improvement dike	170.2	170.2	170.2	170.2	170.2
2-02	Check dam	402.9	402.9	402.9	402.9	402.9
2-03	Excavation	1,245.4	1,245.4	1,245.4	1,245.4	1,245.4
2-04	Aggregate plant	656.0	656.0	656.0	656.0	656.0
3-01	Improvement	1,335.7	1,335.7	1,335.7	1,335.7	1,335.7
3-02	Check dam	1,286.3	1,286.3	1,286.3	1,286.3	1,286.3
3-03	Excavation (1)	2,820.9	2,820.9	2,820.9	2,820.9	2,820.9
3-03 3-04	Excavation (3) 1st	were the second	973.0	4,782.5	6,193.3	6,262.7
3-04'	Excavation (3) 2nd	<u> </u>	1,625.3	0	1,696.8	3,062.0
3-05	Excavation (2) 1st	3,460.3	2,287.7	1,347.3		
3-05'	Excavation (2) 2nd	7,339.3	5,384.3	3,816,8	1,507.6	
3-06	Aggregate plant	2.073.8	1,659.0	1,214.9	912.0	-
3-07	Operation 1st	2,407.6	1,671.0	1,031.4	<b>.</b>	~
3-07	Operation 2nd	5,106.6	3,933.0	2,922.0	1,258.7	
3-08	Rising dike	1,399.4	1,708.6	1,935.5	2,477.5	4,290.0
3-09	Diversion cannel	, <del></del>	1,114.7	1,263.8	1,627.1	2,633.4
3-10	Consolidation dam	693.2	693.2	693.2	693.2	693.2
3-11	Revetment works	881.4	881.4	881.4	881.4	881.4
4-01	Check dam	210.6	210.6	210.6	210.6	210.0
4-01'	Check dam	1,927.2	1,927.2	1,927.2	1,927.2	1,927.
4-02	Check dam	219.7	219.7	219.7	219.7	219.
42'	Check dam	325.0	325.0	325.0	325.0	325.
4-03	Check dam	444.0	444.0	444.0	444.0	444.
4-03'	Check dam	3,515.6	3,515.6	3,515.6	3,515.6	3,515.

Note) Excavation (1) for riverbed

Excavation (2) for aggregate

Excavation (3)

2nd stage

### 1. Breakdown of Construction Cost for Alternative-A

### (1) Breakdown of Construction Cost (Crater Lake Tunnel)

Item	Unit	Quantity	Unit Price (Rp)		oreign ¥x10 <sup>6</sup> )	Local (Rpx106)
1. Civil Work						
T. CIVIL HOLK				i de la companya da l		
(1) Main Work	s	•	1. 11. 1		er se	
1-03	m3	1,069	36,370	38.9	$x_{i} = x_{i+1} \cdot x_{i}$	•
1-04	<sub>m</sub> 3	3,672	38,037	139.7		
1-05	m <sup>3</sup>	228	53,336	12.2		
1-06	E <sub>m</sub> 3	1,141	80,645	92.0		
4-02	<sub>m</sub> 3	1,260	138,401	174.4		
7-01	m	665	2,216,571	1,474.0	·	*.*
7-02	m	665	575,460	382.7	- " .	
8-01	m	90	4,366,780	393.0	and the	
8-02	m	90	890,379	80.1	28 11 1 1	
15-01	hour	6,600	4,350	28.7		-
16-01	m	3,120	82,500	257.4		:
Cooling plant		<u> </u>	4 · ·	601.3		
Total				3,674.4		

## (2) Breakdown of Construction Cost (Ciloseh Area)

## (2-1) Dike Improvement

	Item	Unit	Quantity	Unit Price (Rp)	Amount (Rpx10 <sup>6</sup> )	Foreign (¥x10 <sup>6</sup> )	Local (Rpx10 <sup>6</sup> )
1.	Civil Work				7.2		
	(1) Excavati	on .					
	1-01	$\epsilon_{m}$	19,956	1,435	28.6		
	5-01		19,956	1,726	34.4		
	(2) Embankme	nt					
	2-01	<sub>m</sub> 3	19,956	2,003	40.0	•	
	3-01	$\epsilon_m$	2,646	25,386	67.2		
	Total				170.2		

### (2-2) Check Dams of Cimampang Area

	Item	Unit	Quantity	Unit Price (Rp)	Amount (Rpx10 <sup>6</sup> )	Foreign (¥x10 <sup>6</sup> )	Local (Rpx10 <sup>6</sup> )
1.	Civil Work			,			
	(1) Main Work 1-02	<sub>m</sub> 3	2,640	1,954	5.2		
	4-01	<sub>m</sub> 3	8,800	45,190	397.7		
	Total				402.9		

## (2-3) Plant operation

Item	Unit	Quantity	Unit Price (Rp)	Amount (Rpx10 <sup>6</sup> )	Foreign (¥x10 <sup>6</sup> )	Local (Rpx10 <sup>6</sup> )
Plant operation cost	3 m	394,000	1,665	656.0		
Total				656.0		

### (2-4) Excavation (2)

(1st stage)

	Item	Unit	Quantity	(Rp)	(Rpx10 <sup>6</sup> )	(¥x10 <sup>6</sup> )	(Rpx10 <sup>6</sup> )
1.	Civil Work	-					
	(1) Main Work 1-01	<sub>m</sub> 3	394,000	1,435	565.4		
	5-01	m <sup>3</sup>	394,000	1,726	680.0		
	Total				1,245.4		

Note: Excavation 2;

(3) Breakdown of Construction Cost (Cikunir Area)

Dike Improvement (without Ciponyo I Dalam)

	Item	Unit	Quantity	Unit Price (Rp)	Amount Foreign Local (Rpx $10^6$ ) (Wx $10^6$ ) (Rpx $10^6$ )
1.	Civil Work		·		
	(1) Excavation 1-01 5-01	$\epsilon_m$	125,238 125,238	1,435 1,726	179.7 216.2
	(2) Embankment 2-01 3-01	m3 m3	125,238 27,136	2,003 25,386	250.9 688.9
	Total				1,335.7

## (4) Breakdown of Construction Cost (Cikunir Area) Rising Dike (Ciponyo I Dalam)

	Item	Unit	Quantity	Unit Price (Rp)	Amount (Rpx10 <sup>6</sup> )	Foreign Local (¥x10 <sup>6</sup> ) (Rpx10 <sup>6</sup> )
1.	Civil Work			٠.		
	(1) Excavation					
	1-01	<sub>m</sub> 3	40,306	1,435	57.8	
	5-01	<sub>m</sub> 3	40,306	1,726	69.6	and the second of the second o
	(2) Embankment					
	2-01	m3	40,306	2,003	80.7	
	4-01	m3	24,994	45,190	1,129.5	
~******* <b>-</b>	3-01	<sub>m</sub> 3	2,436	25,386	61.8	·
	Total	·-:	: :		1,399.4	

## (5) Breakdown of Construction Cost (Cikunir Area)

## (5-1) Aggregate plant

Item	Unit	Quantity	Unit Price (Rp)	Amount (Rpx10 <sup>6</sup> )	Foreign (¥x10 <sup>6</sup> )	Local (Rpx10 <sup>6</sup> )
1. Civil Work	±1					•
(1) Main Work						
1-02	<sub>m</sub> 3	6,648	1,954	13.0		
4-02	. m3	3,708	138,401	513.2		
(2) Material						
(2) Material	(t)	200	5,620,000	1,124.0	100.0	_
(3) Placing	(t)	335	1,264,500	423.6	_	423.6
Total	······································			2,073.8		
(5-2) Plant Operat	ion Cost					
1st stage						
Item	Unit	Quantity	Unit Price (Rp)	Amount (Rpx10 <sup>6</sup> )	Foreign (¥x10 <sup>6</sup> )	Local (Rpx106
Plant operation co	st m <sup>3</sup>	1,446,000	1,665	2,407.6		
Total				2,407.6		
(5-3) Excavation ( 1st stage	2)					
Item	Unit	Quantity	Unit Price (Rp)	Amount (Rpx10 <sup>6</sup> )	Foreign (¥x10 <sup>6</sup> )	Local (Rpx106
1. Civil Work				4.		
(1) Main Work		* 446 000	1 495	2,075.0		
1-01		1,446,000	1,435			
5-04	<sub>m</sub> 3	1,446,000	958	1,385.3	,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,	
Total				3.46	50.3	

### (5-4) Plant Operation Cost

2nd stage

Item	Unit	Quantity	Unit Price (Rp)	Amount (Rpx10 <sup>6</sup> )	Foreign (¥x10 <sup>6</sup> )	Local (Rpx106)
Plant operation cost	m <sup>3</sup>	3,067,000	1,665	5,106.6		
Total				5,106.6		
		***** <u>********************************</u>			<del></del>	

### (5-5) Excavation (2)

2nd stage

	Item	Unit	Quantity	Unit Price (Rp)	Amount (Rpx10 <sup>6</sup> )	Foreign Local (**106) (Rpx106)
1.	Civil Work					
	(1) Main Work 1-01 5-04	m <sup>3</sup>	3,067,000 3,067,000	1,435 958	4,401.1	
	Total	1			7,339.3	

## (6) Breakdown of Construction Cost (Cikunir Area)

## (6-1) Excavation (1)

Item	Unit	Quantity	Unit Price (Rp)	Amount (Rpx10 <sup>6</sup> )	Foreign (¥x10 <sup>6</sup> )	Local (Rpx10 <sup>6</sup> )
1. Civil Work					·	
(1) Main Wor	k					
1-01	m <sup>3</sup>	1,370,000	1,435	1,966.0		
5-02	m3	1,370,000	624	854.9		
Total	1			2,820.9		

### (6-2) Excavation (3)

	1s	t	S	t	a	qe	
--	----	---	---	---	---	----	--

Item	Unit	Quantity	Unit Price (Rp)	Amount (Rpx10 <sup>6</sup> )	Foreign (¥x10 <sup>6</sup> )	Local (Rpx10 <sup>6</sup> )
1. Civil Work						
(1) Main Work						
1-01	$\epsilon_m$	Q	1,435	0		
5-03	m3	0	732	0		
Total				. 0		

### (6-3) Excavation (3)

2nd stage

	Item	Unit	Quantity		(Rpx10 <sup>6</sup> )	(Wx10 <sup>6</sup> )	(Rpx10 <sup>6</sup> )
1.	Civil Work				*. •		
	(1) Main Work 1-01	<sub>m</sub> 3	.0	1,435	0		
	5-03	m <sup>3</sup>	0	732	0 .		
	Total				0		

## (7) Breakdown of Construction Cost (Cikunir Area) Diversion cannel

	Item	Unit	Quantity	Unit Price (Rp)	Amount (Rpx106)	Foreign (¥x10 <sup>6</sup> )	Local
1.	Civil Work						
	(1) Excavation						
	1-01	m3	. 0	1,435	0		
	5-01	m3	0	1,726	0	v. ******	
	(2) Embankment		•				
	2-01	<sub>m</sub> 3	0	2,003	0		
	4-01	<sub>m</sub> 3	0	45,190	0		
	Total				0		

### (8) Breakdown of Construction Cost (Cikunir Area)

### (8-1) Consolidation dams

	Item	Unit	Quantity	Unit Price (Rp)	Amount (Rpx10 <sup>6</sup> )	Foreign (¥x10 <sup>6</sup> )	Local (Rpx10 <sup>6</sup> )
1.	Civil Work				· · · · · · · · · · · · · · · · · · ·		
	(1) Dike	:					
	1-01	<sub>m</sub> 3	34,320	1,435	49.2	. :	
	2-01	<sub>m</sub> 3	34,320	2,003	68.7		
	4-01	т3	6,990	45,190	315.9		
	5-02	<sub>m</sub> 3	34,320	624	21.4		
	(2) Consolidat	ion dams	gar et e				11.
	1-02	<i>m</i> 3	1,560	1,954	3.0	100	
	4-01	<sub>m</sub> 3	5,200	45,190	235.0		·
	Total				693.2		

#### (8-2) Revetment works

	Item	Unit	Quantity	Unit Price (Rp)	Amount (Rpx10 <sup>6</sup> )	Foreign (¥x10 <sup>6</sup> )	Local (Rpx10 <sup>6</sup> )
1.	Civil Work						
	(1) Main Work						
	1-01	<sup>m</sup> 3	10,817	1,435	15.5		
	2-01	<sub>m</sub> 3	6,490	2,003	13.0		
	4-01	m3	9,615	45,190	434.5		1.00
	4-02	m <sup>3</sup>	2,975	138,401	411.7		
	5-02	<sub>m</sub> 3	10,817	624	6.7	10000	
	Total				881.4		

