Table V.19 INFRASTRUCTURE AND PUBLIC FACILITIES OF STUDY AREA IN KAMPAR - INDRAGIRI RIVER BASIN, 1993.

Administrative area of study	Infrastructure			Public facilities			
	Artery road	Collector road	Local road	SD	SMP	SLTA	RSU PKS
	(km)	(km)	(km)	(units)	(units)	(units)	(units)
A. Kampar basin							
a. Weir and canal Rantanu Berangin							
Kec. Bangkinang	40	30	60	99	17	13	11
Kec. Kampar	40	20	50	89	19	2	4
Kec. Siak Hulu	20	35	70	63	4	1	2
Subtotal (a)	100	85	180	251	40	16	17
b. Kampar Kiri 1 Dam							
Kec. Kampar Kiri	60	15	75	83	8	2	16
c. Kampar Kiri 2 Dam							
Kec. Singingi	40	5	60	29	2	-	2
Total (a + b + c)	200	105	315	363	50	18	35
B. Indragiri basin							
a. Sinamar Dam							
Kec. Pyk. Utara	10	10	15	34	7	6	6
Kec. Pyk. Timur	20	15	25	21	5	3	6
Kec. Harau	15	20	50	43	3	1	9
Kec. Luhak	20	25	60	83	7	3	15
Kec. Lintau-Buo	25	15	40	55	4	2	6
Subtotal (a)	90	85	190	236	26	15	42
b. Sukam Dam							
Kec. Sijunjung	35	20	45	52	5	4	7
Kec. Tjg. Gadang	20	15	50	73	10	3	15
Subotal (b)	55	35	95	125	15	7	22
c. Kuantan Dam							
Kec. Tjg. Gadang	20	15	50	73	10	3	15
Kec. Ktn. Mudik	60	10	30	45	4	1	14
Subtotal (c)	80	25	80	118	14	4	29
d. Weir and Canal, Lbk.Jambi							
Kec. Ktn. Mudik	60	10	30	45	4	1	14
Kec. Ktn. Tengah	10	25	35	59	13	5	20
Kec. Ktn. Hilir		75	45	50	5	1	6
Kec. Cirenti		15	20	26	2	2	8
Kec. Peranap		20	15	25	3	1	6
Kec. Pasir Penyu	45	30	60	64	9	4	12
Subtotal (d)	115	175	205	269	36	14	66
Total (a+b+d)	260	305	490	630	77	36	130

Source: The monography of each Kecamatan, 1993

Note)

SD = elementary school, SMP = junior high school

SMA = senior high school

RSU/ PKS = hospital/ reiginal clinic

Table V.20 NUMBER OF HISTORICAL ASSETS AND CULTURAL PROPERTIES AT ADMINISTRATIVE REGENCIES IN THE STUDY AREAS, 1994.

Item / Administrative district	Old mosque	Old grave	Tradit. construc.	Seni Rebana	Balimau	Martial	Recreation
A. KAMPAR river basin	2	10	2	8	6	2	13
a. Rantau Berangin Weir							
1. Kec. Bangkinang	-	-	-	1	1	-	2
2. Kec. Kampar	1	1	-	1	1	-	1
3. Kec. Siak Hulu	-	3	-	1	-	-	2
sum of a	1	4	-	3	2	-	5
b. Kampar Kiri 1 dam							
Kec. Kampar Kiri	-	1	1	1	1	1	2
c. Dam Kampar Kiri 2							
Kec. Singingi	-	1	1	1	1	1	1
B. INDRAGIRI river basin	0	8	24	26	12	12	54
a. Sinamar dam							
1. Kec. Pyk. Utara	-	-	1	1	-	-	1
2. Kec. Pyk. Timur	-	-	1	1	-	-	2
3. Kec. Harau	-	1	1	1	-	1	3
4. Kec. Luhak	-	1	1	1	-	1	4
5. Kec. Lintau-Buo	-	-	1	1	-	1	2
sum of a	-	2	5	5	-	3	12
b. Sukam dam							
1. Kec. Sijunjung	-	-	1	1	-	1	3
2. Kec. Tjg. Gadang	-	-	1	1	-	1	2
sum of b	-	-	2	2	-	2	5
c. Kuantan dam							
1. Kec. Tjg. Gadang	-	-	1	1	-	1	2
2. Kec. Ktn. Mudik	-	-	1	1	1	-	1
sum of c	-	-	2	2	1	1	3
d. Lubuk Jambi Weir							
1. Kec. Ktn. Mudik	-	1	1	1	1	-	1
2. Kec. Ktn. Tengah	-	1	1	1	1	-	2
3. Kec. Ktn. Hilir	-	-	1	1	1	-	1
4. Kec. Cirenti	-	-	-	-	1	-	1
5. Kec. Peranap	-	-	-	-	1	-	-
6. Kec. Pasir Penyu	-	-	-	1	-	-	2
sum of d	-	2	3	4	5	-	7

Data source : Key informations at each district in, 1994

Table V.21 WATER QUALITY OF INDRAGIRI RIVER AT LUBUKJAMBI,
PERANAP, RENGAT AND KUALA CINAKU.

Parameter	Unit	
Temperature	oC	17.87 - 31.2
Colour	col.unit	range from clear muddy
Total Dissolved Solid (TDS)	mg/l	60 - 152
Electrical conductivity	mS/cm	0.37 - 0.55
pH	-	5.93 - 7.16
Dissolved Oxygen (DO)	ppm	4.30 - 8.32
Chemical Oxygen Demand (COD)	ppm	10.20 - 48.20
Biological Oxygen Demand (BOD)	ppm	31.20 - 42.20
Oil & grease content	ppm	7.164 - 12.305
Total hardness (Ca and Mg)	ppm	16.64 - 26.62
Cadmium (Cd)	ppm	undetected
Zink (Zn)	ppm	0.003 - 0.019
Cupper (Cu)	ppm	9×10^{-4} - 1.9×10^{-3}
Lead (Pb)	ppm	undetected
Chromium (Cr)	ppm	undetected
Mercury (Hg)	ppm	undetected
Cl^-	ppm	2 - 6
NO_3^-	ppm	0.43 - 0.52
NH_4^+	ppm	0.06 - 0.33
SO_4^{2-}	ppm	0.86 - 2.47

(Data from Laboratory of Public Works of Rain, 1990)

Table V.22 RESULT OF WATER QUALITY TEST OF INDRAGIRI RIVER AT KUALA CINAKU, KUALA PERANAP AND TALUKKUANTAN IN SEPTEMBER, 1994.

Parameter	Unit	Findings
Temperature	oC	28 - 29
Colour	-	range from clear to greenish
Total Dissolved Solid (TDS)	ppm	101.50 - 147.00
Total Suspended Solid (TSS)	ppm	429.00 - 706.00
pH	-	5.5 - 5.7
Dissolved Oxygen (DO)	ppm	4.3 - 4.4
Biological Oxygen Demand (BOD):		
* Kuala Cinaku	ppm	26
* Kuala Peranap	ppm	8
* Taluk Kuantan	ppm	21
Chemical Oxygen Demand (COD):		
* Kuala Cinaku	ppm	44
* Kuala Peranap	ppm	11
* Taluk Kuantan	ppm	35
Zn	ppm	0.065 - 0.072
Cu	ppm	undetected
K +	ppm	1.618 - 2.115
As	ppm	0.000 - 2.115
Fe	ppm	0.170 - 0.23
Mn	ppm	undetected
Hg	ppm	not analyzed
Ba	ppm	0.010 - 0.022
Cd	ppm	undetected
Se	ppm	undetected
Pb	ppm	0.00 - 0.02
PO 4 -	ppm	0.181 - 0.186
NO3 -	ppm	0.0264 - 0.0267
NO2 -	ppm	0.044 - 0.045
SO 4 2-	ppm	1.049 - 1.103
NH3 -N	ppm	0.0018 - 0.0020
Cl -	ppm	2.1061 - 3.3100
CN -	ppm	undetected
F -	ppm	undetected
H S	ppm	undetected
Bacteria:		
Fecal Colliform	#/ml	<1600
Total Colliform	#/ml	<5000

Table V.23 BOTANICAL INVENTORY IN THE STUDY AREA OF INDRAGIRI RIVER BASIN.

No	Local name	Scientific name	Family	Project site				Status		
				DSR	DSM	DKN	BKK	NE	D	L
1	Bintangur	*Callophyllum sp*	Guttifer	x		x	x	x		
2	Balau hitam	*Palaquium sp*	Sapotac	x		x		x		
3	Belimbing hutan	*Elaeocarpus sp*	Oxalae			x	x	x		
4	Balik Angin	*Mallotus paniculatus*	Euphart	x						
5	Durian	*Durio zibethinus*	Bombac		x	x	x	x		
6	Enau	*Arenga pinnata*	Palm	x		x	-	x	x	
7	Balau	*Shorea sp*	Dipterocarp	x		x	x	x		
8	Damar	*Aleurittes moluccana*	Euphorb		x			x		
9	Kelat	*Eugenia spicata*	Myrt	x		x	x	x		
10	Keruing	*Dipterocarpus appendiculus*	Dipterocarp			x	x	x	x	
11	Loso	*Cinnammomum sp*	Laur			x	x			
12	Lalan	*Santiria oblongifolia*	Eben			x	x	x		
13	Meranti merah	*Shorea accuminata*	Dipterocarp			x	x	x		
14	Mersawa	*Anisoptera curtisis*	Dipterocarp		x	x	x	x		
15	Medang	*Listsea sp*	Laur	x	x	x	x	x		
16	Marpoyan	*Rhodamnia toinervia*		x		x	x			
17	Mauparning	*Quercus lucida*	Fagac			x	x	x		
18	Rengas	*Gluta rengas*	Anacard	x		x	x			
19	Resak	*Vatica sp*	Dipterocarp	x	x			x		
20	Sungkai	*Peronema canesceris*	Verb		x	x		x	x	
21	Sondunk-sondunk	*Endospernum sp*	Euphorb			x	x			
22	Sijangkang	*Dillenia sp*	Dillenia			x	x	x		
23	Tarok	*Artocarpus sp*	Neor			x				
24	Tampui	*Elatriospernum tapos*	Euphorb			x	x	x		
25	Terentang	*Campenosperma sp*	Anacard			x	x	x		
26	Tembusu	*Fragrarea fragrans*	Loganiac			x	x	x	x	
27	Jelutung	*Dyera sp*	Apocynac			x	x	x		
28	Jirak putih	*Dehasia sp*	Laurac	x				x		
29	Petai titik	*Alostonia exelsa*	Euphorb	x					x	
30	Petai gadang	*Alostonia scholaris*	Euphorb	x						
31	Petai	*Parkia speciesa*	Mimosac		x					
32	Modang pulut-pulut	*Alseodaphine sp*	laurac	x					x	
33	Gerunggang	*Crafexyten sp*	Guttiferac	x		x	x			
34	Sago	*Aderanthera pavonina*	Leguinninac	x					x	
35	Nangka	*Artocarpus integra*	Morac	x	x			x		
36	Cemara	*Agathis spp*	Araucar	x				x		
37	Rambai	*Baccausea sp*	Apocynac	x				x		
38	Gamai-gamai	*Baeckea frutescens*	Aeyrtac	x					x	
39	Betung	*Baulbusa sp*	Graun	x				x		
40	Barangan gounja	*Costanopsis tungarniy*	Fagac	x						
41	Pinang kuning	*Chrysalidocarpus sp*	Palmae	x				x		
42	Modang jaring	*Elaeocarpus sp*	Tilliaceae	x						
43	Paga-paga	*Eugenia spp*	Myrt	x		x	x	x	x	
44	Timah-timah	*Litsea sp1*	Laurac	x				x	x	
45	Ampodu barau-barau	*Litsea sp2*	Laurac	x				x		
46	Nyatoh	*Palaquium sp*	Sapotac	x				x	x	
47	Nyatoh pinago	*Palaquium sp*	Sapotac	x				x	x	
48	Kalek Baringin	*Sycopsis lumii*	Aeyrtac	x				x		
49	Lansek	*Lansium domasticuls*	Murtaune		x			x		
50	Pala	*Myristica foragraus*	Myrist		x			x		
51	Indarung	*Trema Orientalis*	Tiliac		x					

[Project site]
DSR= Upper Sinamar dam
DSM= Sukam dam
DKM= Lower Kuantan dam
BKK= Lubuk Jambi weir

[Status]
NE= Economical value
D = Protected
L = Endangered

Table V.24 INVENTORY OF TERRESTRIAL MAMMALS, BIRDS, REPTILES AND AMPHIBIA FOUND IN THE INDRAGIRI RIVER BASIN STUDY AREA.

No.	Local name	Scientific name	Project site				Status
			DSR	DSM	DKN	BKK	D
	I.Mamalia						
1	Babi hutan	*Sus scrofa*	v	v	v	v	
2	Beruang Madu	*Helarctos malayanus*		v	v	v	v
3	Beruk	*Macaca nomestrina*	v	v	v	v	
4	Harimau	*Panthera tigris sumateraensis*	v	v	v	v	v
5	Kijang	*Muntiacus muncak*	v	v	?	?	
6	Landak	*Hystrik brachyura*		v			v
7	Berang-berang	*Lutra sumatrana*		v			
8	Lutung Hitam	*Presbytis cristata*		v			
9	Gajah	*Elephas maximus*			v	v	v
10	Monyet ekor panjang	*Macaca fascicularis*	v	v	v	v	
11	Rusa	*Cerves unicalor*	v	v	v	v	v
12	Napu	*Tragulus napu*		v			v
13	Musang	*Paradoxorus hermaporoditus*	v	v	v	v	v
14	Siamang	*Symphalongus syndactilus*	v	v	v	v	
15	Tapir	*Tapirus indicus*	v	v	v	v	v
16	Ungko	*Hylobates agilis*	v	v			v
17	Trenggiling	*Manis javanica*		v			v
	II. Birds						
1	Bubut Merah	*Centropus bengalensis*	v	v			
2	Beo	*Gracula regiwsa*		v	v	v	v
3	Burung Madu Kuning	*Nectarini jugularis*		v			v
4	Cacakurawa	*Pynonotus zeylancicus*	v	v			
5	Ayam hutan	*Galus-galus*		v	v	v	v
6	Elang Bondol	*Heliastur indicus*		v			v
7	Elang Hitam	*Spizaetur bartelsi*	v	v	v	v	
8	Kucica Hitam	*Copsyclus malabaricus*		v			
9	Pucuk Ular	*Anhinga melanongester*		v			v
10	Madu Gunung	*Aethopyga eximialis*		v			v
11	Punai	*Treron sp*	v	v			
12	Raja Udang Sungai	*Alcedo attheis*		v			v
13	Tekukur	*Steptopelia chenesis*		v			
14	Walet Gunung	*Arerodranus brevirostris*		v			v
	III.Reptilia						
1	Biawak	*Varanus salvator*	v	v	v	v	
2	Kura-kura	*Oritra bonensis*		v	v	v	v
3	Buaya Sinyolong	*Tonnistora schlegelli*			v	v	v
4	Ular Sanca Hijau	*Chondrophython viridis*	v	v	v	v	v
5	Ular Sendok	*Naja tripudianis*	v		v	v	
6	Buaya Katak	*Crocodylus sp*			v	v	
7	Bingkaruang	*Marbaya sp*	v	v	v	v	
	IV. Amphibia						
1	Katak coklat	*Rama lumnocharis*	v	v	v	v	
2	Katak hijau	*Rama sp*		v			
3	Katak hijau besar	*Rama macrodon*		v			v

Candidate project site:
DSR = Upper Sinamar Dam DKM = Lower Kuantan Dam
DSM = Sukam Dam BKK = Lubuk Jambi Weir and canal

Status:
D = Protected

Table.V.25 Average Monthly Rainfall in Lower Kuantan Dam
and Lubukjambi Wier and Irrigation Canal (1981-1992)

Month	Rainfall (mm)
Jan.	216
Feb.	163
Mar.	247
Apr.	231
May	213
Jun.	108
Jul.	136
Aug.	121
Sep.	168
Oct.	268
Nov.	248
Dec.	284
Total	2403
Average	200
Maximum	

Source : KI-RBDP and Pasar Kampar
weather station on November, 1994

Table V.26 Mean Daily Temperature and Humidity at
Lubukjambi Weir and Irrigation Canal (1979-1993)

Month	Temperature (C)	Humidity (%)
Jan.	27.8	81.1
Feb.	28.2	79.5
Mar.	28.4	79.6
Apr.	28.8	79.2
May	28.8	82.0
Jun.	28.8	77.6
Jul.	28.3	77.6
Aug.	28.3	77.1
Sep.	28.2	82.0
Oct.	28.3	80.8
Nov.	28.2	79.3
Dec.	27.4	84.8
Average	28.3	80.05
Maximum	28.8	84.8
Minimum	27.4	77.1

Source : KI-RBDP and Pasar Kampar
weather station on November, 1994

Table V.27 Average Monthly Kampar River Discharge
(1981-1992)