## (9) Breakdown of Construction Cost (Cikunir Area)

## Check dam

	Item	Unit	Quantity	Unit Price (Rp)	Amount (Rpx10 <sup>6</sup> )	Foreign (¥x10 <sup>6</sup> )	Local (Rpx10 <sup>6</sup> )
1.	Civil Work						
	(1) Main Work 1-02	m <sup>3</sup>	8,430	1,954	16.5		·
	4-01	<sub>m</sub> 3	28,100	45,190	1,269.8		
	Total	1.1			1,286.8		

### (10) Breakdown of Construction Cost (Cisaruni Area)

### (10-1) Check dams 1st stage

_,	Item	Unit	Quantity	Unit Price (Rp)	Amount (Rpx10 <sup>6</sup> )	Foreign (¥x10 <sup>6</sup> )	Local (Rpx106
1.	Civil Work						
	(1) Main Work						
	1-02	m <sup>3</sup>	1,380	1,954	2.7		
	4-01	<sub>m</sub> 3	4,600	45,190	207.9		
	Total				210.6		

#### (10-2) Check dams 2nd stage

	Item	Unit	Quantity	Unit Price (Rp)	(Rpx10 <sup>6</sup> )	(¥x10 <sup>6</sup> )	(Rpx10 <sup>6</sup> )
1.	Civil Work						
	(1) Main Work						
	1-02	m <sup>3</sup>	12,630	1,954	24.7		
	5-02	m <sup>3</sup>	42,100	45,190	1,902.5		
	Total				1,927.2		

### (11) Breakdown of Construction Cost (Cikupang Area)

### (11-1) Check dams 1st stage

Item	Unit	Quantity	Unit Price (Rp)	Amount (Rpx10 <sup>6</sup> )	Foreign (¥x10 <sup>6</sup> )	Local (Rpx106)
1. Civil Work					1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1	
(1) Main Work			:	and the second s	en en en grande de la companya de la	e.
1-02	<sub>m</sub> 3	1.440	1.954	2.8	*	
4-01	-, m3	4,800	45,190	216.9	2 / F	
Total				219.7		

### (11-2) Check dams 2nd stage

Item	Unit	Quantity	Unit Price (Rp)	Amount (Rpx10 <sup>6</sup> )	Foreign (¥x10 <sup>6</sup> )	Local (Rpx106)
1. Civil Work						
(1) Main Work 1-02	<sub>m</sub> 3	2,130	1,954	4.2		
4-01	m <sup>3</sup>	7,100	45,190	320.8	e Santa	
Total				325.0		

### (12) Breakdown of Construction Cost (Cimerah Area)

### (12-1) Check dams 1st stage

	Item	Unit	Quantity	Unit Price (Rp)	Amount (Rpx10 <sup>6</sup> )	Foreign (¥x10 <sup>6</sup> )	Local (Rpx10 <sup>6</sup> )
1.	Civil Work						
	(1) Main Work 1-02	<sub>m</sub> 3	2,910	1,954	5.7		
	4-01	m3	9,700	45,190	438.3		
	Total				444.0		

### (12-2) Check dams 2nd stage

	Item	Unit	Quantity	Unit Price (Rp)	Amount (Rpx10 <sup>6</sup> )	Foreign (¥x10 <sup>6</sup> )	Local (Rpx10 <sup>6</sup> )
1.	Civil Work						
	(1) Main Work		į.				:
	1-02	$\epsilon_{m}$	23,040	1,954	45.0		:
	5-02	m <sup>3</sup>	76,800	45,190	3,470.6		·
	Total	, <u> </u>			3,515.6		

### 2. Breakdown of Construction Cost for Alternative-B

## (1) Breakdown of Construction Cost (Crater Lake Tunnel)

Item	Unit	Quantity	Unit Price (Rp)	Amount (Rpx10 <sup>6</sup> )	Foreign (¥x10 <sup>6</sup> )	Local (Rpx10 <sup>6</sup> )
1. Civil Work						
(1) Main Work					. *	4
1-03	<sub>m</sub> 3	1,069	36,370	38.9		
1-04	m <sup>3</sup>	3,672	38,037	139.7		
1-05	$\epsilon_{ m m}$	228	53,336	12.2		
1-06	<sub>m</sub> 3	1,141	80,645	92.0		
4-02	<sub>m</sub> 3	1,260	138,401	174.4		
7-01	m	665	2,216,571	1,474.0		
7~02	m	665	575.460	382.7		
8-01	m	90	4,366,780	393.0		
8-02	m	90	890,379	80.1		
15-01	hour	6,600	4,350	28.7		
16-01	m	3,120	82,500	257.4		
Cooling pla	ant			601.3		
Total				3,674.4		

### (2) Breakdown of Construction Cost (Ciloseh Area)

### (2-1) Dike Improvement

	Item	Unit	Quantity	Unit Price (Rp)	Amount (Rpx10 <sup>6</sup> )	Foreign (¥x10 <sup>6</sup> )	Local (Rpx106)
1.	Civil Work						
	(1) Excavation 1-01 5-01	m3	19,956 19,956	1,435 1,726	28.6 34.4		
	(2) Embankment 2-01 3-01	<sub>m</sub> 3 <sub>m</sub> 3	19,956 2,646	2,003 25,386	40.0 67.2		
	Total			:	170.2		

### (2-2) Check Dams of Cimampang Area

	Item	Unit	Quantity	Unit Price (Rp)	Amount (Rpx10 <sup>6</sup> )	Foreign Local (¥x10 <sup>6</sup> ) (Rpx10 <sup>6</sup> )
1.	Civil Work					
	(1) Main Work 1-02	<sub>m</sub> 3	2,640	1,954	5.2	
	4-01	$\epsilon_m$	8,800	45,190	397.7	
	Total				402.9	

### (2-3) Plant operation

Item	Unit	Quantity	Unit Price (Rp)	Amount (Rpx10 <sup>6</sup> )	Foreign (¥x10 <sup>6</sup> )	Local (Rpx10 <sup>6</sup> )
Plant operation cost	m <sup>3</sup>	394,000	1,665	656.0		
Total				656.0		

### (2-4) Excavation (2)

### (1st stage)

	Item	Unit	Quantity	Unit Price (Rp)	Amount (Rpx10 <sup>6</sup> )	Foreign (¥x10 <sup>6</sup> )	Local (Rpx10 <sup>6</sup> )
1.	Civil Work						
	(1) Main Work 1-01	<sub>m</sub> 3	394,000	1,435	565.4		
	5-01	m <sup>3</sup>	394,000	1,726	680.0		
	Tota1				1,245.4		

Note: Excavation 2;

(3) Breakdown of Construction Cost (Cikunir Area)
Dike Improvement (without Ciponyo I Dalam)

	îtem	Unit	Quantity	Unit Price (Rp)	Amount (Rpx10 <sup>6</sup> )	Foreign (¥x10 <sup>6</sup> )	Local (Rpx10 <sup>6</sup> )
1.	Civil Work						
	(1) Excavation						
	1-01	<sub>m</sub> 3	125,238	1,435	179.7		
	5-01	m <sup>3</sup>	125,238	1,726	216.2	٠	
	(2) Embankment						
		m <sup>3</sup>	125,238	2,003	250.9		
	3-01	m <sup>3</sup>	27,136	25,386	688.9		
	Total				1,335.7		

## (4) Breakdown of Construction Cost (Cikunir Area) Rising Dike (Ciponyo I Dalam)

	Item	Unit	Quantity	Unit Price (Rp)	Amount (Rpx10 <sup>6</sup> )	Foreign (¥x10 <sup>6</sup> )	Local (Rpx10 <sup>6</sup> )
1.	Civil Work						
	(1) Excavation	on					
	1-01	<sub>m</sub> 3	40,306	1,435	57.8		
	5-01	m <sup>3</sup>	40,306	1,726	69.6		
	(2) Embankme	nt.					• • •
	2-01	m <sup>3</sup>	40,306	2,003	80.7		
	4-01	<sub>m</sub> 3	24,994	45,190	1,129.5		
	3-01	m <sup>3</sup>	2,436	25,386	61.8		
	Total				1,399.4		

### (5) Breakdown of Construction Cost (Cikunir Area)

### (5-1) Aggregate plant

		Item	Unit	Quantity	Unit Price (Rp)	Amount (Rpx10 <sup>6</sup> )	Foreign (%x10 <sup>6</sup> )	Local (Rpx106)
1.	Civ	il Work		•				
	(1)	Main Work 1-02 4-02	3 m3	5,318 2,966	1,954 138,401	10.4 410.5	an and an and an	
	(2)	Material Metal	(t)	160	5,620,000	899.2		
	(3)	Placing	(t)	268	1,264,500	338.9		
		Total				1,659.0		

### (5-2) Plant Operation Cost

	Item		Unit	Quantity	Unit Price Amount Foreign Local (Rp) (Rpx106) (%x106) (Rpx106)
Plant	operation	cost	m <sup>3</sup>	956,000	1,748 1,671.1
	Total				1,671.1

and the second of the second of the second

### (5-3) Excavation (2)

	Item	Unit	Quantity	Unit Price (Rp)	Amount (Rpx10 <sup>6</sup> )	Foreign (¥x10 <sup>6</sup> )	Local (Rpx10 <sup>6</sup> )
1.	Civil Work						
	(1) Main Work 1-01	<sub>m</sub> 3	956,000	1,435	1,371.9	· · · · · · · · · · · · · · · · · · ·	
	5-04	. m3	956,000	958	915.8	· · · · · · · · · · · · · · · · · · ·	_
	Total				2,287.7	•	

## (5-4) Plant Operation Cost

2nd stage Item	Unit	Quantity	Unit Price (Rp)	Amount (Rpx10 <sup>6</sup> )	Foreign (¥x10 <sup>6</sup> )	Local (Rpx10 <sup>6</sup> )
plant operation cost	<sub>m</sub> 3	2,250,000	1,748	3,933.0		
Total				3,933.0		
(5-5) Excavation (2) 2nd stage						
Item	Unit	Quantity	Unit Price (Rp)	Amount (Rpx10 <sup>6</sup> )	Foreign (¥x10 <sup>6</sup> )	Local (Rpx10 <sup>6</sup> )
1. Civil Work						
(1) Main Work		0.000.000	4 405	2 220 0		
1-01 5-04	m3 m3	2,250,000	1,435 958	3,228.8 2,155.5		
Total				5,384.3		

### (6) Breakdown of Construction Cost (Cikunir Area)

### (6-1) Excavation (1)

Item	Unit	Quantity	Unit Price (Rp)	Amount (Rpx10 <sup>6</sup> )	Foreign Local (\foreign (\foreign \text{Rpx10}^6)
1. Civil Work					
(1) Main Work	• .		10.041		
1-01	m <sup>3</sup>	1,370,000	1,435	1,966.0	
5-02	<sub>m</sub> 3	1,370,000	624	854.9	to the second
Total				2,820.9	

### (6-2) Excavation (3)

### 1st stage

	Item	Unit	Quantity	Unit Price (Rp)	Amount (Rpx10 <sup>6</sup> )	Foreign (*x10 <sup>6</sup> )	Local (Rpx106)
1.	Civil Work						
	(1) Main Work				*		
	1-01	$\epsilon_{ m m}$	449,000	1,435	644.3		
	5-03	<sub>m</sub> 3	449,000	732	328.7		
	Total				973.0		

### (6-3) Excavation (3)

### 2nd stage

	Item	Unit	Quantity	Unit Price (Rp)	Amount (Rpx10 <sup>6</sup> )	Foreign (¥x10 <sup>6</sup> )	Local (Rpx10 <sup>6</sup> )
1.	Civil Work				•		
	(1) Main Work 1-01	m <sup>3</sup>	750,000	1,435	1,076.3	•	
	5-03	<sub>m</sub> 3	750,000	732	549.0		
	Total				1,625.3		

## (7) Breakdown of Construction Cost (Cikunir Area) Diversion cannel

	Item	Unit	Quantity	Unit Price (Rp)	Amount (Rpx10 <sup>6</sup> )	Foreign (¥x10 <sup>6</sup> )	Local (Rpx10 <sup>6</sup> )
1.	Civil Work						
	(1) Excavation						
	1-01	<sub>m</sub> 3	85,500	1,435	122.7		
	5-01	ε <sub>m</sub>	85,500	1,726	147.6		
	(2) Embankment						
	2-01	m3	85,500	2,003	171.3		
	4-01	<sub>m</sub> 3	14,895	45,190	673.1		
	Total			•	1,114.7	1	· · · · · · · · · · · · · · · · · · ·

### (8) Breakdown of Construction Cost (Cikunir Area)

### (8-1) Consolidation dams

	The second secon						
	Item	Unit	Quantity	Unit Price (Rp)	Amount (Rpx10 <sup>6</sup> )	Foreign (¥x10 <sup>6</sup> )	Local (Rpx10 <sup>6</sup> )
1.	Civil Work					· · · · · · · · · · · ·	
	(1) Dike	at a second					
	1-01	<sub>m</sub> 3	34,320	1,435	49.2		
	2-01	<sub>m</sub> 3	34,320	2,003	68.7		
	4-01	$\epsilon_m$ 3	6,990	45,190	315.9		
	5-02	m <sup>3</sup>	34,320	624	21.4		
	(2) Consolida	tion dams					
	1-02	<sub>m</sub> 3	1,560	1,954	3.0		
	4-01	m <sup>3</sup>	5,200	45,190	235.0	·	
	Total				693.2		

## (8-2) Revetment works

	Item	Unit	Quantity	Unit Price (Rp)	Amount (Rpx10 <sup>6</sup> )	Foreign (¥x10 <sup>6</sup> )	Local (Rpx10 <sup>6</sup> )
1.	Civil Work						
	(1) Main Work			÷		e .	
	1-01	$\epsilon_{ m m}$	10,817	1,435	15.5		
	2-01	m <sup>3</sup>	6,490	2,003	13.0		
•	4-01	<sub>m</sub> 3	9,615	45,190	434.5		
	4-02	<sub>m</sub> 3	2,975	138,401	411.7		
	5-02	<sub>m</sub> 3	10,817	624	6.7		
	Total				881.4		

## (9) Breakdown of Construction Cost (Cikunir Area) Check dam

	Item	Unit	Quantity	Unit Price (Rp)		Foreign (¥x10 <sup>6</sup> )	Local (Rpx106)
1.	Civil Work						
	(1) Main Work					alah mengeri	
	1-02	<sub>m</sub> 3	8,430	1,954	16.5	V.	
·	4-01	m <sup>3</sup>	28,100	45,190	1,269.8		·
_	Total				1,286.8	e sa e sa e la procesa.	

### (10) Breakdown of Construction Cost (Cisaruni Area)

### (10-1) Check dams 1st stage

	Item	Unit	Quantity	Unit Price (Rp)	Amount (Rpx10 <sup>6</sup> )	Foreign (¥x10 <sup>6</sup> )	Local (Rpx106)
1.	Civil Work						
	(1) Main Work			green of			
	1-02	<sub>m</sub> 3	1,380	1,954	2.7		
	4-01	E <sub>m</sub> 3	4,600	45,190	207.9	er i de tyter and	
	Total				210.6		<del></del>

#### (10-2) Check dams 2nd stage

	Item	Unit	Quantity	Unit Price (Rp)	(Rpx10 <sup>6</sup> )	Foreign (¥x10 <sup>5</sup> )	Local (Rpx10 <sup>6</sup> )
1.	Civil Work						
	(1) Main Work 1-02		12,630	1,954	24.7	in the second	
	5-02	<sub>M</sub> 3	42,100	45,190	1,902.5		
	Total				1,927.2		

## (11) Breakdown of Construction Cost (Cikupang Area)

## (11-1) Check dams 1st stage

	Item	Unit	Quantity	Unit Price (Rp)	Amount (Rpx10 <sup>6</sup> )	Foreign (¥x10 <sup>6</sup> )	Local (Rpx10 <sup>6</sup> )
1.	Civil Work						-
	(1) Main Work	<sub>m</sub> 3	1,440	1,954	2.8		
	4-01	<sub>m</sub> 3	4,800	45,190	216.9	2 1 <u>1</u> 18 1 4	
	Total				219.7		

### (11-2) Check dams 2nd stage

	Item	Unit	Quantity	Unit Price (Rp)	Amount (Rpx10 <sup>6</sup> )	Foreign (¥x10 <sup>6</sup> )	Local (Rpx10 <sup>5</sup> )
1.	Civil Work						
	(1) Main Work 1-02	m <sup>3</sup>	2,130	1,954	4.2		
	4-01	m <sup>3</sup>	7,100	45,190	320.8		
	Total	···			325.0		

### (12) Breakdown of Construction Cost (Cimerah Area)

### (12-1) Check dams 1st stage

Item	Unit	Quantity	Unit Price (Rp)	Amount (Rpx10 <sup>6</sup> )	Foreign (¥x10 <sup>6</sup> )	Local (Rpx10 <sup>6</sup> )
1. Civil Work				·	·	
(1) Main Work 1-02	<sub>m</sub> 3	2,910	1,954	5.7		
4-01	<sub>m</sub> 3	9,700	45,190	438.3		
Total				444.0		

#### (12-2) Check dams 2nd stage

	Item	Unit	Quantity	Unit Price (Rp)	(Rpx10 <sup>6</sup> )	(¥x10 <sup>6</sup> )	(Rpx10 <sup>6</sup> )
1.	Civil Work						
	(1) Main Work 1-02	$\epsilon_m$	23,040	1,954	45.0		
	5-02	<sub>m</sub> 3	76,800	45,190	3,470.6		
	Total				3,515.6		

### 3. Breakdown of Construction Cost for Alternative-C

### (1) Breakdown of Construction Cost (Crater Lake Tunnel)

Item	Unit	Quantity	Unit Price (Rp)	Amount (Rpx10 <sup>6</sup> )	Foreign (%x10 <sup>6</sup> )	Local (Rpx106)
1. Civil Work						a to s
(1) Main Work					iz jihaye	
1-03	m <sup>3</sup>	1,069	36,370	38.9		
1-04	<sub>m</sub> 3	3,672	38,037	139.7	:	
1-05	<sub>m</sub> 3	228	53,336	12.2		
1-06	m3	1,141	80,645	92.0	٠.	
4-02	m <sup>3</sup>	1,260	138,401	174.4		
7-01	m	665	2,216,571	1,474.0	, in the second	
7-02	· m	665	575,460	382.7		
8-01	m	. 90	4,366,780	393.0		
8-02	m	90	890,379	80.1		
15-01	hour	6,600	4,350	28.7	11.4	
16-01	m	3,120	82,500	257.4		
Cooling pla	nt			601.3		9.
Total	-			3,674.4		

## (2) Breakdown of Construction Cost (Ciloseh Area)

## (2-1) Dike Improvement

	Item	Unit	Quantity	Unit Price (Rp)	Amount (Rpx10 <sup>6</sup> )	Foreign (¥x10 <sup>6</sup> )	Local (Rpx10 <sup>6</sup> )
1.	Civil Work						
	(1) Excavation	n.					
	1-01	$\epsilon_m$	19,956	1,435	28.6		
	5-01	8 <sub>m</sub>	19,956	1,726	34.4	!	
	(2) Embankmen	t					
	2-01	m <sup>3</sup>	19,956	2,003	40.0	•	
	3-01	<sub>m</sub> 3	2,646	25,386	67.2		
	Total				170.2		

### (2-2) Check Dams of Cimampang Area

Item	Unit	Quantity	Unit Price (Rp)	Amount (Rpx10 <sup>6</sup> )	Foreign (¥x10 <sup>6</sup> )	Local (Rpx10 <sup>6</sup> )
1. Civil Work						
(1) Main Work 1-02	m <sup>3</sup>	2,640	1,954	5.2		
4-01	m <sup>3</sup>	8,800	45,190	397.7	<u> </u>	
Total			·	402.9	<u> </u>	

## (2-3) Plant operation

	Item	Unit	Quantity	Unit Price (Rp)	Amount (Rpx10 <sup>6</sup> )	Foreign (¥x10 <sup>6</sup> )	Local (Rpx10 <sup>6</sup> )
Plant	operation cost	3 m	394,000	1,665	656.0		
	Total				656.0		

### (2-4) Excavation (2)

,	1 _					
l	1s	t.	sta	O	Α	)

Item	Unit	Quantity	Unit Price (Rp)	Amount (Rpx10 <sup>6</sup> )	Foreign (Wx10 <sup>6</sup> )	(Rpx10 <sup>6</sup> )
1. Civil Work						
(1) Main Work 1-01	. <sub>m</sub> 3	394,000	1,435	565.4		
5-01	m <sup>3</sup>	394,000	1,726	680.0		
Total				1,245.4		

Note: Excavation 2;

## (3) Breakdown of Construction Cost (Cikunir Area) Dike Improvement (without Ciponyo I Dalam)

	Item	Unit	Quantity	Unit Price (Rp)	Amount (Rpx10 <sup>6</sup> )	Foreign Local $(x_{x10^6})$ $(Rp_{x10^6})$
1.	Civil Work					
	(1) Excavation					an along the
	1-01	. "3	125,238	1,435	179.7	
	5-01	. : <sub>m</sub> 3	125,238	1,726	216.2	
	(2) Embankment				•	en e
	2-01	m <sup>3</sup>	125,238	2,003	250.9	1.4
	3-01	m3	27,136	25,386	688.9	
	Total				1,335.7	

## (4) Breakdown of Construction Cost (Cikunir Area) Rising Dike (Ciponyo I Dalam)

Item	Unit	Quantity	Unit Price (Rp)	Amount (Rpx10 <sup>6</sup> )	Foreign Local (¥x10 <sup>6</sup> ) (Rpx10 <sup>6</sup> )
1. Civil Work	. *				ungska tjär av
(1) Excavation 1-01 5-01	6 <sub>m</sub> 3	84,342 84,342	1,435 1,726	121.0 145.6	
(2) Embankment 2-01 4-01 3-01	3 m3 m3	84,342 29,258 7,004	2,003 45,190 25,386	168.9 1,322.2 177.8	emaka Willer de Perakan
Total				1,935.5	

## (5) Breakdown of Construction Cost (Cikunir Area)

## (5-1) Aggregate plant

	Item	Unit	Quantity	Unit Price (Rp)	Amount (Rpx10 <sup>6</sup> )	Foreign (¥x10 <sup>6</sup> )	Local (Rpx10 <sup>6</sup> )
1.	Civil Work	:					
	(1) Main Work						
	1-02	m <sup>3</sup>	3,989	1,954	13.1		
	4-02	<sub>m</sub> 3	2,225	138,401	341.7		
	(2) Material						
	Metal	(t)	115	5,620,000	646.3		
	(3) Placing	(t)	200	1,264,500	252.9		
	Total				1,214.9		•

### (5-2) Plant Operation Cost

4 - 1	. /		~~
1st		ta	
T 25 1		~	<b>–</b>

1st st	tage				· · · · · · · · · · · · · · · · · · ·			
· .	Item		Unit	Quantity	Unit Price (Rp)	Amount (Rpx10 <sup>6</sup> )	Foreign (¥x10 <sup>6</sup> )	Local (Rpx10 <sup>6</sup> )
Plant	operation	cost	m <sup>3</sup>	563,000	1,832	1,031.4		
	Total					1,031.4		

### (5-3) Excavation (2)

1st	st	a	αe

	Item	Unit	Quantity	(Rp)	(Rpx10 <sup>6</sup> )	(¥x10 <sup>6</sup> )	(Rpx10 <sup>6</sup> )
1.	Civil Work					e e e e e e e e e e e e e e e e e e e	
	(1) Main Work 1-01	m <sup>3</sup>	563,000	1,435	807.9		
	5-04	m <sup>3</sup>	563,000	958	539.4		
	Total				1,347.3		

Unit Price Amount

Local

### (5-4) Plant Operation Cost

2nd stage

	Item		Unit	Quantity	Unit Price (Rp)	Amount (Rpx10 <sup>6</sup> )	Foreign (¥x10 <sup>6</sup> )	Local (Rpx106
Plant	operation	cost	m <sup>3</sup>	1,595,000	1,832	2,922.0		
	Total					2,922.0	i i sier	

### (5-5) Excavation (2)

2nd stage

	Item	Unit	Quantity	Unit Price (Rp)	Amount (Rpx10 <sup>6</sup> )	Foreign Local (¥x10 <sup>6</sup> ) (Rpx10 <sup>6</sup>
1.	Civil Work					
	(1) Main Work 1-01	<sub>m</sub> 3	1,595,000	1,435	2,288.8	
	5-04	<sub>m</sub> 3	1,595,000	958	1,528.0	
	Total				3,816.8	

## (6) Breakdown of Construction Cost (Cikunir Area)

## (6-1) Excavation (1)

Item	Unit	Quantity	Unit Price (Rp)	Amount (Rpx10 <sup>6</sup> )	Foreign (¥x10 <sup>6</sup> )	Local (Rpx10 <sup>6</sup> )
						. :
1. Civil Work					•	
(1) Main Work	A 1 1	ė.				
1-01	8 <sub>m</sub>	1,370,000	1,435	1,966.0		
5-02	_m3	1,370,000	624	854.9		
Total				2,820.9		
6-2) Excavation	(3)	•		•		
	(3)	•				
1st stage			Unit Price	Amount	Foreign	Local
Item	Unit	Quantity	(Rp)	(Rpx10 <sup>6</sup> )	(¥x10 <sup>6</sup> )	(Rpx10 <sup>6</sup> )
1. Civil Work			<del></del>			
en e			1 .			
(1) Main Work 1-01	° 3	2,207,000	1,435	3,167.0		
5-03	<sub>m</sub> 3	2,207,000	732	1,615.5	.*	
Total			٠.	4,782.5		-
	<del></del>			·		
			•		• •	
6-3) Excavation	(3)	•				
2nd stage			. :	<u> </u>	· · ·	
Item	Unit	Quantity	Unit Price (Rp)	Amount (Rpx10 <sup>6</sup> )	Foreign (¥x10 <sup>6</sup> )	Local (Rpx10 <sup>6</sup> )
1. Civil Work						
and the second s						
(1) Main Work	k m3	0	1,435	0		
1-01	m <sup>3</sup>	0	732	0		
5-03	III.	U		-		