Month	Mean Discharge (m³/sec.)
Jan.	237.8
Feb.	181.7
Mar.	221.7
Apr.	245.3
May	222.6
Jun.	96.4
Jul.	82.2
Aug.	93.6
Sep.	163.8
Oct.	191.1
Nov.	213.8
Dec.	260.4
Average	184.2
Maximum	260.4
Minimum	82.2

Source : KI-RBDP November, 1994

Table V.28 Recorded floods and peak discharges in Kampar River

The date of flooding	Peak of discharge (m³/sec.)
12/05/1978	2516
20/1/1989	1845
17/12/1991	1710
19/1/1991	1539
07/01/1986	1516

Table V.29 Water use at Down Reaches of Lower Kuantan Dam

Type of Use	Amount of Use (m³/sec.)
Domestic Use	720,924
Irrigation Use	1,574,964,200
Industrial Use	252,000
Total	1,575,937,124

Source : KI-RBDP November, 1994

Table V.30 Water Quality of Kampar River

No	Parameter	Unit	Station1	Station2	Station3	Station4
PHYSICS						
1	Temperature	oC	26.5	27	27.5	28
2	Suspended Solid Matters	g/l	0.024	0.064	0.132	0.037
3	Dissolved Solid Matters	g/l	0.348	0.506	0.272	0.395
4	Turbidity	m	1	0.5	0.75	0.5
5	Electrical Conductivity	mmho/cm	69	69	69	79
CHEMICS						
1	pH		8.2	8.4	8.1	8.2
2	Ferro/Ferri	mg/l	1.5	1.3	0.76	0.88
3	Manganese	mg/l	0.12	0.14	ND	0.06
4	Barium	mg/l	ND	ND	ND	ND
5	Copper	mg/l	ND	ND	ND	ND
6	Crom Hexavalen	mg/l	ND	ND	ND	ND
7	Total crom	mg/l	0.021	0.025	0.014	0.01
8	Cadmium	mg/l	ND	ND	ND	ND
9	Mercury	μg/l	0.02	0.01	0.01	0.01
10	Lead	mg/l	ND	ND	ND	ND
11	Stanum	mg/l	0.04	0.02	ND	ND
12	Arsen	mg/l	ND	ND	ND	ND
13	Selenium	mg/l	ND	ND	ND	ND
14	Nickel	mg/l	ND	ND	ND	ND
15	Cobalt	mg/l	ND	ND	ND	ND
16	Cyanide	mg/l	ND	ND	ND	ND
17	Sulphit	mg/l	1.94	1.72	2.53	1.75
18	Sulphat	mg/l	9.71	9.62	12.52	11.09
19	Flourida	mg/l	0.02	0.003	0.021	0.013
20	Free Cloride	mg/l	2.38	3.18	3.97	3.97
21	Free Ammonium	mg/l	0.03	0.23	0.27	0.07
22	Nitrate	mg/l	0.13	0.13	0.16	0.12
23	Nitrite	mg/l	0.001	0.007	0.001	0.005
24	Phosphor	mg/l	0.123	0.102	0.102	0.097
25	DO	mg/l	6.5	5.8	5.6	5.4
26	BOD	mg/l	5.5	5.7	5.5	4.5
27	COD	mg/l	24.6	21.7	28.9	22.5
28	Blue Methelyn	mg/l	0.011	0.009	0.007	0.007
29	Oil/Grase	mg/l	0.03	0.1	0.27	ND
30	Pesticide					
	BHC		+	+	+	+
	Heptachlor		--	+	--	+
	Heptachlor Epoxide		+	+	+	--
	Aldrin		--	--	--	--
	Dieldrin		+	--	--	+
	DDT		+	+	--	+
	Endo sulfan		--	--	--	--
31	Alkalinity	mg/l	9.75	8.78	10.73	8.77
32	Hardness	mg/l	41.118	16.821	35.511	11.214
33	Fenol	mg/l	0.0016	ND	ND	0.0012
34	Permanganate	mg/l	28.66	24.84	21.46	17.86

Note) Location of station :   1 Kotopanjang   3 Kuok

                                2 Rantauberangin   4 Kuapan

Table V.31 Present Land Use in Rantauberangin Weir and
irrigation canal

No.	Land Use	Area (ha.)	Employment percentage
1	Residential area / Home Yard	25.5	6.1
2	Paddy field / Crop land	60.0	14.3
3	Plantation	38.7	9.2
4	Others*	295.8	70.4
	Total	420.0	100.0

* : including forest, grassland, shurub etc.

Table V.32 Present Land Use in Bangkinang embankment

No.	Land Use	Area (ha.)	Employment percentage
1	Residential area / Home Yard	170.0	68.0
2	Paddy field / Crop land	80.0	32.0
3	Plantation	0.0	0.0
4	Others*	0.0	0.0
	Total	250.0	100.0

* : including forest, grassland, shurub etc.

Table V.33 Soil fertility at Rantauberangin Weir, irrigation canal and
Bangkinang embankment

No.	Sampling location	Parameters	H Test	Category
1	Kampung Batu	pH	6	Slightly Acid
		N (mg/l)	25	Medium
		P (mg/l)	7	Low
		K (mg/l)	100	Low
2	Sungai Jering	pH	6	Slightly Acid
		N (mg/l)	10	Low
		P (mg/l)	12	Low
		K (mg/l)	75	Low
3	Sentajo	pH	5.5	Acid
		N (mg/l)	12	Low
		P (mg/l)	10	Low
		K (mg/l)	70	Low

Table V.34 Tree Flora of forest in the project area of Kampar river basin .

No	Local Name	Scientific Name	Family	FR %	KR %	DR %	NP %	Status D	L
1	Apam kandis	*Collophyllum sp*	Guttiferae	0.91	0.58	0.39	1.88		
2	Ampuyan	*Memecylon sp*	Melastomataceae	6.36	4.68	15.23	26.27		
3	Alai	*Deplanchea sp*	Bignoniaceae	0.51	0.58	0.39	1.88		
4	Bintangur	*Callophyllum pulcherrimum*	Guttiferae	2.73	1.75	0.20	4.68		
5	Balam	*Palaquem comatum*	Sapotaceae	1.82	1.75	2.10	7.18		
6	Baga	*Pouteria malaccencea*	Sapotaceae	1.82	2.92	3.67	9.32		
7	Cubadak hutan	*Artocarpus integer*	Moraceae	0.91	1.17	1.09	4.08		
8	Cengkudan	*Geramora sp*	Celaminaceae	8.16	1.17	1.47	4.46		
9	Durian hutan	*Durio griffitii*	Bombacaceae	4.54	0.58	0.66	2.09		
10	Kayu kolek	*Bugenia sp*	Myrtaceae	2.73	18.13	12.97	39.28		
11	Kuranji	*Dialluem indium*	Caesalpiniaceae	4.54	0.58	0.66	2.09		
12	Kempas	*Kompasia malaceencis*	Fabaceae	2.73	2.34	5.45	10.52		
13	Karet	*Hevea brassiliensis*	Euphorbiaceae	4.54	2.34	5.45	10.52		
14	Laban	*Vitex pubescens*	Varbanaceae	1.80	3.51	0.59	3.56		
15	Meranti	*Shorea leprosula*	Dipterocarpaceae	1.82	1.17	6.50	10.07		
16	Mendang	*Litsea firma*	Lauraceae	5.45	1.75	6.57	18.13		
17	Mahang	*Macaranga tricoba*	Euphorbiaceae	5.45	7.02	7.82	19.70		
18	Narahan	*Artocarpus tripidus*	Anacardianaceae	5.45	6.43	5.01	16.30		
19	Nyatoh	*Dayena obscura*	Sapotaceae	0.91	5.46	0.36	1.85		
20	Putat	*Barringtonia sp*	Lecythraceae	0.91	0.58	1.52	3,01		
21	Paga	*Ploiarium sp*	Thaccaceae	1.82	0.58	3.26	7.36		
22	Paniang-paniang	*Querqus lucida*	Fagaceae	3.64	2.34	3.52	10.08		
23	Rambutan hutan	*Nephellium sp*	Sapindaceae	4.54	2.92	2.06	13.03		
24	Sanduak-sanduak	*Endospermum sp*	Eurycaceae	1.82	6.43	0.18	3.17		
25	Simpur	*Dillenia sp*	Dilleniaceae	2.73	1.17	0.96	5.44		
26	Petata	*Strombosiu javanica*	Olacaceae	5.45	1.75	5.22	17.10		
27	Timah-timah	*Drypetes sp*	Euphorbiaceae	1.82	6.43	0.38	3.27		
28	Terantang	*Campanorperma macrophyla*	Anacardianceae	1.82	1.17	0.16	3.15		
29	Tapi	*Polyalthia sp*	Annonaceae	0.91	1.17	0.17	2.25		
30	Tampui	*Elateriospermum tapos*	Euphorbaceae	1.82	1.75	0.47	4.04		
31	Ubar	*Eugenia sp*	Myrtaceae	0.91	0.58	0.52	2.01		
				91.37	90.78	95.00	264.76	D	

Notes :

FR = Relative frequency   DR = Relative dominace

KR = Relative density   NP = Importance value

Table V.35(1/2) Terrestrial Fauna in the project area, Kampar river basin.

	Local Name	Sceintific Name	Status P
MAMMALS			
1	Beruang Madu	*Helarctos malayanus*	v
2	Beruk	*Macaca nomestriana*	-
3	Babi Hutan	*Sus serofa*	-
4	Harimau	*Panthea tigris sumateraensis*	v
5	Monyet Ekor Panjang	*Macaca fascicularis*	-
6	Rusa	*Cervus unicolor*	v
7	Musang	*Paradoxorus hermaphroditus*	-
8	Siamang	*Symphalongus syndactilus*	-
9	Tapir	*Tapirus indicus*	v
10	Kijang	*Muntiacus muncak*	-
11	Lutung Hutan	*Perbetys sp*	-
12	Berang-berang	*Cynegole benneti*	-
13	Ungko	*Hylobates sp*	v
14	Tringgiling	*Manis javanica*	v
15	Landak	*Hyrix brachyora*	v
16	Simpai	*Prebitys nolanophus*	v
17	Tupai Tanah	*Lariscus insignis*	-
18	Napu	*Tragulus napu*	v
AVES			
19	Burung madu kuning	*Nactarini jugularis*	v
20	Elang bondol	*Heliastur indicus*	v
21	Pecak ultar	*Anhinga melangaster*	v
22	Tekukur	*Streptopelia chenensis*	
23	Burung layang-layang	*Herunda restrica*	
24	Merpati	*Columba levia*	v
25	Balam	*Streptopelia chinensis*	v
26	Ketitiran	*Geopelia striata*	-
27	Raja uang sungai	*Alcedo arthis*	v
28	Kucica hitam	*Copsichus malabatricus*	-
29	Beo	*Gracula regiusa*	v
30	Elang Hitam	*Galus-galus*	-
31	Ayam Hutan	*Spizaitur baltelsi*	-
32	Elang	*Accipiter sp*	-
33	Bubut merah	*Centropus sp*	-
34	Gagak	*Cispus macrorhyncus*	-
35	Murai Batu	*Rhipodera aenus*	-
36	Punai	*Spenuras oxyorus*	-
37	Enggang	*Bucerus sp*	v
38	Kuaw	*Argisianus argus*	v

Table V.35(2/2) Terrestrial Fauna in the project area, Kampar river basin.

	Local Name	Scientific Name	Status P
39	Biawak	*Varanus salvator*	-
40	Kura-kura	*Oritra binensis*	v
41	Ular sendok	*Naja tripudianis*	-
42	Bingkarubng	*Crocodilus sp*	-
43	Ular tenah	*Angkistrodon rhodostoma*	-
44	Ular sanca hijau	*Chondrophyton niridis*	v
AMPHIBIAN			
45	Katak coklat	*Rana liolenaris*	-
46	Katak hijau	*Rana cancrifora*	-
47	Katak hijau besar	*Rana Macrodon*	v
48	Kodok biasa	*Bufo melanopticus*	-
INSECT			
49	Kupu-kupu raja	*Danaus flexipus*	-
50	Kupu-kupu kubis	*Pilris rapae*	-
51	Peloncat bintik perak	*Epargyreus dores*	-
52	Kupu-kupu mata mutiara	*Enodia porthandia*	-
53	Ngengat lompat cepat	*Itensicenca maja*	-
54	Kupu-kupu ekor walet	*Papilio phyxenes asterius*	-
55	Ngenat ujng kait	*Drepana arculata*	-
56	Kupu-kupu belerang	*Colias philodica*	-
57	Kupu-kupu pinus	*Neaphasia menapia*	-
58	-	*Lepnelisca borcalis*	-
59	-	*Dione juno*	-
60	-	*Oenelis jutha*	-

P: Protected species

	Family	Local Name	Scientific Name
1	Cyprinidae	Semilang Batang	Barbichthys leavis
2		Sepimping	Chela oxygastroides
3		Mali	Dangilla cuvieri
4		Motan Besar Kepala	Dangilla sp
5		Umbut-umbut	Dangilla sumatera
6		Semilang Pulau	Ephalzeorhynchus kallopterus
7		Barau	Hampala bimaculata
8		Barau	Hampala lepidota
9		Kujam	Lucioname setigerus
10		Sijolong	Lucioname triname
11		Parang	Macrorichthys macrochirus
12		Paweh	Oetheochillus hasselti
13		Kujam	Oetheochillus kahayanensis
14		Siburuk Perut	Oetheochillus kelabau
15			Oetheochillus spilurus
16		Kapiek	Puntius belinka
17		Tabengalan	Puntius bromenoides
18		Siban	Puntius bulu
19		Singarek	Puntius fasciatus
20		Sipaku	Puntius hexazona
21		Olang	Puntius schanafeldi
22		Mentulu	Puntius sp
23		Olang	Puntius tetrazona
24		Pantau	Rasbora argyrotaenea
25		Pantau	Rasbora dorseocellata
26		Pantau Bero	Rasbora lateristriata
27		Pantau	Rasbora rutteni
28		Pantau Beras	Rasbora vaillanti
29		Kelabau	Thynnichthys thynnoides
30		Motan	Thynnichthys vaillanti
31	Clariidae	Limbek Baguit	Clarias batrachus
32		Limbek Akar	Clarias teismany
33		Koli	Ephalzeorhynchus sp
34	Siluridae	Lais	Clarias sp
35		Loi Modang	Cryptopterus cryptopterus
36		Loi Godang Kapalo	Cryptopterus lais
37		Loi	Cryptopterus mononema
38		Loi	Cryptopterus sp
39		Lukek	Cryptopterus sp
40		Baliak Tulang	Hamichilurus chaperi
41		Selais	Hamichilurus moonbergii
42		Loi Bomban	Hamichilurus schrinema
43		Tapah	Siluruides hypothalmus
44		Loi Modang	Siluruides indragiriensis
45		Sikumu	Wallago leri

Table V.36(2/2) INVENTORY OF FISHES IN THE MIDDLE REACHES OF KAMPAR RIVER.

	Family	Local Name	Scientific Name
46	Pangasidae	Patin	Pangasius pangasius
47		Juaro	Pangasius polyuranadon
48		Riu-riu	Pseudeutropius branchiopepteus
49	Bagridae	Baung Moncik	Bagrichthys hypselopterus
50		Baung Pisang	Bagroides macrochantus
51		Baung Hitam	Bagroides macropterus
52		Baung Kuning	Bagroides malapterus
53		Baung	Macrones nigriceps
54		Baung Tunggik	Macrones sp
55		Geso	Macrones wycky
56	Cobitidae	Ciling-ciling	Botia hymenophysa
57		Rajo Guntili	Botia macrochantus
58		Tali-tali	Namechilus fasciatus
59		Lida-lida	Notopterus bornensis
60		Belido	Notopterus chitala
61	Osteoglossidae	Domo/Kaloso	Sclerophages formosus
62	Anabantidae	Katung	Anabas sp
63		Puyu	Anabas testudineus
64		Singkek	Helostoma temmenchi
65		Silinca	Polyacanthus hasselti
66		Sopek	Trichogaster leeri
67		Sopek Siam	Trichogaster pectoralis
68		Sopek	Trichogaster trichopterus
69	Ophiochepalidae	Toman	Betta anabantoides
70		Tempalo	Betta taenia
71		Haruan	Ophiochephalus bistoriatus
72		Lompong	Ophiochephalus lucius
73		Jolai	Ophiochephalus maruliades
74		Toman	Ophiochephalus melanosoma
75		Batuik	Ophiochephalus pleuropthalmus
76		Kaluih	Osphronemus gourami
77	Nandidae	Tambun	Nandus nebolusus
78	Lutjinidae	Ikan Sira	Lutjanus argentimaculatus
79	Trichiuridae	Timah	Trichirius haunela
80	Therponidae	Silopu	Synanchesia sp
81	Toxotidae	Sumpik	Toxotes chatareus
82	Mastacembelidae	Tilan	Magrocnathus aculeatus .
83		Tilan	Mastachembelus armatus
84	Belonidae	Julung-julung	Xenentodon canciloides
85		Bolai	Xenentodon maculatus
86	Polynemidae	Tumbuk bong	Dermogenis sumatranus
87	Symbranchoidae	Senangin	Eleuthromena tetradactilum
88	Tetraodontidae	Buntal	Lagochaphalus lunaris
89		Boloik	Monopterus albus
90		Buntal	Tetraodon nigropunctatus
91	Solaidae	Lidah-Lidah	Synaptura conmesuni

Table V.37 Species of Benthos identified at stations
in Kampar river.