## (7) Breakdown of Construction Cost (Cikunir Area) Diversion cannel

	Item	Unit	Quantity	Unit Price (Rp)	Amount (Rpx10 <sup>6</sup> )	Foreign (¥x10 <sup>6</sup> )	Local (Rpx106)
1.	Civil Work						
	(1) Excavation				1 × 1		
	1-01	$\epsilon_{ m m}$	103,020	1,435	147.8		
	5-01	<sub>m</sub> 3	103,020	1,726	177.8		
	(2) Embankment				territoria. E		
	2-01	<sub>m</sub> 3	103,020	2,003	206.3	n egyt etg.	
	4-01	m3	16,196	45,190	731.9		
	Total				1,263.8		

### (8) Breakdown of Construction Cost (Cikunir Area)

# (8-1) Consolidation dams

	Item	Unit	Quantity	Unit Price (Rp)		Foreign Local (**X10 <sup>6</sup> ) (**Rpx10 <sup>6</sup> )
1.	Civil Work					
			f e			
	(1) Dike					
	1-01	<sub>m</sub> 3	34,320	1,435	49.2	
	2-01	<sub>m</sub> 3	34,320	2,003	68.7	
	4-01	<sub>m</sub> 3	6,990	45,190	315.9	
	5-02	m <sup>3</sup>	34,320	624	21.4	$(x,y) = x_1^{\frac{1}{2}}(x,y) = (x,y) = x_1^{\frac{1}{2}}(x,y)$
	(2) Consolida	tion dams				
	1-02	m <sup>3</sup>	1,560	1,954	3.0	
	4-01	m3	5,200	45,190	235.0	er en
	Total				693.2	Mark Trans

### (8-2) Revetment works

	Item	Unit	Quantity	Unit Price (Rp)	Amount (Rpx10 <sup>6</sup> )	Foreign Local (¥x10 <sup>6</sup> ) (Rpx10 <sup>6</sup> )
1.	Civil Work					
	(1) Main Work					•
	1-01	$\epsilon_{ m m}$	10,817	1,435	15.5	
	2-01	<sub>m</sub> 3	6,490	2,003	13.0	
	4-01	m <sup>3</sup>	9,615	45,190	434.5	
	4-02	<sub>m</sub> 3	2,975	138,401	411.7	
	5~02	<sub>m</sub> 3	10,817	624	6.7	
	Total				881.4	

### (9) Breakdown of Construction Cost (Cikunir Area)

### Check dam

	Item	Unit	Quantity	Unit Price (Rp)	Amount (Rpx10 <sup>6</sup> )	Foreign (¥x10 <sup>6</sup> )	Local (Rpx10 <sup>6</sup> )
1.	Civil Work	•					
	(1) Main Work 1-02	m3	8,430	1,954	16.5		
	4-01	<sub>m</sub> 3	28,100	45,190	1,269.8		
	Total	*			1,286.8		

### (10) Breakdown of Construction Cost (Cisaruni Area)

# (10) Check dams 1st stage

(== -,	Zech dum	s ist stage		· ·			
	Item	Unit	Quantity	Unit Price (Rp)	Amount (Rpx10 <sup>6</sup> )	Foreign (¥x10 <sup>6</sup> )	Local (Rpx10 <sup>6</sup> )
1. Civil	Work						
	Main Wor	k					
	1-02	m³	1,380	1,954	2.7		
	4-01		4,600	45,190	207.9		
7	Total				210.6		

#### (10-2) Check dams 2nd stage

	Item	Unit	Quantity	Unit Price (Rp)	Amount (Rpx10 <sup>6</sup> )	Foreign (\text{\tex{\tex	Local (Rpx10 <sup>6</sup> )
1,	Civil Work						
	(1) Main Work 1-02	m3	12,630	1,954	24.7		
	5-02	m <sup>3</sup>	42,100	45,190	1,902.5		
	Total				1,927.2		

### (11) Breakdown of Construction Cost (Cikupang Area)

### (11-1) Check dams 1st stage

	Item	Unit	Quantity	Unit Price (Rp)	Amount (Rpx10 <sup>6</sup> )	Foreign (¥x10 <sup>5</sup> )	Local (Rpx106)
1.	Civil Work			. :			
	(1) Main Work 1-02	<sub>m</sub> 3	1,440	1,954	2.8	and British Sec.	
	4-01	m <sup>3</sup>	4,800	45,190	216.9		
	Total				219.7		

## (11-2) Check dams 2nd stage

	Item	Unit	Quantity	Unit Price (Rp)	Amount (Rpx10 <sup>6</sup> )	Foreign (¥x10 <sup>6</sup> )	Local (Rpx10 <sup>6</sup> )
1.	Civil Work					97 6 35 	
	(1) Main Work 1-02	<sub>m</sub> 3	2,130	1,954	4.2		
	4-01	т3	7,100	45,190	320.8		
	Total				325.0		

### (12) Breakdown of Construction Cost (Cimerah Area)

### (12-1) Check dams 1st stage

	Item	Unit	Quantity		Amount (Rpx10 <sup>6</sup> )	Foreign Local (¥x10 <sup>6</sup> ) (Rpx10 <sup>6</sup> )
1.	Civil Work					
	(1) Main Work		•			
	1-02	<sub>m</sub> 3	2,910	1,954	5.7	
	4-01	£ <sub>m</sub> 3	9,700	45,190	438.3	e te v
	Total				444.0	

### (12-2) Check dams 2nd stage

	Item	Unit	Quantity	Unit Price (Rp)	Amount (Rpx10 <sup>6</sup> )	Foreign Local (¥x10 <sup>6</sup> ) (Rpx10 <sup>6</sup> )
1.	Civil Work					
	(1) Main Work 1-02	<sub>m</sub> 3	23,040	1,954	45.0	
	5-02	m3	76,800	45,190	3,470.6	
	Total				3,515.6	

A. Breakdown of Construction Cost for Alternative-D

### (1) Breakdown of Construction Cost (Crater Lake Tunnel)

Item	Unit	Quantity	Unit Price (Rp)	Amount (Rpx10 <sup>5</sup> )	Foreign (¥x10 <sup>6</sup> )	Local (Rpx10 <sup>6</sup> )
1. Civil Work						
(1) Main Work						
1-03	. m3	1,069	36,370	38.9		
1-04	m <sup>3</sup>	3,672	38,037	139.7	•	
1-05	<sub>m</sub> 3	228	53,336	12.2		
1-06	<sub>.m</sub> 3	1,141	80,645	92.0		
4-02	<sub>m</sub> 3	1,260	138,401	174.4		
7-01	m	665	2,216,571	1,474.0		
7-02		665	575,460	382.7		
8-01	m	90	4,366,780	393.0		•
8-02	m	90	890,379	80.1		
15-01	hour	6,600	4,350	28.7		
16-01	m	3,120	82,500	257.4		
Cooling pl	lant	and the second of		601.3	<u>,</u>	
Total				3,674.4		

### (2) Breakdown of Construction Cost (Ciloseh Area)

	Item	Unit	Quantity	Unit Price (Rp)	Amount (Rpx10 <sup>6</sup> )	Foreign Local (%x106) (Rpx106
1.	Civil Work	÷				
	(1) Excavation				e e e e e e e e e e e e e e e e e e e	er Marketa
	1-01	m <sup>3</sup>	19,956	1,435	28.6	
	5-01	m <sup>3</sup>	19,956	1,726	34.4	1.0
		44 (47)	And the first	1 148		
	(2) Embankment	_				
	2-01	<sub>m</sub> 3	19,956	2,003	40.0	- 11 Te
	3-01	<sub>m</sub> 3	2,646	25,386	67.2	$(C_{\mathcal{F}})^{(1)}$
	Total				170.2	

## (2-2) Check Dams of Cimampang Area

	Item	Unit	Quantity	Unit Price (Rp)	Amount (Rpx10 <sup>6</sup> )	Foreign Local (\(\frac{4}{3}\text{x}\)106) (\(\text{Rpx}\)106)
1.	Civil Work					
	(1) Main Work 1-02	m <sup>3</sup>	2,640	1,954	5.2	
	4-01	m <sup>3</sup>	8,800	45,190	397.7	
	Total				402.9	

## (2-3) Plant operation

Item	Unit	Quantity	Unit Price (Rp)	Amount (Rpx10 <sup>6</sup> )	Foreign (¥x10 <sup>6</sup> )	Local (Rpx10 <sup>6</sup> )
Plant operation cost	<sub>m</sub> 3	394,000	1,665	656.0		
Total				656.0		

#### (2-4) Excavation (2)

#### (1st stage)

	Item	Unit	Quantity	Unit Price (Rp)		ocal (px10 <sup>6</sup> )
1.	Civil Work					
	(1) Main Work 1-01 5-01	<sub>m</sub> 3	394,000 394,000	1,435	565.4 680.0	
	Total	311-	394,000	1,726	1,245.4	

Note: Excavation 2;

(3) Breakdown of Construction Cost (Cikunir Area)
Dike Improvement (without Ciponyo I Dalam)

	Item	Unit	Quantity	Unit Price (Rp)	Amount (Rpx10 <sup>6</sup> )	Foreign (¥x10 <sup>6</sup> )	Local (Rpx10 <sup>6</sup> )
1.	Civil Work		•				
	(1) Excavation						
	1-01	m <sup>3</sup>	125,238	1,435	179.7		
	5-01	<sub>m</sub> 3	125,238	1,726	216.2		
	(2) Embankment						
	2-01	<sub>m</sub> 3	125,238	2,003	250.9		
	3-01	<sub>m</sub> 3	27,136	25,386	688.9	· .	
	Total	4 €			1,335.7		

## (4) Breakdown of Construction Cost (Cikunir Area) Rising Dike (Ciponyo I Dalam)

Item	Unit	Quantity	Unit Price (Rp)	Amount (Rpx10 <sup>6</sup> )	Foreign (¥x10 <sup>6</sup> )	Local (Rpx10 <sup>6</sup> )
1. Civil Work						
(1) Excava	tion	* *				
1-01	<sub>m</sub> 3	130,872	1,435	187.8		
5-01	<sub>m</sub> 3	130,872	1,726	225.9		
(2) Embank	ment					
2-02	m <sup>3</sup>	130,872	2,675	350.1		
4-01	<sub>m</sub> 3	32,277	45,190	1,458.6		
3-01	m <sup>3</sup>	10,049	25,386	255.1		
Total				2,477.5		

### (5) Breakdown of Construction Cost (Cikunir Area)

### (5-1) Aggregate plant

	Item	Unit	Quantity	Unit Price (Rp)	Amount (Rpx10 <sup>6</sup> )	Foreign (¥x10 <sup>6</sup> )	Local (Rpx10 <sup>6</sup> )
1.	Civil Work					w\$1.	
	(1) Main Work 1-02 4-02	m3 m3	2,992 1,669	1,954 138,401	5.8 231.0		
	(2) Material Metal (3) Placing	(t) (t)	90 134	5,620,000 1,264,500	505.8 169.4		
	Total	- *			912.0		

### (5-2) Plant Operation Cost

### 1st stage

Item	Unit	Quantity	Unit Price (Rp)	Amount (Rpx10 <sup>6</sup> )	Foreign (¥x10 <sup>6</sup> )	Local (Rpx10 <sup>6</sup> )
Plant operation cost	. 3 m	0	1,998	0		
Total				O		

### (5-3) Excavation (2)

### 1st stage

	Item	Unit	Quantity	Unit Price (Rp)	Amount (Rpx10 <sup>6</sup> )	Local (Rpx10 <sup>6</sup> )
1.	Civil Work					
	(1) Main Work	•				
	1-01	<sub>m</sub> 3	0	1,435	0	
	5-04	m3	0	958	0	
	Total				o	

### (5-4) Plant Operation Cost

2nd	stage			Ilwih Duine	3-x		
	Item	Unit	Quantity	Unit Price (Rp)	Amount (Rpx10 <sup>6</sup> )	Foreign (¥x10 <sup>6</sup> )	Local (Rpx10 <sup>6</sup> )
Pla	nt operation cost	, m <sup>3</sup>	630,000	1,998	1,258.7		
	Total			·	1,258.7		
•	) Excavation (2)						
Zna	Item	Unit	Quantity	Unit Price (Rp)	Amount (Rpx10 <sup>6</sup> )	Foreign (¥x10 <sup>6</sup> )	Local (Rpx10 <sup>6</sup> )
1.	Civil Work					•	
	(1) Main Work 1-01	m <sup>3</sup>	630,000	1,435	404.1		
	5-04	<sub>m</sub> 3	630,000	958	603.5		<u> </u>
	Total				1,507.6		

### (6) Breakdown of Construction Cost (Cikunir Area)

### (6-1) Excavation (1)

Item	Unit	Quantity	Unit Price (Rp)	Amount (Rpx10 <sup>6</sup> )	Foreign (¥x10 <sup>6</sup> )	Local
1. Civil Work				•		
(1) Main Work						
101	$\epsilon_m$	1,370,000	1,435	1,966.0		
5-02	<sub>m</sub> 3	1,370,000	624	854.9		
Total				2,820.9		

### (6-2) Excavation (3)

#### 1st stage

	Item	Unit	Quantity	Unit Price (Rp)	Amount (Rpx10 <sup>6</sup> )	Foreign (¥x10 <sup>6</sup> )	Local (Rpx106
1.	Civil Work		· · · · · · · · · · · · · · · · · · ·				
	(1) Main Work 1-01	<sub>m</sub> 3	2,858,000	1,435	4,101.2		
	5-03	<sub>m</sub> 3	2,858,000	732	2,092.1		<u> </u>
	Total				6,193.3	1	

### (6-3) Excavation (3)

### 2nd stage

	Item	Unit	Quantity	Unit Price (Rp)	Amount (Rpx10 <sup>6</sup> )	Foreign (¥x10 <sup>6</sup> )	Local (Rpx10 <sup>6</sup> )
1.	Civil Work		·.				
	(1) Main Work			the second			
	1-01	.m3	783,000	1,435	1,123.6		
·	5-03	<sub>m</sub> 3	783,000	732	573.2		
	Total				1,696.8		

(7) Breakdown of Construction Cost (Cikunir Area)
Diversion cannel

	Item	Unit	Quantity	Unit Price (Rp)	Amount (Rpx10 <sup>6</sup> )	Foreign (¥x10 <sup>6</sup> )	Local (Rpx10 <sup>6</sup> )
1.	Civil Work	4					
	(1) Excavation						· ·
	1-01	<sub>m</sub> 3	147,705	1,435	212.0		
	5-01	<sub>m</sub> 3	147,705	1,726	254.9		
•	(2) Embankment						
	2-01	т <sup>3</sup>	147,705	2,003	295.9		
	4-01	<sub>m</sub> 3	19,125	45,190	864.3		
	Total				1,627.1	. 1	and the second

### (8) Breakdown of Construction Cost (Cikunir Area)

### (8-1) Consolidation dams

	Item	Unit	Quantity	Unit Price (Rp)	Amount (Rpx10 <sup>6</sup> )	Foreign (¥x10 <sup>6</sup> )	Local (Rpx10 <sup>6</sup> )
1.	Civil Work						
	(1) Dike						
:	1-01	m <sup>3</sup>	34,320	1,435	49.2		
	2-01	m <sup>3</sup>	34,320	2,003	68.7		
	4-01	<sub>m</sub> 3	6,990	45,190	315.9		•
	5-02	E <sub>m</sub>	34,320	624	21.4		
• • •	(2) Consolida	tion dams	•				
	1-02	<sub>m</sub> 3	1,560	1,954	3.0		
	4-01	m <sup>3</sup>	5,200	45,190	235.0	·	······································
	Total				693.2		

## (8-2) Revetment works

Item	Unit	Quantity	Unit Price (Rp)	Amount (Rpx10 <sup>6</sup> )	Foreign (¥x10 <sup>6</sup> )	Local (Rpx10 <sup>6</sup> )
1. Civil Work						
(1) Main Work						
1-01	<sub>m</sub> 3	10,817	1,435	15.5		
2-01	m <sup>3</sup>	6,490	2,003	13.0		
4-01	3	9,615	45,190	434.5		
4-02	<sub>m</sub> 3	2,975	138,401	411.7		
5-02	m <sup>3</sup>	10,817	624	6.7		
Total			·	881.4		

## (9) Breakdown of Construction Cost (Cikunir Area) Check dam

	Item	Unit	Quantity	Unit Price (Rp)	Amount (Rpx10 <sup>6</sup> )	Foreign (¥x10 <sup>6</sup> )	Local (Rpx106)
1.	Civil Work						Fig. 2
	(1) Main Work 1-02	m3	8,430	1,954	16.5	3+1 1,3+ 1,1	
	4-01	<sub>m</sub> 3	28,100	45,190	1,269.8		
	Total				1,286.8		

### (10) Breakdown of Construction Cost (Cisaruni Area)

### (10-1) Check dams 1st stage

-021	Item	Unit	Quantity	Unit Price (Rp)	Amount (Rpx10 <sup>6</sup> )	Foreign (¥x106)	Local (Rpx10 <sup>6</sup> )
1.	Civil Work						
	(1) Main Work	i julius					
	1-02	<sub>m</sub> 3	1,380	1,954	2.7	e de la companya de l	
	4-01	<sub>m</sub> 3	4,600	45,190	207.9		
	Total				210.6		

#### (10-2) Check dams 2nd stage

	Item	Unit	Quantity	Unit Price (Rp)	Amount (Rpx10 <sup>6</sup> )	Foreign (¥x10 <sup>6</sup> )	Local (Rpx10 <sup>6</sup> )
1.	Civil Work	4 - 41 - 1					
	(1) Main Work 1-02	m3	12,630	1,954	24.7	(estrue)	
	5-02	m3	42,100	45,190	1,902.5		
	Total				1,927.2		

### (11) Breakdown of Construction Cost (Cikupang Area)

### (11-1) Check dams 1st stage

	Item	Unit	Quantity	Unit Price (Rp)	Amount (Rpx10 <sup>6</sup> )	Foreign (¥x10 <sup>6</sup> )	Local (Rpx10 <sup>6</sup> )
1.	Civil Work						
	(1) Main Work 1-02	s <sub>m</sub>	1,440	1,954	2.8		
	4-01	m <sup>3</sup>	4,800	45,190	216.9		
	Total				219.7		

### (11-2) Check dams 2nd stage

	Item	Unit	Quantity	Unit Price (Rp)	Amount (Rpx10 <sup>6</sup> )	Foreign (¥x10 <sup>6</sup> )	Local (Rpx10 <sup>6</sup> )
1.	Civil Work				in the second second		
	(1) Main Work 1-02	<sub>m</sub> 3	2,130	1,954	4.2		
	4-01	<sub>m</sub> 3	7,100	45,190	320.8		
	Total				325.0		

### (12) Breakdown of Construction Cost (Cimerah Area)

### (12-1) Check dams 1st stage

	Item	Unit	Quantity	Unit Price (Rp)	Amount (Rpx10 <sup>6</sup> )	Foreign (¥x10 <sup>6</sup> )	Local (Rpx10 <sup>6</sup> )
1.	Civil Work						
	(1) Main Work 1-02	<sub>m</sub> 3	2,910	1,954	5.7		
	4-01	<sub>m</sub> 3	9,700	45,190	438.3		
	Total				444.0		····

### (12-2) Check dams 2nd stage

	Item	Unit	Quantity	Unit Price (Rp)	Amount (Rpx10 <sup>6</sup> )	Foreign (¥x10 <sup>6</sup> )	Local (Rpx10 <sup>6</sup> )
1.	Civil Work						
	(1) Main Work 1-02	<sub>m</sub> 3	23,040	1,954	45.0		
	5-02	<sub>m</sub> 3	76,800	45,190	3,470.6	<del></del>	
	Total				3,515.6		

### 5. Breakdown of Construction Cost for Alternative-E

### (1) Breakdown of Construction Cost (Crater Lake Tunnel)

	Item	Unit	Quantity	Unit Price (Rp)	Amount Foreign (Rpx10 <sup>6</sup> ) (Yx10 <sup>6</sup> )	Local
1.	Civil Work	·				
	(1) Main Work					
	1-03	<sub>m</sub> 3	1,069	36,370	38.9	
	1-04	<sub>m</sub> 3	3,672	38,037	139.7	
	1-05	<sub>m</sub> 3	228	53,336	12.2	
	1-06	<sub>m</sub> 3	1,141	80,645	92.0	
	4-02	<sub>m</sub> 3	1,260	138,401	174.4	
	7-01	m	665	2,216,571	1,474.0	
	7-02	m	665	575,460	382.7	
	8-01	m	90	4,366,780	393.0	
	8-02	m	90	890,379	80.1	
	15-01	hour	6,600	4,350	28.7	
	16-01	m	3,120	82,500	257.4	
	Cooling plant	ant			601.3	
	Total				3,674.4	

### (2) Breakdown of Construction Cost (Ciloseh Area)

### (2-1) Dike Improvement

Item	Unit	Quantity	Unit Price (Rp)	Amount (Rpx10 <sup>6</sup> )	Foreign (¥x10 <sup>6</sup> )	Local (Rpx10 <sup>6</sup> )
1. Civil Work						
(1) Excavation						
1-01	m <sup>3</sup>	19,956	1,435	28.6		
5-01	<sub>m</sub> 3	19,956	1,726	34.4		
(2) Embankment						
2-01	<sub>m</sub> 3	19,956	2,003	40.0	-	
3-01	<sub>m</sub> 3	2,646	25,386	67.2		
Total				170.2	<u> </u>	

### (2-2) Check Dams of Cimampang Area

	Item	Unit	Quantity	Unit Price (Rp)	Amount (Rpx10 <sup>6</sup> )	Foreign (¥x10 <sup>6</sup> )	Local (Rpx10 <sup>6</sup> )
1.	Civil Work						
	(1) Main Work 1-02	ε <sub>m</sub>	2,640	1,954	5.2		
	4-01	m <sup>3</sup>	8,800	45,190	397.7		
	Total		:	<u> </u>	402.9		

## (2-3) Plant operation

Item	Unit	Quantity	Unit Price (Rp)	Amount (Rpx10 <sup>6</sup> )	Foreign (¥x10 <sup>5</sup> )	Local (Rpx10 <sup>6</sup> )
Plant operation	cost m <sup>3</sup>	394,000	1,665	656.0		
Total				656.0		

### (2-4) Excavation (2)

•	7	_	1.	-					٠.	
Ł	7	S	t	-5	т.	а	Œ	e	3	

Item	Unit	Quantity	Unit Price (Rp)	Amount (Rpx10 <sup>6</sup> )	Foreign (¥x10 <sup>6</sup> )	Local (Rpx10 <sup>6</sup> )
1. Civil Work		*				
(1) Main Work 1-01	<sub>m</sub> 3	394,000	1,435	565.4		
5-01	m <sup>3</sup>	394,000	1,726	680.0		
Total				1,245.4	<u>.</u>	

Note: Excavation 2;

## (3) Breakdown of Construction Cost (Cikunir Area) Dike Improvement (without Ciponyo I Dalam)

	Item	Unit	Quantity	Unit Price (Rp)	Amount (Rpx10 <sup>6</sup> )	Foreign (¥x10 <sup>6</sup> )	Local (Rpx106)
1.	Civil Work	•		•	·		
	(1) Excavation				• •		
	1-01	<sub>m</sub> 3	125,238	1,435	179.7		
	5-01	<sub>m</sub> 3	125,238	1,726	216.2		
	(2) Embankment		4				
	2-01	m <sup>3</sup>	125,238	2,003	250.9		
, Tv	3-01	m <sup>3</sup>	27,136	25,386	688.9		
	Total				1,335.7		

## (4) Breakdown of Construction Cost (Cikunir Area) Rising Dike (Ciponyo I Dalam)

	Item	Unit	Quantity	Unit Price (Rp)	Amount (Rpx10 <sup>6</sup> )	Foreign Local (¥x10 <sup>6</sup> ) (Rpx10 <sup>6</sup> )
1.	Civil Work					
	(1) Excavation					
	1-01	<sub>m</sub> 3	345,392	1,435	495.6	and the second s
	5-01	m3	345,392	1,726	596.1	
	(2) Embankment			•		
	2-02	<sub>m</sub> 3	345,392	2,675	923.9	tura e
	4-01	. <sub>m</sub> 3	41,263	45,190	1,864.7	
	3-01	m <sup>3</sup>	16,139	25,386	409.7	ere ye.
	Total				4,290.0	

### (5) Breakdown of Construction Cost (Cikunir Area)

### (5-1) Aggregate plant

Item	Unit	Quantity	Unit Price (Rp)	Amount (Rpx10 <sup>6</sup> )	Foreign (¥x10 <sup>6</sup> )	Local (Rpx10 <sup>6</sup> )
. Civil Work						
(1) Main Work	***			·		
1-02	m <sup>3</sup>	0	1,954	0		
4-02	<sub>m</sub> 3	0	138,401	0		
(2) Material						. :
Metal	(t)	0	5,620,000	0		-
(3) Placing	(t)	0	1,264,5000	0		
Total				0		

### (5-2) Plant Operation Cost

1st	stage	

Item	Unit	Quantity	Unit Price (Rp)	Amount (Rpx10 <sup>6</sup> )	Foreign (¥x10 <sup>6</sup> )	Local (Rpx10 <sup>6</sup> )
Plant operation cos	t m <sup>3</sup>	0	1,998	0		
Total				0		

### (5-3) Excavation (2)

1	s	ł.	•	s	ŧ.	ac	зe

	Item	Unit	Quantity	Unit Price (Rp)	Amount (Rpx10 <sup>6</sup> )	Foreign (¥x10 <sup>6</sup> )	Local (Rpx10 <sup>6</sup> )
1.	Civil Work						
	(1) Main Work 1-01	<sub>m</sub> 3	0	1,435	0		
	5-04	<sub>m</sub> 3	0	958	0		
	Total		<del>-</del>		0		

### (5-4) Plant Operation Cost

2nd	stage

2nd stage		4		17,		r e i
Item	Unit	Quantity	Unit Price (Rp)	Amount (Rpx10 <sup>6</sup> )	Foreign (¥x10 <sup>6</sup> )	Local
Plant operation cost	m <sup>3</sup>	0	299.8	3 0		
Total				0		
		····	<del></del>			

### (5-5) Excavation (2)

	Item	Unit	Quantity	Unit Price (Rp)	Amount (Rpx10 <sup>6</sup> )	Foreign (¥x10 <sup>6</sup> )	Local (Rpx106)
ı.	Civil Work						
	(1) Main Work 1-01	$\epsilon_{m}$	· <b>0</b>	1,435	0		
	5-04	<sub>m</sub> 3	0	958	0		
	Total				0	•	· .