Station	Species	Frequency (N/m^2)
Upper Reaches	Tricoptera	
Koto Panjang	*Pryganea sp*	42.4
	Agripnia ap	42.4
	Pseudostenophylax sp	42.4
	Hydroptila sp	42.4
Lower Reaches	Diptera	
Rantau Berangin	*Chrironomus sp*	84.8
	Annelida	
	Pristina sp	42.4
	Dero sp	169.4
Bangkinang	Annelida	
	Dero sp	42.4
	Gastroptera	
	Pleurocera sp	42.4
Dabau Bingkuang	Tricoptera	
	Parapsyche sp	42.4
	Limnephilidae	42.4
	Gastropodia	
	Pleurocera sp	42.4
	Goniobasis sp	42.4

Table V.38 Population, population density and number of households in the area of Kuok weir and Rantauberangin irrigation canal.

No.	District	Population (pers.)	Area (ha)	Density (pers./km^2)	Household (n)
1.	Bangkinang	60.335	507.89	99	12.067
2.	Siak Hulu	65.840	3,875.41	17	14.993
3.	Kampar Kiri	45.870	1,961.00	23	9.995
4.	Kampar	92.294	923.53	90	16.452
	Total	264.339	7,267.63	36	52.511

Sorce : General survey of Kampar district, 1992

Table V.39 Population, population density and number of households of Kuok weir and Rantauberangin irrigation canal.

No.	Name of village	Area (km^2)	Population (person)	Density (pers./km^2)	Household (n)
1.	Tanjung Belit	35.00	696	20	175
2.	Tanjung Belit Selatan	27.00	645	24	141
3.	Air Tiris	40.31	4,336	107	867
4.	Ranah	7.70	4,043	525	808
5.	Penyasawan	41.00	5,282	129	1,056
6.	Rumbio	26.00	3,496	134	699
7.	Padang Mutung	22.88	2,060	94	412
8.	Pulau Rambai	6.00	2,808	435	561
9.	Rimbo Panjang	11.00	1,399	127	279
10.	Pulau Payung	10.11	2,868	284	573
11.	Muara Jalai	22.50	3,584	159	716
12.	Bangkinang	51.12	7,946	155	1,589
13.	Salo	26.16	4,424	169	884
14.	Kuok	52.21	5,463	105	1,092
15.	Pulau Jambu	23.77	2,364	99	472
16.	Muara Uwai	23.12	2,377	103	475
17.	Pasir Sialang	21.63	3,013	129	602
18.	Petapahan	235.00	758	3	175
	Total	712.17	57,554	80	11,576

Sorce: District census

Table V.40 Age structure in the area of Kuok weir and
Rantauberangin irrigation canal.

No.	Village	Age group		
		<15	15 - 59	60 <
1.	Tanjung Belit	37.8	57.2	4.5
2.	Tanjung Belit Selatan	39.1	58.2	2.7
3.	Air Tiris	33.6	60.7	5.7
4.	Ranah	37.4	59.5	3.1
5.	Penyasawan	36.9	59.2	3.9
6.	Rumbio	34.1	61.8	4.1
7.	Padang Mutung	37.2	59.1	3.7
8.	Pulau Rambai	37.1	58.8	4.1
9.	Rimbo Panjang	37.3	57.9	4.8
10.	Pulau Payung	38.1	57.8	4.1
11.	Muara Jalai	36.5	57.9	5.6
12.	Bangkinang	36.3	56.5	7.2
13.	Salo	38.8	55.4	5.8
14.	Kuok	38.2	56.9	4.9
15.	Pulau Jambu	39.1	54.8	6.1
16.	Muara Uwai	40.1	56.7	3.2
17.	Pasir Sialang	39.9	55.0	5.1
18.	Petapahan	39.9	66.5	4.5

Source: Population census 1990

Table V.41 Population composition of livelihood, education and age structure in four
Kecamatans (districts) related to Kuok weir and Rantauberangin irrigation canal

	Kampar Kiri		Kampar		Bangkinang		Siak Hulu	
	Total	%	Total	%	Total	%	Total	%
A. Livelihood								
- Agriculture	38531	84.3	62206	67.4	35356	58.6	27850	42.0
- Industry / house industry	184	0.4	1661	1.8	1267	2.1	2172	3.3
- Commercial	3857	8.4	8491	9.2	14300	23.7	14221	21.6
- Service	-	-	-	-	-	-	-	-
- Others	3165	6.9	19936	21.6	9412	15.6	21596	32.8
B. Education								
- not educated / before school	11513	25.1	19104	20.7	11463	19.0	11720	17.8
- Primary school	24082	52.5	48177	52.2	22738	37.5	23789	34.1
- Secondary school	5687	12.4	13016	14.2	12248	20.3	13959	21.3
- High school	4174	9.1	10337	11.2	9762	16.1	11324	17.2
- College	413	0.9	1569	1.7	4305	7.1	999	9.1
C. Age								
- 0 - 4		14.7		13.2		12.9		12.7
- 5 - 14		22.1		27.3		20.1		20.7
- 15 - 24		19.7		17.2		19.5		18.6
- 25 - 34		15.6		13.7		14.1		15.3
- 35 - 44		11.1		11.6		13.1		11.5
- 45 - 54		8.3		8.7		9.2		10.1
- 55 <		8.5		8.3		11.1		11.0

Source : Data Lapangan, 1995

Table V.42 Land ownership,1995, in
Kuok weir and Rantauberangin
irrigation area.

Ownership	Number	%
Community	128	88.8
Nation	13	9.2
Others	3	2.0
Total	144	100.0

Source : Data Olahan, 1985

Table V.43 Distribution of Productive land of villages related to Kuok weir and
Rantauberangin irrigation canal.

No.	Village(Desa)	Paddy field	Unused land	Total	Critical land
1.	Tanjung Belit	-	2,800	2,800	-
2.	Tanjung Belit Selatan	-	2,700	2,700	-
3.	Air Tiris	1,132	2,899	4,031	-
4.	Ranah	327	443	770	-
5.	Penyasawan	396	2,704	3,100	-
6.	Rumbio	273	2,327	2,600	-
7.	Padang Mutung	1,157	1,194	2,351	-
8.	Pulau Rambai	250	350	600	-
9.	Rimbo Panjang	650	5,950	6,600	-
10.	Pulau Payung	300	711	1,011	-
11.	Muara Jalai	400	1,850	2,250	-
12.	Bangkinang	7	5,105	5,112	-
13.	Salo	1,695	2,446	2,616	-
14.	Kuok	308	4,913	5,221	-
15.	Pulau Jambu	485	1,892	2,377	-
16.	Muara Uwai	168	2,144	2,312	-
17.	Pasir Sialang	180	1,983	2,126	-
18.	Petapahan		23,500	23,500	720
	Total	7,728	65,861	73,589	720

Source: Population census, 1990

Table V.44 Health facilities in villages related to Kuok weir and Rantauberangin irrigation canal.

No.	Village (Desa)	Clinic	Children's hospital	Family planning service	Health adviser	Shaman	Hospital	Doctor
1.	Tanjung Belit	-	2	2	-	5	-	-
2.	Tanjung Belit Selatan	-	2	1	-	8	-	-
3.	Air Tiris	1	3	1	5	2	-	-
4.	Ranah		4	2	1	3	-	-
5.	Penyasawan		3	3		6	-	-
6.	Rumbio		5	2	1	5	-	-
7.	Padang Mutung		4	1			-	-
8.	Pulau Rambai		2	2		4	-	-
9.	Rimbo Panjang		2	1		2	-	1
10.	Pulau Payung		1			1	-	-
11.	Muara Jalai		1	1	1	8	-	-
12.	Bangkinang		8	5	15	4	1	4
13.	Salo		4	3	5	7	-	1
14.	Kuok	1	3	4	2	8	-	-
15.	Pulau Jambu		3	3		4	-	-
16.	Muara Uwai		1	3		3	-	-
17.	Pasir Sialang		2	2		4	-	-
18.	Petapahan	1				1	-	-

Source: District's general survey

Table V.45 Type of crop and area and production of mixed farming in Kecamatan Kampar and Bangkinang.

No.	Type of crop	Kec.Kampar		Kec.Bangkinang	
		Extention	Production	Extention	Prodution
1.	Paddy field	529.7	1,715.42	2,518.5	6265.00
2.	Upland field	1654.0	4,571.50	557.0	1201.00
3.	Corn	249.0	739.03	6.0	9.50
4.	Soy bean	-	-	6.0	5.32
5.	Cassava	251.0	2,889.76	73.0	532.50
6.	Sweet potato	29.0	287.50	4.0	17.00
7.	Peanuts	104.0	99.53	12.0	14.40
8.	Greennuts	11.0	12.42	7.0	6.50

Source: District's general survey,1992

Table V.46 Land and river transportation in the area of Kuok weir and
Rantauberangin irrigation canal.

No.	Village name	Land transportation		Water transportation
		Motor bike	Car	
1.	Tanjung Belit	1		1
2.	Tanjung Belit Selatan	1		1
3.	Air Tiris		1	
4.	Ranah		1	
5.	Penyasawan		1	
6.	Rumbio		1	
7.	Padang Mutung		1	
8.	Pulau Rambi		1	
9.	Rimbo Pnjang		1	
10.	Pulau Payung	1		
11.	Muara Jalai		1	
12.	Bangkinang		1	
13.	Salo		1	
14.	Kuok		1	
15.	Pulau Jambu			1
16.	Muara Uwai		1	
17.	Pasir Sialang		1	
18.	Petapahan	1		

Source: District general survey, 1990

Table V.47 Vehicles in four districts (Kecamatans) related to Kuok weir and Rantauberangin irrigation canal.

No.	Type of vehicle	Bangkinang	Kampar	Kampar Kiri	Siak Hulu
1.	Bicycle drawn carriage	4	6	-	18
2.	Pedicab	7	3	-	-
3.	Buffalo-drawn carriage	-	2	-	-
4.	Horse-drawn carriage	-	-	-	-
5.	Motor-bicycle drawn carriage	3	2	17	20
6.	3 wheel motor-drive vehicle	7	10	-	-
7.	4 wheels motor-drive vehicle	15	17		
8.	Canoe without motor	8	14	22	12
9.	Canoe with outboard motor	6	5	18	9
10.	Motorboat	-	-	2	-
11.	Others	3	3	2	-

Source: District census, 1990

Table V.48 Evaluation of Significant Impacts of Kampar Kanan Water Supply Project.
Area : Kuok Weir and Rantanberangin irrigation channel
Activity Stage : Pre-Construction Stage

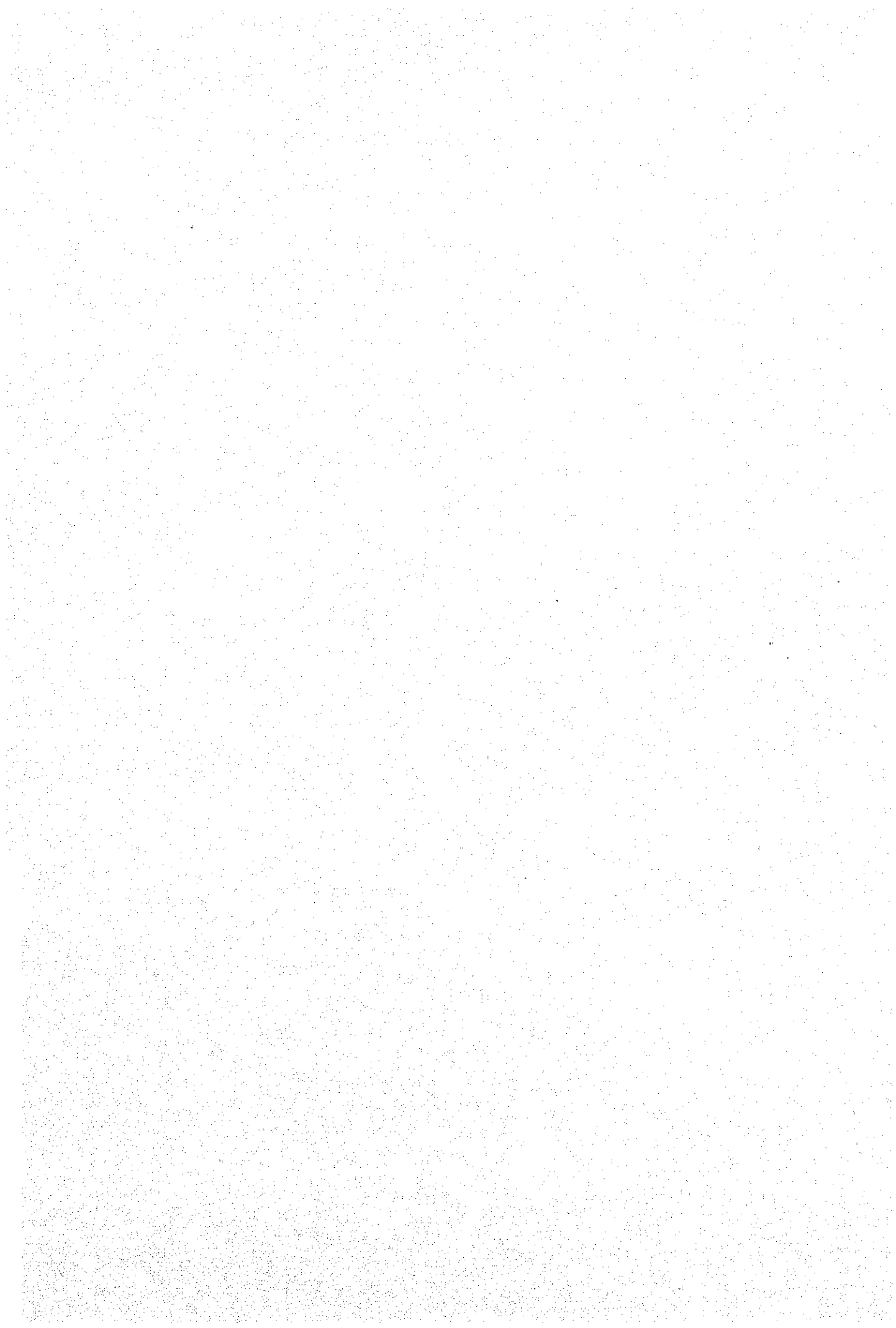| ENVIRONMENT COMPONENTS	Kinds of impact	PRE-CONSTRUCTION STAGE			
		Survey and Investigation		Compensation for Land Release	
		Remark	Scale	Remark	Scale
SOCIOECONOMY AND CULTURE					
1. Public Perception/Attitude	a. No.of people	830/152,629 x 100 = 0.54 %	1	830/152,629 x 100 = 0.54 %	1
	b. Extent of area	narrow	1	small	1
	c. Duration	only during pre-construction stage	2	pre-construction stage	2
	d. Intensity	significant	2	low	2
	e. No.of components	one socio-economic component	1	4	1
	f. Period	cummulative, not too long	3	cummulative, not too long	3
	g. Recoverage	possibly eliminated	2	possibly eliminated	2
	Average of scale		1.7		1.7
2. land ownership	a. No.of people			830/152,629 x 100 = 0.5 %	1
	b. Extent of area			two districts	3
	c. Duration			pre-construction stage	1
	d. Intensity			low	2
	e. No.of Components			4	1
	f. Period			cummulative, not too long	3
	g. Recoverage			can not to be eliminated	3
	Average of scale				2.0
3. Means of Livelihood/ Employment	a. No.of people			197/19,512 x 100 = 1.0 %	1
	b. Extent of area			two districts	3
	c. Duration			low	3
	d. Intensity			pre-, and construction stage	2
	e. No.of Components			4	3
	f. Period			cummulative, not too long	3
	g. Recoverage			can not be eliminated	3
	Average of scale				2.6
4. People's income	a. No.of people			830/152,629 x 100 = 0.5 %	1
	b. Extent of area			two districts	3
	c. Duration			pre-construction stage	1
	d. Intensity			low	2
	e. No.of Components			4	1
	f. Period			cummulative, not too long	3
	g. Recoverage			temporary	3
	Average of scale				2.0
5. Public facilites	a. No.of people			830/152,629 x 100 = 0.5 %	1
	b. Extent of area			two districts	3
	c. Duration			pre-, and construction stages	3
	d. Intensity			low	2
	e. No.of Components			4	1
	f. Period			cummulative, short	3
	g. Recoverage			can be recovered	2
	Average of scale				2.1

Table V.48 Evaluation of Significant Impacts of Kampar Kanan Water Supply Project.
Area : Kuok Weir and Rantauberangin Irrigation Channel
Activity Stage : Construction Stage