### (6) Breakdown of Construction Cost (Cikunir Area)

### (6-1) Excavation (1)

Item	Unit	Quantity	Unit Price (Rp)	Amount (Rpx10 <sup>6</sup> )	Foreign (¥x10 <sup>6</sup> )	Local (Rpx10 <sup>6</sup> )
1. Civil Work						
(1) Main Work	, 'b 1					
1-01	m <sup>3</sup>	1,370,000	1,435	1,966.0		
5-02	<sub>m</sub> 3	1,370,000	624	854.9		·
Total		: 1		2,820.9		

### (6-2) Excavation (3)

1s	t	•	S	tage

	Item	Unit	Quantity	Unit Price (Rp)	Amount (Rpx10 <sup>6</sup> )	Foreign (¥x10 <sup>6</sup> )	Local (Rpx10 <sup>6</sup> )
1.	Civil Work						
; *	(1) Main Work	j.			÷		
	1-01	<sub>m</sub> 3	2,890,000	1,435	4,147.2		
	5-03	3	2,890,000	732	2,115.5		
	Total				6,262.7		

### (6-3) Excavation (3)

2nd	st	გი	٥

	Item	Unit	Quantity	Unit Price (Rp)	Amount (Rpx10 <sup>6</sup> )	Foreign (¥x10 <sup>6</sup> )	(Rpx10 <sup>6</sup> )
1.	Civil Work						
	(1) Main Work 1-01	<sub>m</sub> 3	1,413,000	1,435	2,027.7		
	5-03	$\epsilon_m$	1,413,000	732	1,034.3		
	Total				3,062.0		

## (7) Breakdown of Construction Cost (Cikunir Area) Diversion cannel

	Item	Unit	Quantity	Unit Price (Rp)	Amount (Rpx10 <sup>6</sup> )	Foreign (¥x10 <sup>6</sup> )	Local (Rpx106
1.	Civil Work	·	•		٠.		
	(1) Excavation					*	
	1-01	<sub>m</sub> 3	288,720	1,435	414.3		
	5-01	m <sup>3</sup>	288,720	1,726	498.3		
	(2) Embankment						
	2-01	<i>m</i> 3	288,720	2,003	578.3		
	4-01	m <sup>3</sup>	25,947	45,190	1,172.5		<u> </u>
	Total				2,663.4		

### (8) Breakdown of Construction Cost (Cikunir Area)

### (8-1) Consolidation dams

	Item	Unit	Quantity	Unit Price (Rp)	Amount (Rpx10 <sup>6</sup> )	Foreign (¥x10 <sup>6</sup> )	Local (Rpx10 <sup>6</sup> )
1.	Civil Work						<del>_</del>
	(1) Dike					£1,	
	1-01	m <sup>3</sup>	34,320	1,435	49.2	A	
	2-01	$\epsilon_m$	34,320	2,003	68.7		
	4-01		6,990	45,190	315.9		
	5-02	m3	34,320	624	21.4		
	(2) Consolidat:	ion dams					
	1-02	<sub>m</sub> 3	1,560	1,954	3.0	6276 7	
	4-01	<sub>m</sub> 3	5,200	45,190	235.0		
	Total				693.2		

#### (8-2) Revetment works

	Item	Unit	Quantity	Unit Price (Rp)	Amount (Rpx10 <sup>6</sup> )	Foreign (¥x10 <sup>6</sup> )	Local (Rpx10 <sup>6</sup> )	
1.	Civil Work							
	(1) Main Work							
	1-01	. <sub>m</sub> 3	10,817	1,435	15.5		i i	
	2-01	m3	6,490	2,003	13.0	•		
	4-01	<sub>m</sub> 3	9,615	45,190	434.5			
	4-02	<sub>m</sub> 3	2,975	138,401	411.7		•	
	5-02	m3	10,817	624	6.7			
	Total				881.4			

### (9) Breakdown of Construction Cost (Cikunir Area)

### Check dam

:	Item	Unit	Quantity	Unit Price (Rp)		Foreign (¥x10 <sup>6</sup> )	Local (Rpx10 <sup>6</sup> )
1.	Civil Work						
	(1) Main Work 1-02	m3	8,430	1,954	16.5		
	4-01	<sub>m</sub> 3	28,100	45,190	1,269.8		
	Total	· ·	4 1		1,286.8		

### (10) Breakdown of Construction Cost (Cisaruni Area)

### (10-1) Check dams 1st stage

	Item	Unit	Quantity	Unit Price (Rp)	Amount (Rpx10 <sup>6</sup> )	Foreign (¥x10 <sup>6</sup> )	Local (Rpx10 <sup>6</sup> )
1.	Civil Work						
	(1) Main Work 1-02	<sub>m</sub> 3	1,380	1,954	2.7		
	4-01	<sub>m</sub> 3	4,600	45,190	207.9		
	Total				210.6		

### (10-2) Check dams 2nd stage

	Item	Unit	Quantity	Unit Price (Rp)	Amount (Rpx10 <sup>6</sup> )	(¥x10 <sup>6</sup> )	(Rpx10 <sup>6</sup> )
1.	Civil Work						
	(1) Main Work 1-02	$\epsilon_{ m m}$	12,630	1,954	24.7		
	5-02	m <sup>3</sup>	42,100	45,190	1,902.5		
	Total				1,927.2	_,	

Unit Price Amount

### (11) Breakdown of Construction Cost (Cikupang Area)

### (11-1) Check dams 1st stage

	Item	Unit	Quantity	Unit Price (Rp)	Amount (Rpx10 <sup>6</sup> )	Foreign (¥x10 <sup>6</sup> )	Local (Rpx106
1.	Civil Work				•	it solitor	
	(1) Main Work 1-02	<sub>m</sub> 3	1,440	1,954	2.8	10 10 10 10 10 10 10 10 10 10 10 10 10 1	-
	4-01	m <sup>3</sup>	4,800	45,190	216.9		
	Total				219.7		

#### (11-2) Check dams 2nd stage

Item	Unit	Quantity	Unit Price (Rp)	Amount (Rpx10 <sup>6</sup> )	
1. Civil Work					
(1) Main Work 1-02	<sub>m</sub> 3	2,130	1,954	4.2	
4-01	m3	7,100	45,190	320.8	
Total				325.0	

### (12) Breakdown of Construction Cost (Cimerah Area)

### (12-1) Check dams 1st stage

	Item	Unit	Quantity	Unit Price (Rp)	Amount (Rpx10 <sup>6</sup> )	Foreign Local (¥x10 <sup>6</sup> ) (Rpx10 <sup>6</sup> )
1.	Civil Work	•	10 T			
	(1) Made to Manda	•				range kalèng di kabupatèn di salah Kabupatèn
	(1) Main Work 1-02	$\epsilon_{m}$	2,910	1,954	5.7	$(0, x) + \mathcal{L}(x)^{1/4} + \frac{1}{2} \left( \frac{1}{2} \right)^{1/4} + \frac{1}{2} \left$
	4-01	$r_{m}$ 3	9,700	45,190	438.3	
	Total				444.0	

#### (12-2) Check dams 2nd stage

	Item	Unit	Quantity	Unit Price (Rp)	Amount (Rpx10 <sup>6</sup> )	Foreign (¥x10 <sup>6</sup> )	Local (Rpx106)
1.	Civil Work	•					
1	(1) Main Work 1-02	<sub>m</sub> 3	23,040	1 054	AE O		
	5-02	m3	76,800	1,954 45,190	45.0 3,470.6		
	Total		·		3,515.6		

Annex-6

Rp)		83.5	06.6	97.0	20.6	52.4	6.05	92.8	774.2	\$6.4	6.8	
(* 10 <sup>6</sup>	Total	42,083	39,806	37,697.	36,020	38,152	3,620.	2,992.	77	5,526	5,378	
	10th	3,390.7	2,988.5	1,801.0	1,198.0	886.5	ŀ	536.9	226.3	7.616	1	
	9th	3,390.7	2,988.8	1,801.3	1,197.8	886.7	ŀ	537.0	226.2	979.4	1	
	8th	3,390.6	2,989.0	1,801.3	1,197.8	886.7	į	536.8	ł	979.3		
	7th	3,390.6	2,989.0	1,801.3	1,197.8	886.7	1	536.8	<b>I</b>	979.3	1	
	<b>6</b> ₹ħ	4,709.0	4,147.8	2,514.9	1,670.4	886.7	1	536.8	l	979.3	ł	
	5th	4,507.7	2,723.2	4,082.2	3,687.0	5,363.9	2,845.2	1	1	278.1	1,228.3	
	4th	4,520.4	4,334.0	5,398.9	4,682.5	5,364.7	252.4	•		278.0	1,228.1	
	3rđ	6,286.3	6,786.1	7,815.6	9,117.6	10,212.1	1	<b>l</b>	275.2	1	1,228.1	
	2nd	6,430.7	7,803.1	8,335.1	9,766.9	10,212.4		263.9	1	1	1,228.1	
	1st	2,066.9	2,057.1	2,345.5	2,304.8	2,566.0	523.3	44.6	46.5	73.3	466.3	
		A	Ø	cikunir area C	A	<b>(2)</b>	Ciloseh area	Cisaruni area	Cikupang area	Cimerah area	Crater lake	
		ı	į	B	Α	6		ָט	Ü	۱۵	٥	

### (2) 1st stage (Cikunir Area) (Area II) \*\* A \*\*

							(x 10 <sup>6</sup> Rp)
		lst	2nd	3rd	4th	5th	Grand Total
1. Civil w	orks						
	uipment perating cost		. <del>-</del> . *	802.5	802.5	802.6	2,407,6
1.2 Pl	ant		2,073.8	· · · · · · · · · · · · · · · · · · ·		***	2,073.8
1.3 Em	bankment		658.8	658.8	658.8	658.9	2,635.3
1.4 Ex	cavation 1		1,410.5	1,410.4	-	<u> </u>	2,820.9
1.5 Ex	cavation 2	· ·	·	1,153.4	1,153.4	1,153.5	3,460.3
1.6 Ch	eck dam (chec)	c) -	321.6	321.6	321.6	321.5	1,286.3
1.7 Re	vetment works	-	393.7	393.7	393.7	393.5	1,574.6
1.8 Pr	eparatory		340.0	331.8	233.1	233.1	1,138.0
Su	o Total	_	5,198.4	5,072.2	3,563.1	3,563.1	17,396.8
2. Land acc	quisition	: -	108.1	108.9	78.4	65.8	361.2
3. Governme	-		259.9	253.6	178.2	178.1	869.8
Sub Tota	1	_	5,566.4	5,434.7	3,819.7	3,807.0	18,627.8
4. Engineer	•	1,879.0	313.1	313.1	313.1	313.1	3,131.4
5. Continge		187.9	551.2	538.5	387.6	387.6	2,052.8
Total		2,066.9	6,430.7	6,286.3	4,520.4	4,507.7	23,812.0

Note: Excavation 1 stocking sediment

: Excavation 2 for aggregate

: Maintenance 65.0  $\times$  10  $^6$  Rp/year

## (3) 2nd stage (Cikunir Area) (Area II) \*\* A \*\*

	· <u>-</u>				(:	( 10 <sup>6</sup> Rp)
	6th	7th	8th	9th	10th	Grand Total
1. Civil works	, i					
1.1 Excavation 2	1,467.9	1,467.9	1,467.9	1,467.8	1,467.8	7,339.3
1.2 Plant	1,021.3	1,021.3	1,021.3	1,021.3	1,021.4	5,106.6
1.3 Preparatory	174.2	174.2	174.2	174.3	174.3	871.2
Sub Total	2,663.4	2,663.4	2,663.4	2,663.4	2,663.5	13,317.1
2. Land acquisition	64.0	64.0	64.0	64.0	64.0	320.0
3. Government administration	133.1	133.2	133.2	133.2	133.2	665.9
Sub Total	2,860.5	2,860.6	2,860.6	2,860.6	2,860.7	14,303.0
4. Engineering services	1,438.3	239.7	239.7	239.7	239.7	2,397.1
5. Contingency	410.2	290.3	290.3	290.3	290.3	1,571.4
Total	4,709.0	3,390.6	3,390.6	3,390.6	3,390.7	18,271.5

Note: Excavation volume  $3.067 \times 10^3 \text{ m}^3$ 

<sup>:</sup> Excavation 2: for aggregate

### (2) 1st stage (Cikunir Area) (Area II) \*\* B \*\*

				:	•	× 10 <sup>6</sup> Rp)
	1st	2nd	3rd	4th	5th	Grand Total
1. Civil works						
1.1 Dike improvement	·	333.9	333.9	333.9	334.0	1,335,7
1.2 Rising Dike		536.3	536.3	536.2		1,608.8
1.3 Aggregate plant		1,659.0			i Lagrador (1 <del>2</del> 70)	1,659.0
1.4 Operation cost	-	* ( <u>*</u>	557.0	557.0	557.0	1,671.0
1.5 Excavation 1	_	1,410.5	1,410.4	. · · -	-	2,820.9
1.6 Excavation 2		762.6	762.6	762.5	11 1 1 2 <u>-</u> 1	2,287.7
1.7 Excavation 3	<del></del>	274.9	274.9	274.9	275.0	824.8
1.8 Dimension cannel	_	557.3	557.4	***		1,114.7
1.9 Check dam (check)	<b>-</b>	321.6	321.6	321.6	321.5	1,286.3
1.10 Revetment	·	393.7	393.7	393.7	393.5	1,574.6
1.11 Preparatory		418.2	360.3	222.6	131.7	1,132.8
Sub Total	-	6,393.1	5,508.1	3,402.4	2,012.7	17,316.3
2. Land acquisition	<b>6.3</b>	108.1	108.9	78.4	65.8	361.2
3. Government administration	-	319.7	275.4	170.1	100.6	865.8
Sub Total	_	6,820.9	5,892.4	3,650.9	2,179.1	18,543.3
4. Engineering						·.
•	,870.1	311.7	311.7	311.7	311.7	3,116.9
5. Contingency	187.0	670.5	582.0	371.4	232.4	2,043.3
Total 2	,057.1	7,803.1	6,786.1	4,334.0	2,723.2	23,703.5

Note: Excavation 1: stocking sediment Excavation 2: for aggregate

## (3) 2nd stage (Cikunir Area) (Area II) \*\* B \*\*

						(:	х 10 <sup>6</sup> Rp)
		6th	7th	8th	9th	10th	Grand Total
1.	Civil works						
	1.1 Operation cost	7.86.6	786.6	786.6	786.6	786.6	3,933.0
	1.2 Excavation 2	1,076.9	1,076.9	1,076.9	1,076.9	1,076.7	5,384.3
	1.3 Excavation 3	325.1	325.1	325,1	325.0	325.0	1,625.3
	1.4 Preparatory	153.2	153.2	153.2	153.2	153.2	766.0
	Sub Total	2,341.8	2,341.8	2,341.8	2,341.7	2,341.5	11,708.6
2.	Land acquisition	64.0	64.0	64.0	64.0	64.0	320.0
3.	Government administration	117.1	117.1	117.1	117.1	117.0	585.4
	Sub Total	2,522.9	2,522.9	2,522.9	2,522.8	2,522.5	12,614.0
	Engineering					200	
7.	services	1,264.3	210.8	210.8	210.8	210.8	2,107.5
5.	Contingency	360.6	255.3	255.3	255.2	255.2	1,381.6
	Total	4,147.8	2,989.0	2,989.0	2,988.8	2,988.5	16,103.1

Note: Excavation 2: for aggregate

: Excavation 3:

(2) 1st stage (Cikunir Area) (Area II) \*\* C \*\*

				±		(x 10 <sup>6</sup> Rp)
	lst	2nd	3rd	4th	5th	Grand Total
1. Civil works						
1.1 Dike improvement	. •	333.9	333.9	333.9	334.0	1,335.7
1.2 Rasing dike		648.5	648.5	648.6		1,945.6
1.3 Aggregate plant		1,214.9		<del>-</del>		1,214.9
1.4 Operation cost	-	<u>.</u>	343.8	343.8	343.8	1,031.4
1.5 Excavation 1		1,410.5	1,410.4	er en	<del>-</del> ,	2,820.9
1.6 Excavation 2	_	***	449.1	449.1	449.1	1,347.3
1.7 Excavation 3		1,158.0	1,158.0	1,158.0	1,157.8	4,631.8
1.8 Diversion cannel	. · •	421.3	421.3	421.2		1,263.8
1.9 Check dam (check)	٠	321.6	321.6	321.6	321.5	1,286.3
1.10 Revetment	-	393.7	393.7	393.7	393.5	1,574.6
1.11 Preparatory	-	413.2	383.6	284.9	210.0	1,291,7
Sub Total	4-4	6,315.6	5,863.9	4,354.8	3,209.7	19,744.0
2. Land acquisition	- [	681.2	681.2		und .	1,362.4
3. Government		•		÷		•
administration	<del>-</del>	315.8	293.2	217.7	160.5	987.2
Sub Total	-	7,312.6	6,838.3	4,572.5	3,370.2	22,093.6
4. Engineering						
services 2	,132.3	355.4	355.4	355.4	355.4	3,553.9
5. Contingency	213.2	667.1	621.9	471.0	356.6	2,329.8
Total 2	,345.5	8,335.1	7,815.6	5,398.9	4,082.2	27,971.3

Note: Excavation 1 stocking sediment

: Excavation 2 for aggregate

: Excavation 3

(3) 2nd stage (Cikunir Area) (Area II) \*\* C \*\*

(x 10<sup>6</sup> Rp) Grand 6th 7th 8th 9th 10th Total 1. Civil works 1.1 Operation cost 548.4 548.4 2,922.0 584.4 584.4 584.4 1.2 Excavation 2 763.2 3,816.8 763.4 763.4 763.4 763.4 94.3 471.7 94.3 94.3 94.4 94.4 1.3 Preparatory 1,442.1 1,442.2 1,442.2 1,441.9 7,210.5 1,442.1 Sub Total . 0 2. Land acquisition 3. Government 72.1 72.1 360.5 72.1 72.1 administration 72.1 1,514.0 7,571.0 1,514.3 1,514.2 1,514.2 1,514.3 Sub Total 4. Engineering 1,297.9 129.8 129.8 129.8 778.7 129.8 services 850.8 157.2 157.2 157.2 222.0 157.2 5. Contingency 9,719.7 1,801.3 1,801.0 2,514.9 1,801.2 1,801.3 Total

Note: Excavation 2 for aggregate.

(2) 1st stage (Cikunir Area) (Area II) \*\* D \*\*

						(	ж 10 <sup>6</sup> Rp)
		1st	2nd	3rd	4th	5th	Grand Total
1. Civi	l works						
1,1	Dike improvement	***	333.9	333.9	333.9	334.0	1,335.7
1.2	Rising dike	<u></u>	808.9	808.9	808.9		2,426.7
1.3	Plant	•	912.0	**		<u></u>	912.0
1.4	Excavation 1		1,410.5	1,410.4		***	2,820.9
1.5	Excavation 3	4	1,539.0	1,539.0	1,539.0	1,539.0	6,156.0
1.6	Diversion cannel		809.9	809.9		på	1,619.8
1.7	Check dam (check)	-	321.6	321.6	321.6	321.5	1,286.3
1.8	Revetment	_	393.7	393.7	393.7	393.5	1,574.6
1.9	Preparatory	<b>-</b> '	349.3	429.1	273.7	217.1	1,269.2
	Sub Total	**	6,878.8	6,046.5	3,670.8	2,805.8	19,401.2
2. Land	acquisition	-	1,703.0	1,703.0		-	3,406.0
3. Gove admi	rnment nistration	· ••	267.0	328.0	209.2	165.9	970.1
Sub '	Total		8,848.8	8,077.5	3,880.0	2,971.0	23,777.3
4. Engi	<u>-</u>	005 2	349.2	349.2	349.2	349.3	3,492.2
		,095.3 209.5	568.9	690.9	453.3	366.7	2,289.3
5. Cont	ingency	409.5	300.9	090.9	403+3		
Tota	1 2	,304.8	9,766.9	9,117.6	4,682.5	3,687.0	29,558.8

Note: Excavation 1 stocking sediment

: Excavation 2 for aggregate

: Excavation 3

### (3) 2nd stage (Cikunir Area) (Area II) \*\* D \*\*

	·	and the state of t			()	(10 <sup>6</sup> Rp)
	6th	7th	8th	9th	10th	Grand Total
1. Civil works						
1.1 Operation cost	251.7	251.7	251.7	251.7	251.9	1,258.7
1.2 Excavation 2	301.5	301.5	301.5	301.5	301.6	1,507.6
1.3 Excavation 3	339.4	339.4	339.4	339.4	339.2	1,696.8
1.4 Preparatory	62.5	62.5	62.5	62.5	62.5	312.6
Sub Total	955.1	955.1	955.1	955.1	955.2	4,775.6
2. Land acquisition	· <u>-</u>	:	-		<b>.</b>	0
3. Government administration	47.8	47.8	47.8	47.8	47.8	239.0
Sub Total	1.002.9	1.002.9	1,002.9	1,002.9	1,003.0	5,014.6
4. Engineering services	515.6	86.0	86.0	86.0	86.0	859.6
5. Contingency	151.9	108.9	108.9	108.9	109.0	587.6
Total	1,670.4	1,197.8	1,197.8	1,197.8	1,198.0	6,461.8

### (2) 1st stage (Cikunir Area) (Area II) \*\* E \*\*

					· (	x 10 <sup>6</sup> Rp)
	1st	2nd	3rd	4th	5th	Grand Total
1. Civil works						
1.1 Dike improvemen	at -	333.9	333.9	333.9	334.0	1,335.7
1.2 Rising dike		1,014.5	1,014.5	1,014.5	1,014.4	4,057.9
1.3 Excavation 1	<u>.</u>	1,410.5	1,410.4	<u>.</u>		2,820.9
1.4 Excavation 3	_	1,567.3	1,567,3	1,567.3	1,567,2	6,269.1
1.5 Diversion canno	e1 -	1,420.8	1,420.7		_	2,841.5
1.6 Check dam (Chec	ck) -	321.6	321.6	321.6	321.5	1,286.3
1.7 Revetment	· .	393.7	393.7	393.7	393.5	1,574.6
1.8 Preparatory	<b>A</b> ve.	452.4	452.3	254.2	254.1	1,413.0
Sub Total	-	6,914.7	6,914.4	3,885.2	3,884.7	21,599.0
2. Land acquisition	_	1,634.8	1,634.8	408.7	408.7	4,087.0
3. Government administration	<b></b>	345.7	345.7	194.3	194.2	1,079.9
Sub Total	-	8,895.2	8,894.9	4,488.2	4,487.6	26,765.9
4. Engineering						
services	2,332.7	388.8	388.8	388.8	388.7	3,887.8
5. Contingency	233.3	928.4	928.4	487.7	487.6	3,065.4
Total	2,566.0	10,212.4	10,212.1	5,364.7	5,363.9	33,719.1

Note: Excavation 1 stocking sediment

: Excavation 2 for aggregate

#### (3) 2nd stage (Cikunir Area) (Area II) \*\* E \*\*

 $(x 10^6 Rp)$ Grand 7th 8th 9th 10th 6th Total 1. Civil works 1.1 Maintenance 612.4 612.4 612.4 612.4 612.4 3,062.0 42.9 1.2 Preparatory 42.9 42.9 42.9 42.9 214.5 Sub Total 655.3 655.3 655.3 655.3 3,276.5 655.3 2. Land acquisition 0 3. Government administration 164.0 32.8 32.8 32.8 32.8 32.8 688.1 688.1 688.1 688.1 688.1 3,440.5 Sub Total 4. Engineering 118.0 118.0 118.0 118.0 117.8 589.8 services 403.0 80.6 80.6 80.6 80.6 5. Contingency 80.6 886.7 886.7 886.7 886.7 886.5 4,433.3 Total