ENVIRONMENT COMPONENTS	Kinds of impact	CONSTRUCTION STAGE						4. Construction implementation			
		1. Mobilization of heavy quipment Remark	Scale	2. Mobilization of manpower Remark	Scale	3. Land clearance Remark	Scale	4-1.River improvement	Scale	4-2. Main construction	Scale
GEOPHYSICS-CHIMISTRY											
1. Air quality/ noise	a. Extent	6,293/152,629 x 100 = 4.0 %	1			1330/152,629 x 100 = 0.9 %	1	500 people, 0.3%	1	1,330/152,629 x 100 = 0.9 %	1
	b. Area	relatively small	1			relatively small	1	small, at the work side	1	small	1
	c. Duration	construction stage	2			at part of the construction stage	2	construction stage	3	construction stage	3
	d. Intensity	increase	2			increase	2	increase	3	increase	2
	e. No.of components	3	1			3	1	5	2	2	1
	f. Period	neutralized	1			neutralized	1	neutralized	1	neutralized	1
	g. Recoverage	can be eliminated	1			can be eliminated	1	possibly eliminated	1	possibly eliminated	1
	Average of scale		1.3				1.3		1.7		1.4
2. Physiography/ geology	a. Extent					No one is affected	1	A few people is affected	1	1,330/152,629 x 100 = 0.9 %	1
	b. Area					relatively small	1	small	1	small	1
	c. Duration					construction stage	3	construction stage	3	construction stage	3
	d. Intensity					increase	2	low	1	increase	2
	e. No.of Components							5 components	2	2 components	1
	f. Period					neutralizable	1	neutralized	1	neutralized	1
	g. Recoverage					can not be eliminated	1	possibly eliminated	1	not possible to eliminate	5
	Average of scale						1.3		1.4		2.0
3. Water quality	a. Extent					5463/152,629 x 100 = 3.5 %	1	3465/152,629 x 100% = 2.2%	1		
	b. Area					relatively small, one subdistrict area	3	small	1		
	c. Duration					at the construction stage	3	construction stage	3		
	d. Intensity					increase	2	increase	2		
	e. No.of Components					7	2	5	2		
	f. Period					neutralizable	1	cummulative, in a long time	2		
	g. Recoverage					cannot be eliminated, no compound	1	can not to be eliminated	1		
	Average of scale						1.9		1.7		
4. Land use system	a. Extent					830/152,629 x 100 = 0.5 %	1				
	b. Area					relatively small	1				
	c. Duration					at part of the construction stage	3				
	d. Intensity					change of land function is great	3				
	e. No.of Components					7	2				
	f. Period					neutralizable	1				
	g. Recoverage					can be eliminated	1				
	Average of scale						1.7				
5. River Flow Pattern	a. Extent							3,465/152,629 x 100 = 2.2 %	1		
	b. Area							small	1		
	c. Duration							construction stage	3		
	d. Intensity							low	2		
	e. No.of Components							5 components	2		
	f. Period							cummulative, in a long time	2		
	g. Recoverage							impossible to eliminate	5		
	Average of scale								2.3		

Table V.48 Evaluation of Significant Impacts of Kampar Kanan Water Supply Project.
Area : Kuok Weir and Rantauberangin Irrigation Channel
Activity Stage : Construction Stage

ENVIRONMENT COMPONENTS	Kinds of impact	CONSTRUCTION STAGE						4. Construction implementation			
		1. Mobilization of heavy quipment Remark	Scale	2. Mobilization of manpower Remark	Scale	3. Land clearance Remark	Scale	4-1.River improvement	Scale	4-2. Main construction	Scale
BIOLOGY											
6. Terrestrial Flora	a. Extent					No one is affected	1				
	b. Extent of area					relativey small	1				
	c. Duration					construction stage, partly post- stage	4				
	d. Intensity					low	2				
	e. No.of Components					7	2				
	f. Period					neutralized	1				
	g. Recoverage					not possible to eliminate	4				
	Average of scale						2.1				
7. Terrestrial Fauna	a. Extent					No one is affected	1				
	b. Extent of area					relatively small	1				
	c. Duration					construction stage, partly post- stage	4				
	d. Intensity					low	2				
	e. No.of Components					7	2				
	f. Period					cummulative, for a long time	1				
	g. Recoverage					can be eliminated	1.0				
	Average of scale						1.7				
8. Aquatic Fauna	a. Extent							No one is affected	1		
	b. Extent of area							relatively small	1		
	c. Duration							construction and post- stage	4		
	d. Intensity							very low	2		
	e. No.of Components							5	2		
	f. Period							neutralizable	1		
	g. Recoverage							cannot be eliminated	4		
	Average of scale								2.1		
SOCIOECONOMY AND CULTURE											
9. Public Perception/Attitude	a. No.of people			15,869/152,629 x 100 = 10.4 %	2						
	b. Extent of area			2 districts	3						
	c. Duration			construction stage	3						
	d. Intensity			low	2						
	e. No.of components			3	1						
	f. Period			cummulative, in a short time	3						
	g. Recoverage			can be eliminated	2						
	Average of scale				2.3						
10. Customs/ traditions	a. No.of people			500/152,629 x 100 = 0.3 %	1						
	b. Extent of area			very small, around the worker's domicile	1						
	c. Duration			part of construction stage	2						
	d. Intensity			low	2						
	e. No.of Components			5	2						
	f. Period			cummulative, in a long time	2						
	g. Recoverage			can be eliminated	1						
	Average of scale				1.6						
11. Means of Livelihood/ Employ-ment	a. No.of people			500/152,629 x 100 = 0.3 %	1						
	b. Extent of area			Indragiri Hulu Regency	3						
	c. Duration			part of construction stage	3						
	d. Intensity			low	2						
	e. No.of Components			3	1						
	f. Period			cummulative, in a short time	3						
	g. Recoverage			can be eliminated	2						
	Average of scale				2.1						

Table V.48 Evaluation of Significant Impacts of Kampar Kanan Water Supply Project.
Area : Kuok Weir and Rantauberangin Irrigation Channel
Activity Stage : Construction Stage

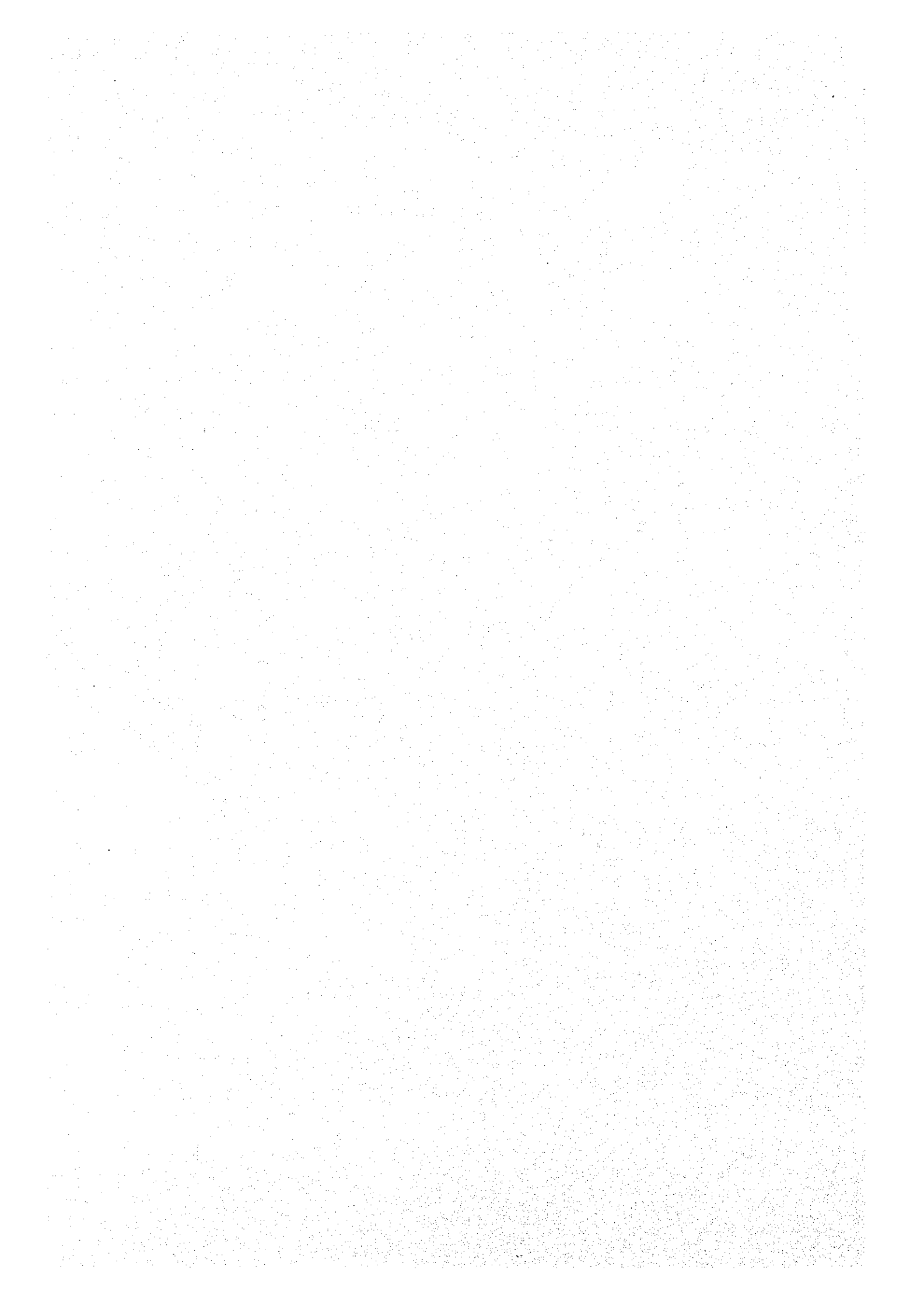| ENVIRONMENT COMPONENTS	Kinds of impact	CONSTRUCTION STAGE						4. Construction implementation			
		1. Mobilization of heavy equipment Remark	Scale	2. Mobilization of manpower Remark	Scale	3. Land clearance Remark	Scale	4-1.River improvement	Scale	4-2. Main construction	Scale
12. People's income	a. No.of people			500/152,629 x 100 = 0.3 %	1						
	b. Extent of area			Indragiri Hulu Regency	3						
	c. Duration			at the construction stage	3						
	d. Intensity			low	2						
	e. No.of Components			3	1						
	f. Period			cummulative, in a short time	3						
	g. Recoverage			can be eliminated	2						
	Average of scale				2.1						
13. Environment aesthetics	a. No.of people	5463/152,629 x 100 = 3.5 %	1			830/152,629 x 100 = 0.5 %	1				
	b. Extent of area	small	1			small, just around the location	1				
	c. Duration	construction stage	3			construction stage	2				
	d. Intensity	very low	1			low	2				
	e. No.of Components	3	1			7.0	2				
	f. Period	cummulative, not seen quickly	1			cummulative, for a long time	2				
	g. Recoverage	can be eliminated	1			can be eliminated	1				
	Average of scale		1.3				1.6				
14. Public health	a. No.of people	6293/152,629 x 100 = 4 %	1			1330/152,629 x 100 = 0.9 %	1	3465/152,629 x 100 % = 2.2 %	1	1,330/152,629 x 100 = 0.9 %	1
	b. Extent of area	small	1			small	2	small	1	small	2
	c. Duration							construction stage	3	construction stage	3
	d. Intensity	medium	3			medium	3	low	2	low	2
	e. No.of Components	3	1			7.0	2	8.0	1	2	1
	f. Period	cummulative, in a short time	3			cummulative, in a short time	3	cummulative, in a short time	3	cummulative, in a short time	3
	g. Recoverage	can be eliminated	3			can be eliminated, controlled	2	can be eliminated	2	can be eliminated	2
	Average of scale		1.7				2.2		1.9		2.0
15. Public facilites	a. No.of people	5463/152,629 x 100 = 3.5 %	1								
	b. Extent of area	relatively small	1								
	c. Duration	part of construction stage	2								
	d. Intensity	low	1								
	e. No.of Components	3	1								
	f. Period	cummulative, in a short time	3								
	g. Recoverage	can be eliminated	2								
	Average of scale		1.6								

Table V.48 Evaluation of Significant Impacts of Kampar Kanan Water Supply Project.
Area : Kuok weir and Rantauberangin Irrigation Channel
Activity Stage : Post-Construction Stage

ENVIRONMENT COMPONENTS	Kinds of impact	PROJECT ACTIVITY Weir and irrigation channel operation / maintenance	Scale
GEOPHYSICS-CHMISTRY			
1. physiography and geology	a. No.of people	No one is affected	1
	b. Extent of area	Kampar Regency	2
	c. Duration	Post-construction stage	5
	d. Intensity	geometrical changes to river body	3
	e. No.of Components	3	1
	f. Period	cumulative, effects are long	1
	g. Recoverage	impossible to eliminate compound effects	5
	Average of scale		2.7
SOCIOECONOMY AND CULTURE			
1. Means of Livelihood/ Employment opportunities	a. No.of people	97,562	3
	b. Extent of area	Kampar Regency	3
	c. Duration	construction stage	5
	d. Intensity	high	4
	e. No.of Components	3	1
	f. Period	cummulative, in a short time	3
	g. Recoverage	impossible to eliminate no compound effect	4
	Average of scale		3.4
2. Income	a. No.of people	97,562	4
	b. Extent of area	Kampar Regency	3
	c. Duration	construction stage	5
	d. Intensity	high, 50-75 % of people are affected	4
	e. No.of Components	3	1
	f. Period	cummulative, in a short time	3
	g. Recoverage	impossible to eliminate no compound effect	4
	Average of scale		3.4
3. Public health	a. No.of people	97,562	2
	b. Extent of area	wider area than the planned area	3
	c. Duration	construction stage	4
	d. Intensity	medium	3
	e. No.of Components	3	3
	f. Period	cummulative, in a short time	3
	g. Recoverage	cannot be eliminated	2
	Average of scale		2.9
4. Environment aesthetics	a. No.of people	15,423	3
	b. Extent of area	wider area than the planned area	5
	c. Duration	post-construction stage	5
	d. Intensity	low	2
	e. No.of Components	3	4
	f. Period	cummulative, in a short time	4
	g. Recoverage	cannot be eliminated	3
	Average of scale		3.7

Table V.49 Evaluation of Significant Impacts of Bangkinang Area River Improvement Works.
Area : Bangkinang dike
Activity Stage : Pre-Construction Stage