Note: Excavation volume  $3.067 \times 10^3 \text{ m}^3$ : Aggregate plant  $3.067 \times 10^3 \text{ m}^3$ 

### (1) 1st stage (Ciloseh Area) (Area I)

						()	10 <sup>6</sup> Rp)
		1st	2nd	3rd	4th	5th	Grand Total
1.	Civil works				•		
1.1	Embankment	***	<b>-</b>		_	169.2	169.2
1.2	Excavation 1	<del></del> ,			<del>-</del>	1,245.4	1,245.4
1.3	Check dams		_		201.5	201.5	403.0
1.4	Operation plant	<u> </u>	_			656.0	656.0
1.5	Preparatory			<del>.</del>	14.1	159.1	173.2
2.	Land acquisition	ce4	-		4.4	49.3	53.7
3.	Government		•				
	administration	-	-	<b></b>	10.8	121.6	132,4
	Sub Total		444		230.8	2,602.1	2,832,9
4.	Engineering						
** •	services	475.7	. <del>-</del>	_		. 🕶 🕌	475.7
5.	Contingency	47.6	<u>.</u>	<u>-</u>	21.6	243.1	312.3
	Total	523.3			252.4	2,845.2	3,620.9

Note: Excavation volume  $394 \times 10^3 \text{ m}^3$ 

: Aggregate plant heire cost

: Maintenance 28.6 x 10 Rp/year

### (2) 1st stage (Cisaruni Area) (Area III)

	en e					(x	10 <sup>6</sup> Rp)
		1st	2nd	3rd	4th	5th	Grand Total
1.	Civil works	•	210.6			** :	210 6
1.1	Check dams Preparatory		14.7	enter			210.6 14.7
2.	Land acquisition	<b>***</b> .	4.8	***	*~	-	4.8
3.	Government administration	·- ·	11.3		<u></u>		11.3
	Sub Total		241.4	-	344	<b>-</b>	241.4
4.	Engineering services	40.5	-	<del>,,,</del>	***	<b>-</b>	40.5
5.	Contingency	4.1	22.5	<b></b>	-	**	26.6
	Total	44.6	263.9	<del>-</del>	-	<del>.</del>	308.5
	~ <del></del>						

Note: Maintenance 10.5 x 106 Rp/year

# (3) 2nd stage (Cisaruni Area) (Area II)

					·		k 10 <sup>6</sup> Rp)
		6th	7th	8th	9th	10th	Grand Total
1.	Civil works						
1.1	Check dams	385.4	385.4	385.4	385.5	385.5	1,927.2
1.2	Preparatory	27.0	27.0	27.0	26.9	26.9	134.9
2.	Land acquisition	8.2	8.2	8.2	8.3	8.3	41.2
3.	Government						
•	administration	20.6	20.6	20.6	20,6	20.6	103.0
	Sub Total	441.2	441.2	441.2	441.4	441.3	2,206.3
4.	Engineering				:		
	services	49.4	49.4	49.4	49.4	49.4	247.0
5.	Contingency	46.2	46.2	46.2	46.2	46.2	231.0
	Total	536.8	536.8	536.8	537.0	536.9	2,684.3

# (4) 1st stage (Cikupang Area) (Area IV)

y Mad	1 V		٠	4		(:	( 10 <sup>6</sup> Rp)
9 (.4F) 6 (151		1st	2nd	3rd	4th	5th	Grand Total
1.	Civil works			810 5			0.10 5
1.1	Check dams Preparatory			219.7 15.4	- -	EA-	219.7 15.4
2.	Land acquisition	The Control of the Co		4.8	<b>-</b> -,		4.8
3.	Government administration	· <u></u>		11.8	<b></b>	<del>**</del>	11.8
2.3	Sub Total			251.7			251.7
4.	Engineering services	42.3	- Law	- ·	-		42.3
5.	Contingency	4.2		23.5	_	_	27.7
	Total	44.5	_	275.2	_	-	321.7

Note: Maintenance  $10.5 \times 10^6$  Rp/year

# (5) 2nd stage (Cisaruni Area) (Area IV)

						(3	10 <sup>6</sup> Rp)
		6th	7th	8th	9th	10th	Grand Total
1.	Civil works				, v		
1.1	Check dams	-		••	162.5	162.5	325.0
1.2	Preparatory	<b></b>			11.4	11.4	22.8
2.	Land acquisition	-	· <b>-</b>	٠.	3.3	3,4	6.7
3.	Government				٠.	e distribution of the	
	administration	<u>ئ</u> ــــــــــــــــــــــــــــــــــــ			8.7	8.7	17.4
	Sub Total			-	185.9	186.0	371.9
4.	Engineering						
	services	-	<del>-</del>		20.8	20.8	41.6
5.	Contingency	<b>-</b>		<b>_</b>	19.5	19.5	39.0
	Total				226.2	226.3	452.5

# (6) 1st stage (Cimerah Area) (Area V)

						(:	< 10 <sup>6</sup> Rp)
		1st	2nd	3rd	4th	5th	Grand Total
1.	Civil works						
1.1	Check dams	-	<b>↔</b>	<b>M</b>	222.0	222.0	444.0
1.2	Preparatory				15.5	15.6	31.1
2.	Land acquisition	€-T-T	<del>-</del>	<b></b>	4.8	4.8	9.6
3.	Government administration	see	, nove	<u>-</u>	11.9	11.9	23.
	Sub Total	w.w	45ta	-	254.2	254.3	508.
4.	Engineering						
4.	services	66.6	<b>-</b>			-	66.
5.	Contingency	6.7	-	· <u>-</u>	23.8	23.8	54.
	Total	73.3		_	278.0	278.1	629.

Note: Maintenance 11.1 x 106 Rp/year

# (7) 2nd stage (Cisaruni Area) (Area V)

٠.				· · · · · · · · · · · · · · · · · · ·		(3	10 <sup>6</sup> Rp)
		6th	7th	8th	9th	10th	Grand Total
1.	Civil works						
1.1	check dams	703.1	703.1	703.1	703.1	703,2	3,515,6
1.2	Preparatory	49.2	49.2	49.2	49.2	49.3	246.1
2.	Land acquisition	15.1	15.1	15.1	15.2	15.2	75.7
3.	Government administration	37.6	37.6	37.6	37.6	37.6	188.0
	Sub Total	805.0	805.0	805.0	805.1	805.3	4,025.4
	Duringanian		**************************************				
4.	Engineering services	90.1	90.1	90.1	90.1	90.1	450.5
5.	Contingency	84.2	84.2	84.2	84.2	84.3	421.1
	Total	979.3	979.3	979.3	979.4	979.7	4,897.0

# (8) 1st stage (Cimerah Area) (Area VI)

(x 10<sup>6</sup> Rp) Grand 2nd 4th Total 1st 3rd 5th Civil works 1. Check dams 918.6 918.6 918.6 3,674.4 918.6 1.1 64.3 64.3 64.3 257,2 64.3 Preparatory 1.2 20.2 80.5 Land acquisition 20.1 20.1 20.1 2. Government 3. administration 49.1 49.1 49.1 49.1 196.4 1.052.1 4,208.5 1,052.1 1,052.1 1,052.2 Sub Total Engineering 4. 70.7 70.7 706.7 423.9 70.7 70.7 services 42.4 105.3 105.3 105.3 105.4 463.7 5 Contingency 466.3 1,228.1 1,228.3 5,378.9 1,228.1 1,228.1 Total

Note: Maintenance 45.90 x 106 Rp/year

# THE REPUBLIC OF INDONESIA THE FEASIBILITY STUDY OF THE DISASTER PREVENTION PROJECT IN THE SOUTHEASTERN SLOPE OF MT. GALUNGGUNG

# SUPPORTING REPORT (V)

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PROJECT EVALUATION

DECEMBER 1988

JAPAN INTERNATIONAL COOPERATION AGENCY

# Supporting Report (V) (Project Evaluation)

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## 1. Introduction

The Disaster Prevention Project in the southeastern slope of Mt. Galunggung has been planned for the purpose of the sediment control and the countermeasure of the crater lake on five (5) rivers in S. Ciloseh, S. Cikupang and S. Cimerah.

In this supporting report, the project was evaluated economically on the basis of its economic cost and the annual economic benefit with project.

The economic value of the project was evaluated by estimating the internal economic rate of return (IRR) and the order of priority of the project was assessed not only by IRR but also from the viewpoint of the new present value (NPV).

The annual economic benefit of the project was made equal to the annual mean damage mitigation amount expected with project. The annual mean damage mitigation amount is the difference between the annual mean damage amount without project and the one with project.

The expected effects of the annual mean damage mitigation amount with project are valued by three items of the flooding in the possible disaster area, the mitigation of the direct and indirect damage caused by the sedimentation and the water conservation in the water supply district of the irrigation channel Cikunten I (referred to below as the "Irrigation Area").

The damage amount was estimated in consideration of the possible disaster area's flooding area, inundation depth and deposited sediment thickness which were consequently derived from the flooding analysis on the sediment runoff characteristics and the flood runoff characteristics of each catchment.

The direct damage was made to be the damage amount of general assets, agricultural products and public facilities. The indirect damage was to be the economic aid for the people in the damage area. The damage amount at the irrigation area was to be the decreased amount of the rice crop.

The estimation of the economic cost is described in the Supporting Report IV.

### 2. FLOODING ANALYSIS

### 2.1 Method of Flooding Analysis

The obtained effects by executing the disaster prevention projects are the decrease of the damage by flooding and the damage by sediment flooding. The damage by flooding and the sediment runoff is estimated based on the flooding analysis. Namely, the flooding area, the inundation depth and the deposited sediment thickness presumed in the flooding analysis is used for estimating the economic benefit with project.

Therefore, the flooding analysis will be practiced in two (2) cases, one is with project and the other is without project.

The sediment volume and the flood discharge being studied in this flooding analysis are the design excess sediment volume and the probable peak discharge of each river in the disaster prevention plan examined in this study. However, the sediment volume and the flood discharge studied in the flooding analysis of the countermeasure of crater lake will be estimated in this flooding analysis.

In this study, the damage without project are the damage by flood and the damage by sediment deposit which occur by the excess sediment volume depositing in the river channels and the flooding district.

On the other hand, the damage with project is only the damage by flooding in principle. But, in S. Ciloseh Area, the excavated sediment volume during 10 years of the project executing period is 20% of the design excess sediment volume. So, in S. Ciloseh, the damage by the excess sediment volume over the design excavated sediment volume with project will be estimated.

The flow chart of the flooding analysis is as shown in Fig. - 2.1.

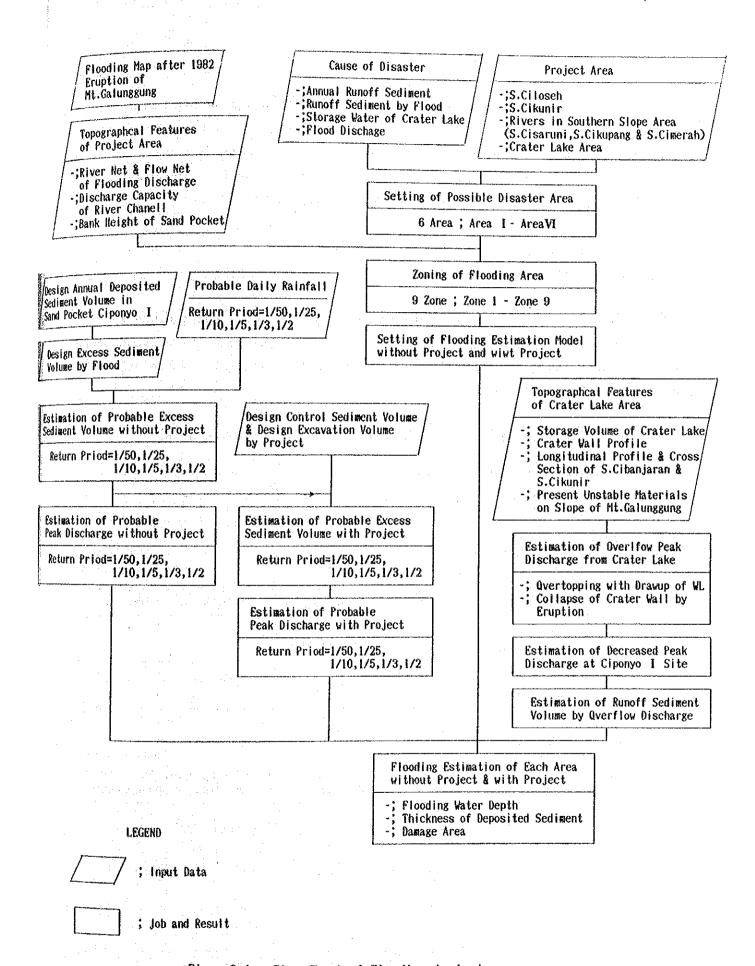


Fig. - 2.1 Flow Chart of Flooding Analysis