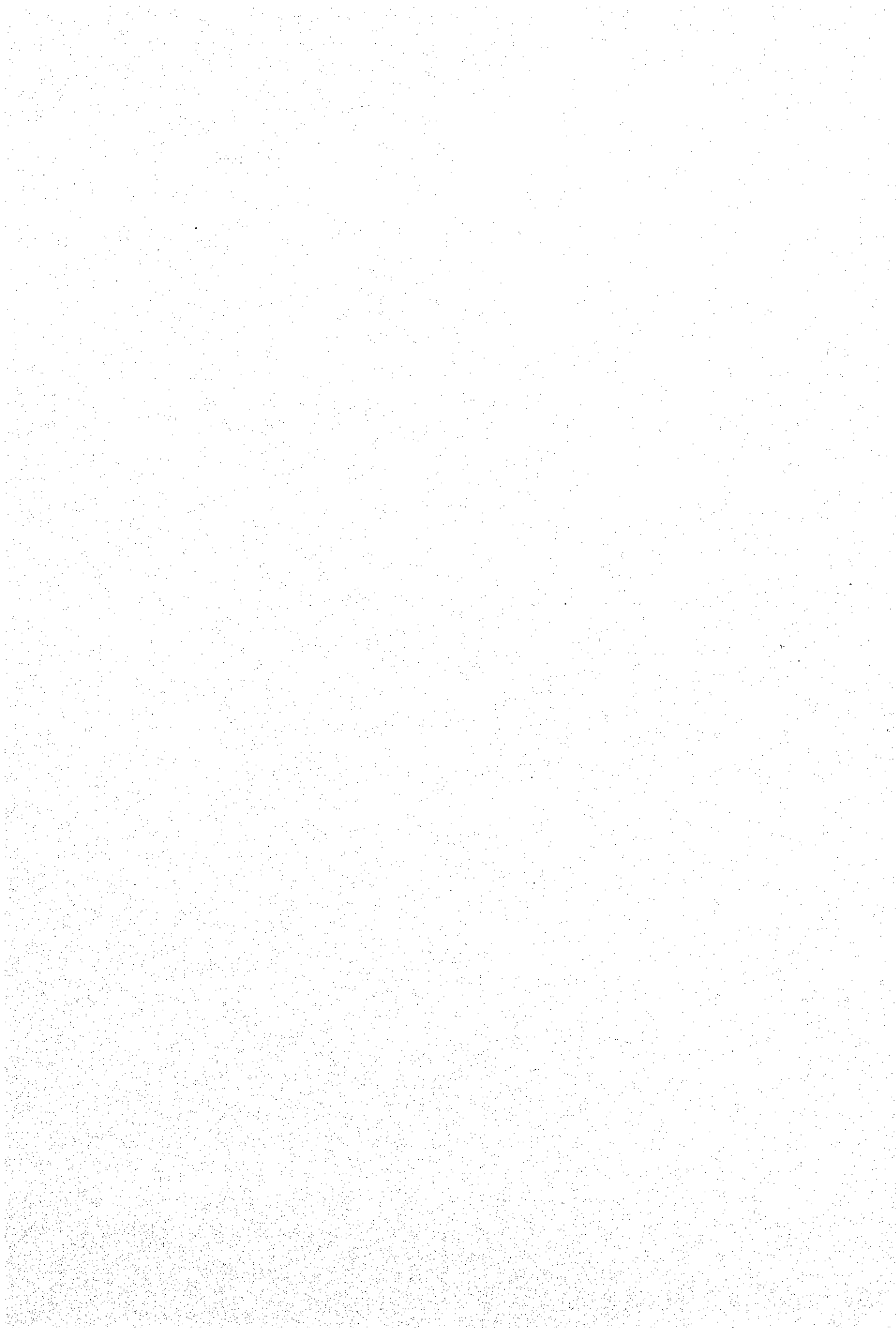| ENVIRONMENT COMPONENTS	Kinds of impact	PRE-CONSTRUCTION STAGE			
		Survey and Investigation Remark	Scale	Compensation for Land Release Remark	Scale
SOCIOECONOMY AND CULTURE					
1. Public Perception/Attitude	a. No.of people	3465/152,629 x 100 = 2.2 %	1	3465/152,629 x 100 = 2.2 %	1
	b. Extent of area	narrow	1	small	1
	c. Duration	only during pre-construction stage	2	pre-construction stage	2
	d. Intensity	significant	2	low	2
	e. No.of components	one socio-economic component	1	4	1
	f. Period	cummulative, not too long	3	cummulative, not too long	3
	g. Recoverage	possibly eliminated	2	possibly eliminated	2
	Average of scale		1.7		1.7
2. land ownership	a. No.of people			3,465/152,629 x 100 = 2.2 %	1
	b. Extent of area			two districts	3
	c. Duration			pre-construction stage	1
	d. Intensity			low	2
	e. No.of Components			4	1
	f. Period			cummulative, not too long	3
	g. Recoverage			can not to be eliminated	3
	Average of scale				2.0
3. Means of Livelihood/ Employment	a. No.of people			40/19,512 x 100 = 0.2 %	1
	b. Extent of area			two districts	3
	c. Duration			low	3
	d. Intensity			pre-, and construction stage	2
	e. No.of Components			4	3
	f. Period			cummulative, not too long	3
	g. Recoverage			can not be eliminated	3
	Average of scale				2.6
4. People's income	a. No.of people			3465/152,629 x 100 = 2.2 %	2
	b. Extent of area			two districts	3
	c. Duration			pre-construction stage	1
	d. Intensity			low	2
	e. No.of Components			4	1
	f. Period			cummulative, not too long	3
	g. Recoverage			temporary	3
	Average of scale				2.1
5. Public facilites	a. No.of people			3465/152,629 x 100 = 2.2 %	1
	b. Extent of area			two districts	3
	c. Duration			pre-, and construction stages	3
	d. Intensity			low	2
	e. No.of Components			4	1
	f. Period			cummulative, short	3
	g. Recoverage			can be recovered	2
	Average of scale				2.1

Table V.49 Evaluation of Significant Impacts of Bangkinang Area River Improvement Works:
Area : Bangkinang Dike
Activity Stage : Construction Stage

| ENVIRONMENT COMPONENTS | Kinds of impact | CONSTRUCTION STAGE | | | | | | 4. Construction implementation | | | |
		1. Mobilization of heavy equipment Remark	Scale	2. Mobilization of manpower Remark	Scale	3. Land clearance Remark	Scale	4-1.River improvement	Scale	4-2. Main construction	Scale
GEOPHYSICS-CHIMISTRY											
1. Air quality/ noise	a. Extent	3465/152,629 x 100 = 2.2 %	1			3865/152,629 x 100 = 2.5 %	1	500 people, 0.3%	1	3,865/152,629 x 100 = 2.5 %	1
	b. Area	relatively small	1			relatively small	1	small, at the work side	1	small	1
	c. Duration	construction stage	2			at part of the construction stage	2	construction stage	3	construction stage	3
	d. Intensity	increase	2			increase	2	increase	3	increase	2
	e. No.of components	3	1			3	1	5	2	2	1
	f. Period	neutralized	1			neutralized	1	neutralized	1	neutralized	1
	g. Recoverage	can be eliminated	1			can be eliminated	1	possibly eliminated	1	possibly eliminated	1
	Average of scale		1.3				1.3		1.7		1.4
2. Physiography/ geology	a. Extent					No one is affected	1	A few people is affected	1	3,865/152,629 x 100 = 2.5 %	1
	b. Area					relatively small	1	small	1	small	1
	c. Duration					construction stage	3	construction stage	3	construction stage	3
	d. Intensity					increase	2	low	1	increase	2
	e. No.of Components							5 components	2	2 components	1
	f. Period					neutralizable	1	neutralized	1	neutralized	1
	g. Recoverage					can not be eliminated	1	possibly eliminated	1	not possible to eliminate	.5
	Average of scale						1.3		1.4		2.0
3. Water quality	a. Extent					No one is affected	1	3465/152,629 x 100% = 2.2%	1		
	b. Area					relatively small, one subdistrict area	3	small	1		
	c. Duration					at the construction stage	3	construction stage	3		
	d. Intensity					increase	2	increase	2		
	e. No.of Components					7	2	5	2		
	f. Period					neutralizable	1	cummulative, in a long time	2		
	g. Recoverage					cannot be eliminated, no compound	1	can not to be eliminated	1		
	Average of scale						1.9		1.7		
4. Land use system	a. Extent					3,465/152,629 x 100 = 2.2 %	1				
	b. Area					relatively small	1				
	c. Duration					at part of the construction stage	3				
	d. Intensity					change of land function is great	3				
	e. No.of Components					7	2				
	f. Period					neutralizable	1				
	g. Recoverage					can be eliminated	1				
	Average of scale						1.7				
5. River Flow Pattern	a. Extent							3,465/152,629 x 100 = 2.2 %	1		
	b. Area							small	1		
	c. Duration							construction stage	3		
	d. Intensity							low	2		
	e. No.of Components							5 components	2		
	f. Period							cummulative, in a long time	2		
	g. Recoverage							impossible to eliminate	5		
	Average of scale								2.3		

Table V.49 Evaluation of Significant Impacts of Bangkinang Area River Improvement Works:
Area : Bangkinang Dike
Activity Stage : Construction Stage

ENVIRONMENT COMPONENTS	Kinds of impact	CONSTRUCTION STAGE									
		1. Mobilization of heavy equipment		2. Mobilization of manpower		3. Land clearance		4. Construction implementation			
		Remark	Scale	Remark	Scale	Remark	Scale	4-1.River improvement	Scale	4-2. Main construction	Scale
BIOLOGY											
6. Terrestrial Flora	a. Extent					No one is affected	1				
	b. Extent of area					relativey small	1				
	c. Duration					construction stage, partly post- stage	4				
	d. Intensity					low	2				
	e. No.of Components					7	2				
	f. Period					neutralized	1				
	g. Recoverage					not possible to eliminate	4				
	Average of scale						2.1				
7. Terrestrial Fauna	a. Extent					No one is affected	1				
	b. Extent of area					relatively small	1				
	c. Duration					construction stage, partly post- stage	4				
	d. Intensity					low	2				
	e. No.of Components					7	2				
	f. Period					cummulative, for a long time	1				
	g. Recoverage					can be eliminated	1.0				
	Average of scale						1.7				
8. Aquatic Fauna	a. Extent							No one is affected	1		
	b. Extent of area							relatively small	1		
	c. Duration							construction and post- stage	4		
	d. Intensity							very low	2		
	e. No.of Components							5	2		
	f. Period							neutralizable	1		
	g. Recoverage							cannot be eliminated	4		
	Average of scale								2.1		
SOCIOECONOMY AND CULTURE											
9. Public Perception/Attitude	a. No.of people			15,869/152,629 x 100 = 10.4 %	2						
	b. Extent of area			2 districts	3						
	c. Duration			construction stage	3						
	d. Intensity			low	2						
	e. No.of components			3	1						
	f. Period			cummulative, in a short time	3						
	g. Recoverage			can be eliminated	2						
	Average of scale				2.3						
10. Customs/ traditions	a. No.of people			400/152,629 x 100 = 0.2 %	1						
	b. Extent of area			very small, around the worker's domicile	1						
	c. Duration			part of construction stage	2						
	d. Intensity			low	2						
	e. No.of Components			5	2						
	f. Period			cummulative, in a long time	2						
	g. Recoverage			can be eliminated	1						
	Average of scale				1.6						
11. Means of Livelihood/ Employ-ment	a. No.of people			400/152,629 x 100 = 0.2 %	1						
	b. Extent of area			Indragiri Hulu Regency	3						
	c. Duration			part of construction stage	3						
	d. Intensity			low	2						
	e. No.of Components			3	1						
	f. Period			cummulative, in a short time	3						
	g. Recoverage			can be eliminated	2						
	Average of scale				2.1						

Table V.49 Evaluation of Significant Impacts of Bangkinang Area River Improvement Works:
Area : Bangkinang Dike
Activity Stage : Construction Stage

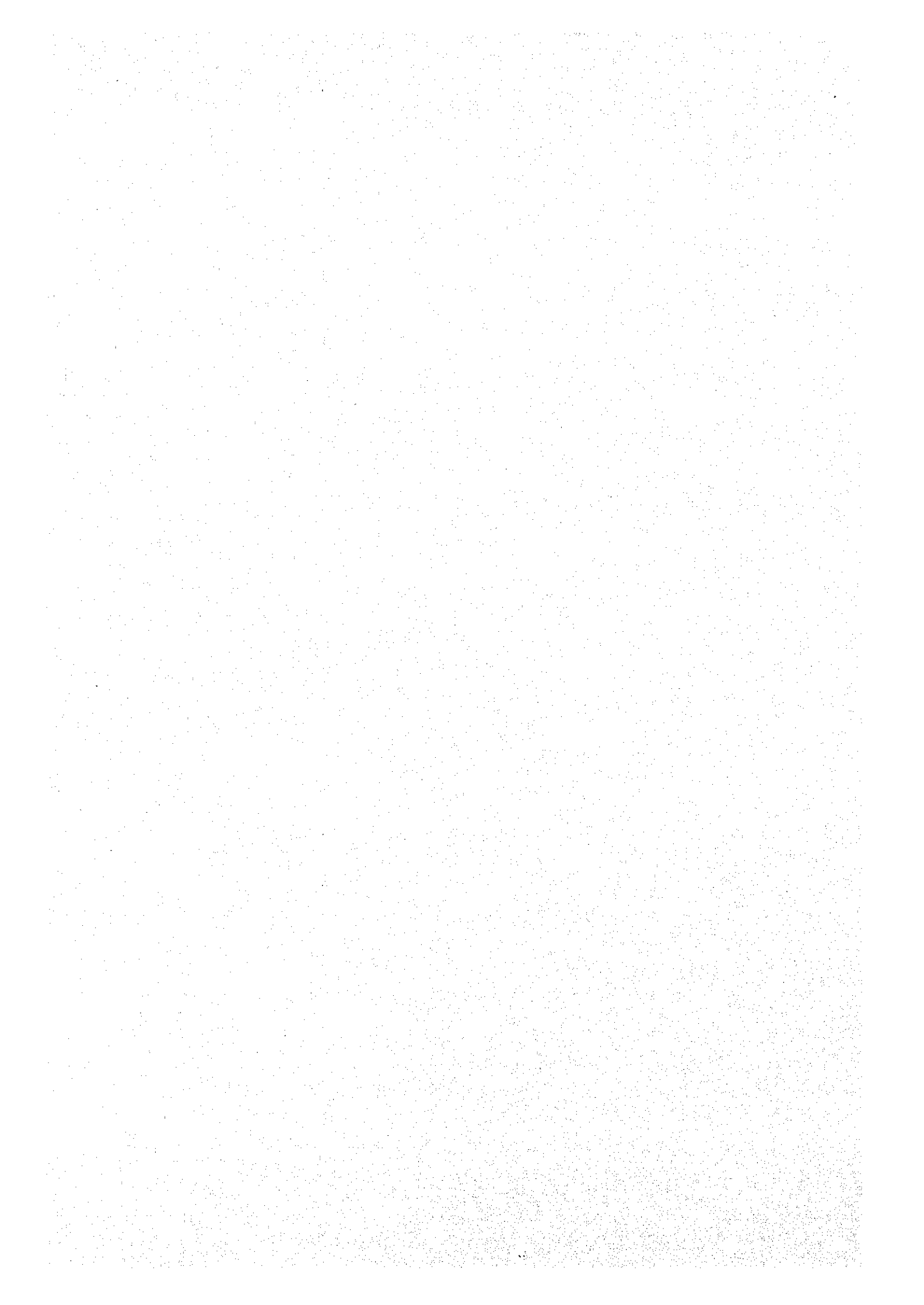| ENVIRONMENT COMPONENTS	Kinds of impact	CONSTRUCTION STAGE								
		1. Mobilization of heavy quipment		2. Mobilization of manpower		3. Land clearance		4. Construction implementation			
		Remark	Scale	Remark	Scale	Remark	Scale	4-1.River improvement	Scale	4-2. Main construction	Scale
12. People's income	a. No.of people			400/152,629 x 100 = 0.2 %	1						
	b. Extent of area			Indragiri Hulu Regency	3						
	c. Duration			at the construction stage	3						
	d. Intensity			low	2						
	e. No.of Components			3	1						
	f. Period			cummulative, in a short time	3						
	g. Recoverage			can be eliminated	2						
	Average of scale				2.1						
13. Environment aesthetics	a. No.of people	3465/152,629 x 100 = 2.2 %	1			3,465/152,629 x 100 = 2.2 %	1				
	b. Extent of area	small	1			small, just around the location	1				
	c. Duration	construction stage	3			construction stage	2				
	d. Intensity	very low	1			low	2				
	e. No.of Components	3	i			7.0	2				
	f. Period	cummulative, not seen quickly	1			cummulative, for a long time	2				
	g. Recoverage	can be eliminated	1			can be eliminated	1				
	Average of scale		1.3				1.6				
14. Public health	a. No.of people	3463/152,629 x 100 = 2.2 %	1			3865/152,629 x 100 = 2.5 %	2	3465/152,629 x 100 % = 2.2 %	1	3,865/152,629 x 100 = 2.5 %	1
	b. Extent of area	small	1			small	2	small	1	small	2
	c. Duration							construction stage	3	construction stage	3
	d. Intensity	medium	3			medium	3	low	2	low	2
	e. No.of Components	3	1			7.0	2	8.0	1	2	1
	f. Period	cummulative, in a short time	3			cummulative, in a short time	3	cummulative, in a short time	3	cummulative, in a short time	3
	g. Recoverage	can be eliminated	3			can be eliminated, controlled	2	can be eliminated	2	can be eliminated	2
	Average of scale		1.7				2.3		1.9		2.0
15. Public facilites	a. No.of people	3465/152,629 x 100 = 2.2 %	1								
	b. Extent of area	relatively small	1								
	c. Duration	part of construction stage	2								
	d. Intensity	low	1								
	e. No.of Components	3	1								
	f. Period	cummulative, in a short time	3								
	g. Recoverage	can be eliminated	2								
	Average of scale		1.6								

Table V.49 Evaluation of Significant Impacts of Bangkinang Area River Improvement Works.
Area : Bangkinang Dike
Activity Stage : Post-Construction Stage

ENVIRONMENT COMPONENTS	Kinds of impact	PROJECT ACTIVITY Weir and irrigation channel operation / maintenance	Scale
GEOPHYSICS-CHMISTRY			
1. physiography and geology	a. No.of people	No one is affected	1
	b. Extent of area	Kampar Regency	2
	c. Duration	Post-construction stage	5
	d. Intensity	geometrical changes to river body	3
	e. No.of Components	3	1
	f. Period	cumulative, effects are long	1
	g. Recoverage	impossible to eliminate compound effects	5
	Average of scale		2.7
SOCIOECONOMY AND CULTURE			
1. Means of Livelihood/ Employ- ment opportunities	a. No.of people	97,562	3
	b. Extent of area	Kampar Regency	3
	c. Duration	construction stage	5
	d. Intensity	high	4
	e. No.of Components	3	1
	f. Period	cummulative, in a short time	3
	g. Recoverage	impossible to eliminate no compound effect	4
	Average of scale		3.4
2. Income	a. No.of people	97,562	4
	b. Extent of area	Kampar Regency	3
	c. Duration	construction stage	5
	d. Intensity	high, 50-75 % of people are affected	4
	e. No.of Components	3	1
	f. Period	cummulative, in a short time	3
	g. Recoverage	impossible to eliminate no compound effect	4
	Average of scale		3.4
3. Public health	a. No.of people	97,562	2
	b. Extent of area	wider area than the planned area	3
	c. Duration	construction stage	4
	d. Intensity	medium	3
	e. No.of Components	3	3
	f. Period	cummulative, in a short time	3
	g. Recoverage	cannot be eliminated	2
	Average of scale		2.9
4. Environment aesthetics	a. No.of people	15,423	3
	b. Extent of area	wider area than the planned area	5
	c. Duration	post-construction stage	5
	d. Intensity	low	2
	e. No.of Components	3	4
	f. Period	cummulative, in a short time	4
	g. Recoverage	cannot be eliminated	3
	Average of scale		3.7

Table V.51 Mean Daily Temperature and Humidity
in Kuantan Dam and Lubukjambi Weir
and Irrigation Canal (1979-1993)

Month	Temperature (C)	Humidity (%)
Jan.	26.5	86.7
Feb.	27.4	77.6
Mar.	27.2	77.4
Apr.	27.2	77.5
May	27.8	84.0
Jun.	27.4	86.3
Jul.	27.2	84.1
Aug.	27.4	83.8
Sep.	27.0	85.4
Oct.	27.6	76.9
Nov.	27.0	68.4
Dec.	26.0	70.3
Average	27.1	79.9
Maximum	27.8	86.7
Minimum	26.0	68.4

Table V.50 Average Monthly Rainfall in Lubukjambi Dam,
intake weir and irrigation canal (1981-1992)

Month	Rainfall (mm)
Jan.	288
Feb.	165
Mar.	284
Apr.	253
May	263
Jun.	112
Jul.	133
Aug.	109
Sep.	158
Oct.	212
Nov.	282
Dec.	319
Total	2,578
Average	215
Maximum	319
Minimum	109

Table V.52 Average Monthly Rainfall in Rengat City (1983-1993)

Month	Rainfall (mm)
Jan.	191
Feb.	142
Mar.	183
Apr.	230
May	185
Jun.	101
Jul.	96
Aug.	82
Sep.	157
Oct.	213
Nov.	237
Dec.	254
Total	2,071
Average	172
Maximum	254
Minimum	82

Table V.53 Mean Daily Temperature and Humidity in Rengat City (1983-1993)

Month	Temperature (C)	Humidity (%)
Jan.	25.3	89.0
Feb.	25.9	85.0
Mar.	25.7	89.0
Apr.	26.8	86.0
May	26.5	88.0
Jun.	27.2	85.0
Jul.	26.3	86.0
Aug.	26.8	84.0
Sep.	26.4	86.0
Oct.	25.9	88.0
Nov.	26.0	89.0
Dec.	25.8	89.0
Average	26.2	87.0
Maximum	27.2	89.0
Minimum	25.3	84.0

Table V.54 Average Monthly Indragiri River
Discharge in Lower Kuantan Dam (1981-1992)

Month	Mean Discharge (m³/sec.)
Jan.	353.3
Feb.	259.8
Mar.	345.3
Apr.	332.5
May	338.0
Jun.	136.0
Jul.	119.8
Aug.	106.4
Sep.	179.7
Oct.	252.1
Nov.	379.8
Dec.	327.7
Average	260.9
Maximum	379.8
Minimum	106.4

Table V.55 Recorded floods and peak
discharges in Indragiri River (Pulau Berhalo)

The date of flooding	Peak of discharge (m³/sec.)
08 January 1986	3850
27 January 1988	1342
24 Januari 1989	1342
29 December 1991	2250
01 January 1992	1401

Table V.56 Water Use at Downstream stretch
of Lower Kuantan Dam (1994)

Type of Use	Amount of Use (m³/sec.)
Domestic Use	2,241,120
Irrigation Use	527,693,350
Industrial Use	1,884,700
Total	531,819,170

Source : JICA Interim report (1994)

Table V.57 Average Monthly Indragiri
River Discharge in Rengat (1981-1992)

Month	Mean Discharge (m³/sec.)
Jan.	654.3
Feb.	423.0
Mar.	574.0
Apr.	589.5
May	579.8
Jun.	248.9
Jul.	217.8
Aug.	193.9
Sep.	309.1
Oct.	440.6
Nov.	644.7
Dec.	666.6
Average	461.9
Maximum	666.6
Minimum	193.9

Table V.58 Water Quality of Indragiri River

No	Parameter	Unit	Station 1	2	3	4	5	6	7	8
PHYSICS										
1	Temperature	oC	26	27	26	25	26	24	27	29
2	Suspended Solid Matters	g/l	0.188	0.396	0.188	0.188	0.188	0.188	0.188	0.095
3	Dissolved Solid Matters	g/l	0.041	0.048	0.041	0.041	0.041	0.041	0.041	0.038
4	Turbidity	m	1.0	1.0	2.3	2.0	0.5	1.0	1.0	1.0
5	Electrical Conductivity	mmho/cm	165	150	165	165	165	165	165	100
CHEMICS										
1	pH		8.1	8.4	7.8	8.1	8.4	8.4	7.7	7.2
2	Ferro/Ferri	mg/l	0.80	0.89	0.25	0.39	1.20	0.08	0.48	0.79
3	Manganese	mg/l	0.06	0.06	ND	0.05	0.01	0.06	ND	ND
4	Barium	mg/l	ND	ND	ND	ND	ND	ND	ND	ND
5	Copper	mg/l	ND	ND	ND	ND	ND	ND	ND	ND
6	Zinc	mg/l	ND	ND	ND	ND	ND	ND	ND	ND
7	Hexavalent Cromium	mg/l	0.008	0.01	0.004	0.006	0.005	0.003	0.007	0.009
8	Total chrom	mg/l	ND	ND	0.001	ND	ND	0.001	ND	ND
9	Cadmium	mg/l	ND	ND	ND	ND	ND	ND	ND	ND
10	Mercury	µg/l	0.01	0.01	0.01	ND	0.02	0.01	ND	ND
11	Lead	mg/l	ND	ND	ND	ND	ND	ND	ND	ND
12	Stanum	mg/l	0.01	0.01	ND	ND	0.04	0.01	ND	0.01
13	Arsenic	mg/l	ND	ND	ND	ND	ND	ND	ND	ND
14	Selenium	mg/l	ND	ND	ND	ND	ND	ND	ND	ND
15	Nickel	mg/l	ND	ND	ND	ND	ND	ND	ND	ND
16	Cobalt	mg/l	ND	ND	ND	ND	ND	ND	ND	ND
17	Cyanide	mg/l	ND	ND	ND	ND	ND	ND	ND	ND
18	Sulphide	mg/l	1.75	1.56	1.94	1.75	0.97	1.75	1.94	1.56
19	Sulphate	mg/l	0.086	0.03	0.02	0.012	0.054	0.069	0.023	0.055
20	Fluoride	mg/l	0.013	0.043	0.063	0.008	0.035	0.035	0.038	0.008
21	Free Cloride	mg/l	4.76	3.18	1.59	2.38	3.18	2.38	1.59	1.59
22	Free Ammonia	mg/l	0.14	0.21	ND	0.17	ND	0.21	0.23	0.36
23	Nitrate	mg/l	0.13	0.13	0.18	0.13	0.13	0.13	0.16	0.16
24	Nitrite	mg/l	0.002	0.005	0.001	0.002	0.001	0.002	0.005	0.006
25	Phosphate	mg/l	0.116	0.113	0.098	0.111	0.138	0.109	0.250	0.131
26	DO	mg/l	6	6	6.8	5.8	6.2	6.4	4.8	3.8
27	BOD	mg/l	3	4	4	3.2	3	3	5	4.9
28	COD	mg/l	15.6	11.9	12	14.6	14	15	20.9	19.6
29	Methelyn Blue Active Substances	mg/l	0.008	0.012	0.007	0.007	0.006	0.001	0.010	0.015
30	Oil/Grase	mg/l	0.11	ND	0.33	ND	0.2	ND	ND	0.1
31	Pesticide		+	+	--	+	+	+	+	+
32	Alkalinity	mg/l	54.6	44.85	14.63	76.05	36.08	38.03	44.82	24.38
33	Hardness	mg/l	57.94	48.59	31.77	76.63	46.72	35.51	50.46	29.90
34	Phenol	mg/l	ND	0.002	0.003	ND	0.004	ND	ND	0.001
35	Permanganate	mg/l	7.13	9.23	16.43	10.43	9.83	9.83	17.85	16.43

Note) Location of station 1: Muara Sijunjung   5: Lower Kuantan dam
                           2: Pintu Batu   6: Lubuk Ambacang
                           3: Batang Banuang   7: Lubuk Jambi
                           4: Batang Karing   8: Rengat

Table V.59 Spatial Structure Plan in Lower Kuantan Dam and Reservoir Area (1994)

No.	Zone	Tanjung Gadang	Kuantan Mudik	Amount (Ha.)	Occupied percentage (%)
1	Protected Zone	0	200	200	2.8
2	Buffer Zone	2,702	0	2702	38.1
3	Cultivation Zone	4,198	0	4198	59.1
4	Others	0	0	0	0
	Total	6,900	200	7,100	100

Table V.60 Spatial Structure Plan in Lubukjambi Weir and Irrigation Canal

No.	Zone	Area (Ha.)	Occupied percentage (%)
1	Plantation	230	60
2	Others	150	40
	Total	380	100

Table V.61 Present Land Use in Lower Kuantan Dam
and Reservoir Area

No.	Land Use	Area (Ha.)	Occupied percentage (%)
1	Home Yard	477	6.7
2	Paddy Field	424	6.0
3	Plantation	1,927	27.1
4	Grass Land	4,272	60.2
	Total	7,100	100.0

Table V.62 Present Land Use in Lubukjambi Weir
and Irrigation Canal

No.	Land Use	Area (Ha.)	Occupied percentage (%)
1	Home Yard	16.2	4.3
2	Paddy Field	23.3	6.1
3	Plantation	203.0	53.4
4	Grass Land	137.5	36.2
	Total	380.0	100.0

Table V.63 Soil fertility category in Lower Kuantan Reservoir

No.	Sampling location	Parameters	H Test	Category
1	Pintu Batu	pH	6	Acid
		N	12	Low
		P	8	Low
		K	70	Low
2	Tanjung Keling	pH	5.5	Acid
		N	10	Low
		P	10	Low
		K	75	Low
3	Batang Karing	pH	5.5	Acid
		N	12	Low
		P	10	Low
		K	60	Low

Table V.64 Soil fertility category in Lubukjambi Irrigation Canal

No.	Sampling location	Parameters	H Test	Category
1	Kampung Batu	pH	6	Acid
		N	25	Medium
		P	7	Low
		K	100	Low
2	Sungai Jering	pH	6	Acid
		N	10	Low
		P	12	Low
		K	75	Low
3	Batang Karing	pH	5.5	Acid
		N	12	Low
		P	10	Low
		K	70	Low

Table V.65 Spatial Structure Plan
in Rengat City Dike

No.	Zone	Area (Ha.)	Occupied percentage (%)
1	Plantation	12	13.95
2	Others	15	17.44
3	Buffer Zone	37	43.02
4	Others	22	25.58
	Total	86	100

Table V.66 Present Land Use
in Rengat City Dike

No.	Land Use	Area (Ha.)	Occupied percentage (%)
1	Home Yard	17.5	20.7
2	Paddy Field	19.0	22.5
3	Plantation	0.0	0.0
4	Grass Land	48.0	56.8
	Total	84.5	100.0

Table V.67 Flora (Tree) in Future Lower Kuantan Dam Location (Station 1)

No	Scientific Name	Local Name	Family	RF %	RD %	RB %	IV %	status D	L
1	Aleurites moluccana	Damar	Euphorbeaceae	2.83	2.27	2.39	7.49		
2	Artocarpus elasticus	Tarok	Moraceae	2.83	2.27	1.77	6.87		
3	Artocarpus integer	Cubadak hutan	Moraceae	2.83	2.27	0.31	5.41		
4	Calophyllum pulcherrimum	Bintangur	Guttiferae	6.98	6.82	5.80	19.60		
5	Campnosperma sp.	Tarantang	Anacardiaceae	2.83	2.27	2.39	7.49		
6	Cinnamomum sp.	Laso	Lauraceae	2.83	2.27	1.44	6.54		
7	Cratoxylon sp.	Geronggang	Guttiferae	2.83	2.27	1.07	6.17		
8	Dillenia sp.	Sijangkang	Dilleniaceae	2.83	2.27	0.65	5.75		
9	Drypetes sp	Timah-timah	Euphorbeaceae	2.83	2.27	0.49	5.59		
10	Durio oxleyanus	Durian	Bombacaceae	2.83	2.27	1.25	6.35		
11	Elateriospermum tapos	Tampuih	Euphorbeaceae	6.98	4.57	2.58	14.13		
12	Endospermum sp	Sanduak-sanduak	Euphorbeaceae	2.83	2.27	1.07	6.17		
13	Eugenia sp.	Kabau	Myrtaceae	2.83	2.27	2.76	7.86		
14	Fagrea fragrans	Tambusu	Loganiaceae	2.83	2.27	1.48	6.58		
15	Ficus variegata	Aro	Moraceae	2.83	2.27	3.95	9.05		
16	Garcinia celebica	Kandis	Guttiferae	2.83	2.27	2.44	7.54		
17	Gultha rengas	Rengas	Anacardiaceae	2.83	2.27	0.73	5.83		
18	Koompassia malaccensis	Kampas	Fabaceae	4.65	6.82	34.43	45.90		
19	Litsea sp	Medang	Lauraceae	2.83	2.27	2.59	7.69		
20	Macaranga triloba	Mahang	Euphorbeaceae	2.83	2.27	1.77	6.87		
21	Mallones paniculata	Baliak Angin	Euphorbeaceae	2.83	2.27	2.54	7.64		
22	Palaquium sp	Balam	Sapotaceae	2.83	2.27	7.53	12.63		
23	Parashorea nellata	Timbalun	Dipterocarpaceae	2.83	2.27	1.01	6.11		
24	Parkia speciosa	Petai	Fabaceae	2.83	2.27	2.04	7.14		
25	Payena obscura	Nyatoh	Sapotaceae	2.83	2.27	2.24	7.34		
26	Peronema canescens	Sungkai	Verbenaceae	2.83	2.27	0.73	5.83		
27	Pterospermum javanicum	Bayur	Sterculiaceae	2.83	2.27	1.82	6.92		
28	Quercus lucida	Pancang-pancang	Fagaceae	2.83	2.27	1.45	6.55		
29	Scorodocarpus borneensis	Kulim	Olacaceae	2.83	2.27	0.52	5.62		
30	Shorea leprosula	Meranti	Dipterocarpaceae	2.83	2.27	1.01	6.11		
31	Shorea platyclados	Banio	Dipterocarpaceae	2.83	2.27	0.50	5.60		
32	Shorea sp	Balau	Dipterocarpaceae	2.83	2.27	0.37	5.47		
33	Syzygium sp	Kolek Jambu	Myrtaceae	2.83	2.27	1.04	6.14		
34	Terminalia copelandii	Jao	Combretaceae	2.83	2.27	0.31	5.41		
35	Vatica sp	Resak	Dipterocarpaceae	2.83	2.27	1.25	6.35		
				109.2	90.9	95.7	295.7		

RF = Relative frequency   RB = Relative dominance   D = Protected species
RD = Relative density   IV = Importance Value   L = Endangered species

Table V.68 Flora (Tree) in Future Reservoir of Lower Kuantan Dam Location (Banjar Tengah Forest) (Station 2)

No	Scientific Name	Local Name	Family	RF %	RD %	RB %	IV %	status D	L
1	Alceodaphne umbeliflora	Medang Kunyit	Lauraceae	3.33	4.76	1.34	9.43		
2	Alseodhapne sp	Medang Kaladi	Lauraceae	6.66	4.76	2.83	14.25		
3	Aquilaria malaccensis	Gaharu	Guttiferae	3.33	2.38	1.52	7.23		
4	Aromadendron sp	Pauh-pauh	Magnoliaceae	3.33	2.38	1.03	6.74		
5	Artocarpus elasticus	Tarok	Moraceae	3.33	4.76	1.77	9.86		
6	Calophyllum pulcherrimum	Bintangur	Guttiferae	6.98	2.38	0.52	9.88		
7	Colophyllum sp	Pingan-pingan	Guttiferac	3.33	2.38	0.52	6.23		
8	Crypteronia sp	Dolik	Crypteroniaceae	6.66	4.76	2.44	13.86		
9	Dialium indum	Kuranji	Fabaceae	3.33	14.28	30.33	47.94		
10	Endospermum sp	Sanduak-sanduak	Euriceae	3.33	2.38	1.61	7.32		
11	Eugenia sp	Ubar	Myrtaceae	3.33	2.38	10.90	16.61		
12	Ficus variegata	Aro	Moraceae	3.33	2.83	0.83	6.99		
13	Gironniera nervosa	Medang Babulu	Ulmaceae	3.33	2.38	0.57	6.28		
14	Koompassia malaccensis	Kampas	Fabaceae	4.65	7.14	12.56	24.35		
15	Litsea firma	Medang Kelor	Lauraceae	3.33	2.38	1.73	7.44		
16	Macaranga triloba	Mahang	Euphorbeaceae	3.33	2.38	0.94	6.65		
17	Mallotos paniculata	Baliak Angin	Euphorbeaceae	3.33	2.38	1.03	6.74		
18	Nephelium glabra	Rambutan Hutan	Sapindaceae	3.33	2.38	0.92	6.63		
19	Palaquium sp	Balam	Sapotaceae	3.33	2.38	2.97	8.68		
20	Polyalthia sp	Tapi	Annonaceae	3.33	2.38	2.06	7.77		
21	Pterospermum javanicum	Bayur	Sterculiaceae	3.33	4.76	12.35	20.44		
22	Sautriria oblongifolia	Kedondong	Olacaceae	3.33	4.76	3.05	11.14		
23	Shorea sp	Meranti Bareh	Dipterocarpaceae	3.33	2.38	1.32	7.03		
24	Stenipermium sp	Medang Api-api	Celastraceae	3.33	4.76	1.47	9.56		
25	Strerculia cordata	Kalumpang	Sterculaceae	3.33	2.38	1.20	6.91		
26	Strombossiajavanica	Patata	Olacaceae	3.33	2.38	1.73	7.44		
				98.21	95.65	99.54	293.40		

RF = Relative frequency   RB = Relative dominance   D = Protected species

RD = Relative density   IV = Importance Value   L = Endangered species

Table V.69 Flora (Tree) in Future Reservoir of Lower Kuantan Dam Location
(Lubuk Kapiek Forest) (Station 3)

No	Scientific Name	Local Name	Family	RF %	RD %	RB %	IV %	status D	L
1	*Artocarpus integra*	Cubadak Hutan	Moraceae	2.70	7.55	3.35	13.60		
2	*Artocarpus tripilus*	Manarahan	Moraceae	5.40	6.60	6.25	18.25		
3	*Calophyllum pulcherrimum*	Bintangur	Guttiferae	5.40	3.77	2.42	11.59		
4	*Cratoxylon sp*	Sibalugur	Guttiferae	2.78	0.94	0.71	4.43		
5	*Dialium indum*	Kuranji	Caesalfiniacea	5.40	5.66	13.85	24.91		
6	*Elaeocarpus stipularis*	Jirang Tupai	Tileaceae	2.70	0.94	0.44	4.08		
7	*Elateriospermum tapos*	Tampuih	Euphorbeaceae	5.40	5.66	10.88	21.94		
8	*Endospermum sp*	Sanduak-sanduak	Euriceae	2.70	0.94	9.70	13.34		
9	*Eugenia sp*	Kabau	Myrtaceae	2.70	0.94	1.49	5.13		
10	*Garcinia sp*	Manggis Hutan	Guttiferae	2.70	0.94	1.10	4.74		
11	*Gerinia celebica*	Kandis	Guttiferae	2.70	1.89	0.69	5.28		
12	*Hevea brasiliensis*	Karet	Euphobiaceae	5.40	7.55	3.44	16.39		
13	*Terminalia copelandii*	Jao	Combretaceae	6.66	0.94	0.78	8.38		
14	*Koompassia malaccensis*	Kampas	Fabaceae	5.40	5.66	12.54	23.60		
15	*Litsea sp*	Medang	Lauraceae	2.70	2.83	1.60	7.13		
16	*Macaranga prainosa*	Kubin	Euphorbeaceae	2.70	1.89	0.39	4.98		
17	*Nephelium glabra*	Rambutan Hutan	Sapindaceae	5.40	1.89	7.67	14.96		
18	*Palaquium sp*	Balam	Sapotaceae	2.70	1.98	1.20	5.88		
19	*Parkia speciosa*	Petai	Fabaceae	2.70	3.77	8.30	14.77		
20	*Pterospermum javanicum*	Bayur	Sterculaceae	2.70	1.89	5.39	9.98		
21	*Quercus javanica*	Paniang-paniang	Fagaceae	2.70	3.77	1.97	8.44		
22	*Santiria oblongifolia*	Kedondong	Bruseraceae	2.70	6.60	12.66	21.96		
23	*Syzygium sp*	Kolek Jambu	Myrtaceae	5.40	11.32	9.81	26.53		
24	*Shrorea retinodes*	Sebayang	Dipterocarpaceae	2.70	0.94	3.88	7.52		
25	*Strombossia javanica*	Petata	Olacaceae	2.70	1.89	0.39	4.98		
26	*Taraktogenos sp.*	Buluh-Buluh	Flacourtiaceae	2.70	0.94	3.31	6.95		
27	*Vitex pubescens*	Laban	Verbenaceae	5.40	1.89	1.94	9.23		
				101.24	91.58	126.15	318.97		

RF = Relative frequency   RB = Relative dominance   D = Protected species

RD = Relative density   IV = Importance Value   L = Endangered species

Table V.70 Flora (Tree) in Future Reservoir of Lower Kuantan Dam Location
(Pintu Batu Forest) (Station 4)

No	Scientific Name	Local Name	Family	RF %	RD %	RB %	IV %	status D	L
1	Artocarpus elasticus	Tarok	Moraceae	3.92	3.57	1.32	8.81		
2	Artocarpus integer	Cubadak Hutan	Moraceae	1.96	1.78	0.52	4.26		
3	Calophyllum pulcherrimum	Bintangur	Guttiferae	1.96	1.78	0.57	4.31		
4	Campnosperma sp	Tarantang	Anacarciaceae	1.92	1.78	1.84	5.54		
5	Cratoxylon sp	Sibalusui	Guttiferae	3.92	3.57	1.27	8.76		
6	Dialium indum	Kuranji	Fabaceae	3.92	3.57	0.99	8.48		
7	Durio grifitii	Durian Hutan	Bombacaceae	3.92	2.57	6.48	12.97		
8	Eugenia sp	Kolek	Myrtaceae	3.92	5.36	7.05	16.33		
9	Ficus variegata	Aro	Moraceae	5.88	5.36	5.33	16.57		
10	Garcinia celebica	Kandis	Guttiferae	1.96	1.78	1.84	5.58		
11	Koompassia malaccensis	Kampas	Fabaceae	3.92	7.14	13.04	24.10		
12	Mangifera foctida	Ambacang Hutan	Anacardiaceae	1.96	1.78	1.04	4.78		
13	Nephelium glabra	Rambutan Hutan	Sapindaceae	1.96	1.78	0.38	4.12		
14	Palaquium sp	Balam	Guttiferae	5.88	7.14	8.44	21.46		
15	Pterospermum javanicum	Bayur	Sterculaceae	1.96	1.78	1.94	5.68		
16	Quercus javanica	Paniang-paniang	Fagaceae	3.92	5.36	3.98	13.26		
17	Santiria oblongifolia	Kedondong	Bruseraceae	3.92	3.57	1.47	8.96		
18	Scorodocarpus borneensis	Kulim	Olacaceae	3.92	7.14	6.55	17.61		
19	Shorea lepurosula	Meranti	Dipterocarpaceae	9.80	12.50	13.09	35.39		
20	Shorea ovata	Banirawan	Dipterocarpaceae	1.96	1.78	2.32	6.06		
21	Shorea platyclados	Banio	Dipterocarpaceae	3.92	3.57	5.08	12.57		
22	Simplocus fasciculata	Jirak	Synflocaceae	1.96	1.78	4.24	7.98		
23	Stenospermium sp	Medang Api-api	Celastraceae	1.96	1.78	1.84	5.58		
24	Teminalia copelandi	Jao	Combrettaceae	2.83	2.27	0.31	5.41		
25	Terminalia catappa	Ketaping	Combretaceae	1.96	1.78	2.53	6.27		
26	Vitex pubescens	Labuai	Apocynaceae	3.92	3.57	1.27	8.76		
27	Vitex sp1	Laban	Verbinaceae	1.96	1.78	0.82	4.56		
28	Vitex sp2	Pulai	Apocynaceae	5.88	5.36	2.82	14.06		
29	Vitex sp3	Putat	Apocynaceae	3.92	3.57	1.56	9.05		
				100.79	106.55	99.93	307.27		

RF = Relative frequency   RB = Relative dominance   D = Protected species

RD = Relative density   IV = Importance Value   L = Endangered species

Table V.71 Flora (Tree) in Future Reservoir of Lower Kuantan Dam Location (Lubukkambacang Forest) (Station 5)

No	Scientific Name	Local Name	Family	RF %	RD %	RB %	IV %	D	L
1	Alseodhapne umbelliflora	Medang kunyit	Lauraceae	2.94	4.08	3.74	10.76		
2	Alstonia sp	Pulai	Apocynaceae	2.94	4.08	3.01	10.03		
3	Amercus cucida	Barangan	Fagaceae	2.94	2.04	6.60	11.58		
4	Artocarpus elasticus	Tarok	Moraceae	2.94	2.04	2.02	7.00		
5	Calophyllum pulcherrimum	Bintangur	Guttiferae	2.94	4.08	4.45	11.47		
6	Campnosperma sp	Tarantang	Anacarciaceae	2.94	2.04	1.46	6.44		
7	Dacryodes angalata	Kedondong	Burceraceae	2.94	2.04	0.42	5.40		
8	Dillenia sp	Resak	Dilleniaceae	2.94	2.04	1.50	6.48		
9	Durio oxleyanus	Durian	Bombacaceae	2.94	2.04	1.03	6.01		
10	Elateriospermum tapos	Tampuih	Euphorbeaceae	5.88	2.04	2.02	9.94		
11	Endospermum sp	Sanduak-sanduak	Euriceae	2.94	2.04	0.55	5.53		
12	Eugenia sp	Daek	Myrtaceae	2.94	2.04	5.36	10.34		
13	Eugenia spicata	Kolek	Myrtaceae	2.94	2.04	1.46	6.44		
14	Ficus variegata	Aro	Moraceae	2.94	2.04	4.48	9.46		
15	Hevea brasiliensis	Karet	Euphorbiceae	5.88	12.24	8.33	26.45		
16	Koompassia malaccensis	Kampas	Fabaceae	5.88	10.20	33.72	49.80		
17	Macaranga sp	Sapek-sapek	Euphorbiceae	2.94	6.12	3.25	12.31		
18	Macaranga triloba	Mahang	Euphorbeaceae	2.94	4.08	4.19	11.21		
19	Mallotos paniculata	Baliak Angin	Euphorbeaceae	2.94	2.04	1.03	6.01		
20	Palaqueum sp	Balam	Guttiferae	2.94	2.04	0.70	5.68		
21	Parkia speceosa	Petai	Mumoceae	2.94	2.04	1.89	6.87		
22	Perenema canescens	Sungkai	Verbaneceae	2.94	2.04	0.80	5.78		
23	Quercus bennetii	Paniang-paniang	Fagaceae	5.88	4.08	0.70	10.66		
24	Shorea acuminata	Meranti merah	Dipterocarpaceae	2.94	4.08	0.50	7.52		
25	Shorea lepidota	Meranti putih	Dipterocarpaceae	5.88	6.12	2.70	14.70		
26	Simplocos fasciculata	Jirak nasi	Myrtaceae	2.94	2.04	0.33	5.31		
27	Strombossia javanica	Petata	Olacaceae	2.94	2.04	0.57	5.55		
28	Vatica sp	Resak	Dipterocarpaceae	2.94	2.04	1.46	6.44		
				97.02	95.88	98.27	291.17		

RF = Relative frequency   RB = Relative dominance   D = Protected species

RD = Relative density   IV = Importance Value   L = Endangered species

Table V.72(1/2) Terrestrial Fauna Found in the project area in Indragiri river basin.

		Local Name	Sceintific Name	Location					Status
				I	II	III	IV	V	P
	MAMALIA								
1		Kambing Hutan	Carprecornis sumatraensis	V		V	V	V	V
2		Rusa	Cervus unicolor		V	V	V	V	
3		Musang air	Cynegole benneti		V		V		V
4		Gajah	Elephas maximus	V		V			V
5		Kucing Hutan	Felis bengalenis		V	V	V		V
6		Beruang Madu	Helarctos malaxamis	V	V	V	V	V	V
7		Ungko	Hylobates sp		V	V	V		V
8		Landak	Hyrix brachyura		V	V	V		V
9		Tupai Tanah	Lariscus intignis		V	V	V	V	V
10		Monyet Ekor Panjang	Macaca fascicutaris	V		V			
11		Beruk	Macoca nomestriana	V	V	V	V	V	
12		Trenggiling	Manis javanica		V	V	V		V
13		Kijang	Mumticus muncak		V		V		V
14		Harimau Dahan	Naofelis nebulosa		V	V			V
15		Pukang/Kukung	Nyeticeus coucang		V	V	V		V
16		Harimau	Panthera tigris sumateraensis	V	V	V	V	V	V
17		Musang	Paradoxocus hermaprodetus	V		V	V		
18		Lutung Hutan	Presbytis sp		V				V
19		Simpai	Prebytis melanophos		V	V	V	V	V
20		Surili	Presbytis nygula		V				V
21		Babi Hutan	Sus scrofa	V	V	V	V	V	
22		Siamang	Symphalongus syndactilus	V	V				V
23		Tapir	Tapirus indius	V		V	V	V	V
24		Kancil	Tragulus javanicus		V	V	V		V
	BIRDS								
25		Elang	Accipiter sp		V		V		
26		Puyuh	Arborophila sp		V	V	V		
27		Kuaw	Argisianus argus		V	V	V	V	V
28		Bangau	Balarica sp				V	V	
29		Enggang	Buceres sp		V	V	V		V
30		Murai	Corsuchus sp		V	V	V	V	
31		Bubut	Centropus sp		V	V	V	V	V
32		Gagak	Cespes macrorhyncos		V	V	V	V	
33		Pelatuk	Dinopiore sp		V	V		V	
34		Tengalak	Oriolus maculatus		V		V		V
35		Elang Hitam	Spizaetur bartelsi	V					
36		Beo	Gracula regiusa	V		V	V		V
37		Burung Udang	Haleyon chloris		V	V	V		V
38		Serindit	Loriculkuc vernalis		V	V	V	V	V
39		Burung Hantu	Otus sp		V	V	V	V	V
40		Burung Daun	Phyloscopus faciatus		V		V	V	
41		Burung Kencak	Rhipidura javanica		V		V		
42		Murai Batu	Rhipudura aeneus		V		V		
43		Punai	Spenurus oxyurus		V	V	V		
44		Ayam Hutan	Gallus gallus	V	V		V		V
45		Ibis Putih	Thereskia sp		V	V			V

Table V.72 (2/2) Terrestrial Fauna Found in the project area in Indragiri river basin.

| | | Local Name | Sceintific Name | Location | | | | | Status |
				I	II	III	IV	V	P
	REPTILIA								
46		Ular sanca hijau	Chondrophyton niridis			V	V		V
47		Bingkaruang	Maboya sp	V	V	V	V	V	
48		Ular sawah	Phyton retiarlatus			V	V		V
49		Ular sendok	Naja tripudianis	V		V	V		V
50		Kura-kura	Oritra binensis	V	V	V		V	
51		Labi-labi	Citra ndica			V	V		
52		Buaya Sihyolong	Tonnistora schlelegelli		V	V	V		V
53		Biawak	Varabus salvator	V		V	V		V
	AMPHIBIA								
54		Kodok biasa	Bufo melanopticus	V		V	V	V	
55		Katak hijau	Rana cancrifora	V	V	V		V	
56		Katak coklat	Rana lioneralis	V			V	V	
57		Katak hijau besar	Rana Macrodon		V	V			
	INSECT								
58		Kupu-kupu raja	Danaus flexipus	V	V	V	V	V	
60		Ngengat ujung kait	Drepana arculata	V	V	V		V	
61		Kupu-kupu mata mutiara	Enedia protlandia	V	V	V	V	V	
62		Peloncat bintik perak	Epargyreus dorus	V	V		V		
63		Ngengat lompat cepat	Itensicenca maja		V	V	V	V	
65		Kupu-kupu belerang	Colias philodica	V	V		V	V	
66		Kupu-kupu pinus	Neophasia menapia	V		V	V	V	
			Oenelis jutha	V		V		V	
			Dione juno		V	V		V	
			Lephelisca borcalis	V	V	V	V		
67		Kupu-kupu Ekor Walet	Papilio phyxenes asterius	V	V		V	V	
68		Kupu-kupu kubis	Pilris rapae	V		V	V	V	
69		Kupu-kupu besar	Speyeria cybele	V		V	V		
70		Peloncat bintik perak	Epargyreus dorus	V	V		V		
71		Kupu-kupu kubis	Pilris rapae	V		V	V	V	

I. Forest area near Lower Kuantan Damsite
II. Forest area near Lubuk Jambi
III. Forest area near Banjar Tengah
IV. Forest area near Lubuk Kapiek
V. Forest area near Pintu Batu

P: Protected forest

Table V.73 (1/2) INVENTORY OF FISHES IN THE MIDDLE REACHES OF INDRAGIRI RIVER.

	Family	Local Name	Scientific Name
1	Cyprinidae	Semilang Batang	*Barbichthys leavis*
2		Sepimping	*Chela oxygastroides*
3		Umbut-umbut	*Dangilla cuvieri*
4		Mali	*Dangilla sp*
5		Kujam	*Dangilla sumatera*
6		Semilang Pulau	*Ephalzeorhynchus kallopterus*
		Barau	*Hampala bimaculata*
7		Barau	*Hampala lepidota*
8		Sijolong	*Lucioname setigerus*
9			*Lucioname triname*
10		Paweh	*Oetheochillus hasselti*
11		Kujam	*Oetheochillus kahayanensis*
12		Kelabau	*Oetheochillus kelabau*
13		Siburuk Perut	*Oetheochillus spilurus*
14		Kapiek	*Puntius belinka*
15		Tabengalam	*Puntius bromenoides*
16		Siban	*Puntius bulu*
17		Singarek	*Puntius fasciatus*
18		Sipaku	*Puntius hexazona*
19		Olang	*Puntius scanafeldi*
20		Mentulu	*Puntius sp*
21		Olang	*Puntius tetrazona*
22		Parang	*Rasbora argyrotaenea*
23		Pantau	*Rasbora dorsepcellata*
24		Pantau Bero	*Rasbora lateristriata*
25		Pantau	*Rasbora rutteni*
26		Pantau Beras	*Rasbora vaillanti*
27		Motan	*Thynnichthys thynnoides*
28		Motan Besar Kepala	*Thynnichthys vaillanti*
29	Clariidae	Limbek Baguit	*Clarias batrachus*
30		Limbek Akar	*Clarias teismany*
31		Koli	*Ephalzeorhynchus sp*
32	Siluridae	Lais	*Clarias sp*
33		Loi Modang	*Cryptoterus cryptoterus*
34		Loi Godang Kapalo	*Cryptoterus lais*
35		Loi	*Cryptoterus mononema*
36		Loi	*Cryptoterus sp*
37		Lukek	*Cryptoterus sp*
38		Baliak Tulang	*Hamichilurus chaperi*
39		Selais	*Hamichilurus moonbergii*
40		Loi Bomban	*Hamichilurus schrinema*
41		Tapah	*Siluruides hypothalmus*
42		Loi Modang	*Siluruides indragiriensis*
43		Sikumu	*Wallago leri*
44	Pangasidae	Patin	*Pangasius pangasius*
45		Juaro	*Pangasius polyuranadon*
46		Patin Kunyit	*Pangasius sp*
47		Riu-riu	*Pseudeutropius branchiopepteus*

	Family	Local Name	Scientific Name
48	Bagridae	Baung Moncik	Bagrichthys hypselopterus
50		Baung Pisang	Bagroides macrochantuseps
51		Baung Hitam	Bagroides macropterus
52		Baung Kuning	Bagroides malapterus
53		Baung	Macrones nigriceps
54		Baung Tunggik	Macrones sp
55	Cobitidae	Ciling-ciling	Botia hymenophysa
56		Rajo Guntili	Botia macrochantus
57		Tali-tali	Namechilus fasciatus
58		Lida-lida	Notopterus bornensis
59		Belido	Notopterus chilata
60	Osteoglossidae	Domo/Kaloso	Sclerophages formosus
61	Anabantidae	Katung	Anabas sp
62		Puyu	Anabas testudineus
63		Singkek	Helostoma temmenchi
64		Kaluih	Osphronemus gourami
65		Silinca	Polyacanthus hasselti
66		Sopek	Trichogaster leeri
67		Sopek Siam	Trichogaster pectoralis
68		Sopek	Trichogaster trichopterus
69	Ophiochepalidae	Toman	Betta anabantoides
70		Tempalo	Betta taenia
71		Haruan	Ophiochephalus bistoriatus
72		Lompong	Ophiochephalus lucius
73		Toman	Ophiochephalus melanosoma
74		Batuik	Ophiochephalus pleuropthalmus
75	Nandidae	Jolai	Ophiochephalus maruliades
77	Lutjinidae	Tambun	Nandus nebolusus
78	Trichiuridae	Ikan Sira	Lutjanus argentimaculatus
79	Therponidae	Timah	Trichirius haunela
80	Toxotidae	Silopu	Synanchesia sp
81	Mastacembelidae	Tilan	Mastachembelus armatus
82		Sumpuik	Toxotes chatareus
83	Belonidae	Tilan	Magrocnathus aculeatus
84		Bolai	Xenentodon maculatus
85	Polynemidae	Julung-julung	Xenentodon cancioides
86	Symbranchoidae	Tumbuk bong	Dermogenis sumatranus
87	Tetraodontidae	Senangin	Eleuhromena tetradactium
88		Boloik	Monopterus albus
89		Buntal	Tetraodon nigropunctatus
90	Solaidae	Buntal	Lagochaphalus lunaris
91		Lidah-Lidah	Synaptura conmesuni

Table V.74 Species inventory and abundance of phytoplankton in Lubukjambi weir and
irrigation area (Station 3)

	Species	Number	Density
1. Chlorophyceae	*Closterium tumidim*	17	3.13
	Closterium praelogum	19	1.27
	Pleurataenium sp	4	0.27
	Micropora sp	3	0.20
	Staurastrum cingulum	3	0.20
	Hematococcus lacustris	2	0.13
	Oscillataoria angustissima	2	0.13
	Akistrodesmus sp	1	0.07
	Westella sp	1	0.07
	Pediastrum tetras	1	0.07
2. Bacillariophyceae	*Rhoicosperia curvata*	5	0.33
	Synedra amphicephala	7	0.47
	Cosmarium globossum	7	0.47
	Neidium iridis	2	0.13
	Cymbella affinis	2	0.13
	Amphipleura pellucida	2	0.13
	Achantes cilensis	1	0.07
3. Cyanophyceae	*Cyanoptyche gleocystis*	4	0.27
	Nostoc spongiosforme	1	0.07
4. Rhodophyceae	*Eirodesmus phaeticus*	2	0.13
	Phormidium sp	1	0.07
5. Charophyceae	*Nitella jurcata*	1	0.07
	Total	88	7.88

Table V.75 Population, population density and households of seven Desas (Villages) in the reservoir area of Lower Kuantan dam.

No.	Desa (Village)	Population	Area	Density	Household	
					Total	Submerged at EL.120m
	(n)	(persons)	(ha)	(pers./km^2)	(n)	(n)
1	Durian Gedang	1270	62.2	21	266	237
2	Padang Teraap	769	13.29	58	155	109
3	Tanjung Keliling	1234	88.09	14	290	259
4	Air Ramo	1147	38.67	30	261	245
5	Banjar Tengah	539	38.89	14	126	164
6	Batang kering	652	36.25	18	114	113
7	UPT Timpeh 4	2576	12.6	204	560	92
	Total	8187	289.99	51.3	1772	1219

Source: Field survey, 1995

Table V.76 Number of houses submerged in the reservoir area of Lower Kuantan dam.

A. All of Desa (Viilage)

	1	2	3	4	5	6	7	
Kecamatan	Sijunjung	Tanjung Gadang						Total
Desa	Durian Gadang	Padang Tarap	Tanjung Keling	Air Amo	Banjar Tengah	Batang Karing	Timpeh IV	
Elevation								
100 m	0	109	259	66	164	0	0	598
110 m	0	109	259	66	164	0	0	598
116 m	224	109	259	191	164	107	0	1054
120 m	237	109	259	245	164	113	92	1219

B. Main Kampung (small village)

Desa	Tanjung Keling			Banjar Tengah		Batang Karing	
Kampung	Tanjung Keling	Pintu Batu	Mudik-muk	Banjar Tengah	Lubuk Kapiek	Batang Karing	Sungai Mandar
Elevation							
100 m	154	32	73	109	55	0	0
110 m	154	32	73	109	55	0	0
116 m	154	32	73	109	55	104	3
120 m	154	32	73	109	55	110	3

Note) a. Small huts are not included.
b. Name of village is based on the map of 1: 10,000
c. Timpeh IV and V are new trasmigration area.
d. Elevation is the reservoir water level.

Table V.77 Population, poppulation density and number of households of four Kecamatans in the area of Lubukjambi irrigation canal.

No.	District	Population (n)	Area (ha)	Density (pers./km^2)	Household (n)
1	Kuantan Mudik	17,438	42,238	41	3,864
2	Kuantan Tengah	26,711	18,300	145	5,897
3	Kuantan Hilir	16,115	7,179	224	3,940
4	Cerenti	13,198	48,800	27	2,811
	Total	73,462	116,517	437	16,512

Source: Indragiri Hulu survey, 1992

Table V.78 (1/2) Population, population density and number of households in villages related to Lubukjambi intake weir and irrigation canal.

No.	Village (Desa)	Area (km²)	Population (persons)	Density (pers/km²)	Household (n)
1	Aur Duri	9.5	229	30.0	45
2	Banuaran	4.2	357	89.0	71
3	Benai	1.5	708	354.0	156
4	Benai Kecil	1.7	239	119.0	49
5	Beringin Jaya	6.7	1340	191.0	294
6	Bukit Kausan	9.9	734	73.0	149
7	Bukit pedusunan	12.4	967	81.0	213
8	Gunung	12.0	632	53.0	157
9	Inuman	31.0	212	7.0	44
10	Jeluar Patah	28.2	758	27.0	160
11	Kampung Baru	12.2	929	77.0	217
12	Kampung Medan	5.1	1508	301.0	301
13	Kampung Tengah	5.4	552	110.0	110
14	Kepala Pulah	6.6	115	16.0	23
15	Koto Benai	1.8	305	152.0	71
16	Koto gunung	9.9	674	67.0	100
17	Koto Kari	3.3	576	192.0	114
18	Koto Kuabu	45.0	633	15.0	153
19	Koto lubuk Jambi	12.2	855	71.0	171
20	Koto pangian	3.8	210	53.0	42
21	Koto Sentajo	4.3	738	184.0	177
22	Koto Taluk	5.5	2182	364.0	577
23	Koto Tuo	4.4	270	68.0	54
24	Kp. Baru Sentajo	5.1	1669	333.0	326
25	Luai	7.3	453	65.0	151
26	Lubuk Jambi	45.5	1006	22.0	234
27	Lubuk Jambi	8.1	610	76.0	119
28	Muara Sentajo	5.0	1398	280.0	301
29	Mudik Hulu	28.0	655	23.0	174
30	Parit TA. Hitan	17.8	427	24.0	106
31	Pasar Baru baserah	1.1	1520	1520.0	304
32	Pasar Teluk	2.3	1986	993.0	381
33	Pasar Usang Baserah	1.9	550	275.0	110
34	Pasar usang Pangian	8.0	2363	295.0	473
35	Pebawa Hilir	9.3	764	85.0	177
36	Pebawa Hulu	9.2	718	80.0	155
37	Petapahan	13.3	346	27.0	112
38	Pintu Gadang	4.8	1425	258.0	295

Table V.78 (2/2) Population, population density and number of households in villages related to Lubukjambi intake weir and irrigation canal.

No.	Village (Desa)	Area (km²)	Population (persons)	Density (pers./km²)	Household (n)
39	Pisang Berebus	11.1	514	47.0	117
40	Pulah kedundung	10.3	766	77.0	169
41	Pulah Kumpai	12.0	1144	95.0	229
42	Pulau Augit	13.5	1386	99.0	277
43	Pulau binjai	8.4	637	80.0	142
44	Pulau Bralo	10.0	1370	137.0	274
45	Pulau Gadang	4.3	978	245.0	209
46	Pulau Jambu	35.0	659	19.0	131
47	Pulau Kijang	6.8	708	101.0	142
48	Pulau Komang	5.8	1198	200.0	264
49	Pulau Madinah	6.6	393	56.0	79
50	Pulau Panjang	20.0	629	31.0	122
51	Pulau Rengas	9.5	651	65.0	130
52	Pulau Tengah	2.3	510	255.0	102
53	rantau Silang	8.7	801	89.0	190
54	Rawang Binjai	12.0	480	40.0	96
55	Saik	13.3	312	24.0	202
56	Sawah	11.8	2957	246.0	587
57	Seberang Pantai	9.7	290	29.0	167
58	Seberang TA. Hitam	28.3	260	10.0	53
59	Serosa	38.0	473	12.0	118
60	Siberakun	4.6	616	123.0	147
61	Sikelelawar	9.9	223	22.0	50
62	Simandolak	6.1	1304	217.0	306
63	Simpang Tanah Lapang	4.0	673	168.0	135
64	Simpang Tiga	16.8	2665	133.0	581
65	Sukaping	11.0	738	67.0	148
66	Sungai Ala	41.5	620	15.0	149
67	Sungai Manau	11.1	993	90.0	225
68	Sungai Pinang	41.0	772	19.0	174
69	Tanjung	42.2	799	19.0	154
70	Tanjung Medang	31.2	457	15.0	105
71	Taratak Air Hitam	17.6	779	43.0	176
72	Teluk Beringin	12.1	779	65.0	364
73	Toar	12.2	1057	88.0	235
	Total	941.4	61,204	138.2	13,615

Table V.79 Population, population density and number of households in villages related to Rengat ring dike.

No	Village	Population (n)	Area (ha)	Density (pers./km^2)	Household (n)
1	Kampung Dagang	2,419	81.0	30	484
2	Sekip Hulu	5,518	27.8	199	1,104
3	Sekip Hilir	4,190	7.5	559	797
4	Kelurahan Pasiran	5,578	10.3	542	929
	Total	17,705	126.6	1,330	3,314

Source: Field Survey , 1995

Table V.80 Population composition of Livelihood, education and age structure of two Kecamatans in the area of Lower Kuantan dam.

Livelihood/Education	Population			
	Kec. Sijunjung		Kec. Pulau Gadang	
	Total	%	Total	%
A. Livelihood				
- Agriculture	4,546	63.1	6,894	86.4
- Industry / house industry	89	1.2	692	8.6
- Commercial	391	5.4		
- Service	1,523	21.1	397	5.0
- Others	656	10.2		
B. Education				
- not educated / before school	8,800	26.0	47,784	76.8
- Primary school	8,672	26.0	4,181	18.1
- Secondary school	7,858	23.0	6	3.4
- High school	6,966	20.0	9	1.6
- College	1,078	3.2	0	0.5
C. Age structure				
0 - 4	3,917	11.7	3,519	15.2
5 - 14	8,940	26.8	5,532	23.9
15 - 24	6,078	18.2	4,268	18.4
25 - 34	5,422	16.2	3,796	16.4
35 - 44	3,561	10.7	2,684	11.6
45 - 54	2,632	7.9	1,573	6.8
55 <	2,824	8.5	1,782	7.7

Source: Field survey, 1995

Table V.81 (1/2) Age structure in villages related to
Lubukjambi irrigation canal, 1992

No.	Name of village (Desa)	Age group		
		<15 yrs	15 - 59 yrs	60 yrs <
1	Aur Duri	38.8	54.1	7.1
2	Banuaran	41.0	43.9	2.9
3	Benai	37.9	54.8	7.3
4	Benai Kecil	38.8	56.7	4.5
5	Beringin Jaya	40.2	57.7	2.1
6	Bukit Kausan	41.0	55.8	3.2
7	Bukit pedusunan	38..9	55.2	5.9
8	Gunung	37.8	55.4	6.8
9	Inuman	38.7	54.1	7.2
10	Jeluar Patah	41.3	56.8	1.9
11	Kampung Baru	41.3	53.5	5.2
12	kampung Medan	40.4	57.5	2.1
13	Kampung Tengah	41.1	56.7	2.2
14	Kepala Pulah	40.5	56.8	2.7
15	Koto Benai	39.1	53.7	7.2
16	Koto gunung	37.9	55.8	6.3
17	Koto Kari	41.2	57.6	1.2
18	Koto Kuabu	39.4	53.9	6.7
19	Koto lubuk Jambi	37.8	56.0	6.2
20	Koto pangian	39.5	53.4	7.1
21	Koto Sentajo	38.5	55.8	5.7
22	Koto Taluk	48.9	50.2	0.9
23	Koto Tuo	39.0	56.5	4.5
24	Kp. Baru Sentajo	39.3	54.6	6.1
25	Luai	40.3	55.4	4.3
26	Lubuk Jambi	39.0	55.2	5.8
27	Lubuk Jambi	36.3	55.8	8.2
28	Muara Sentajo	38.6	55.6	5.8
29	Mudik Hulu	39.8	53.1	7.1
30	Parit TA. Hitan	40.1	57.0	2.9
31	Pasar Baru baserah	39.4	53.5	7.1
32	Pasar Teluk	37.1	57.7	7.2
33	Pasar Usang Baserah	38.7	54.2	7.1
34	Pasar usang Pangian	40.8	56.1	3.1
35	Pebawa Hilir	39.9	52.9	7.2
36	Pebawa Hulu	41.3	53.7	5.1
37	Petapahan	39.2	54.5	6.3
38	Pintu Godang	39.9	53.0	7.1
39	Pisang Berebus	39.5	53.7	6.8
40	Pulah kedundung	40.6	57.5	1.9
41	Pulah Kumpai	40.1	58.0	1.9
42	Pulau Augit	40.6	55.9	3.5
43	Pulau binjai	40.2	55.7	4.1
44	Pulau Bralo	41.3	55.1	3.6
45	Pulau Godang	41.1	57.9	1.0
46	Pulau Jambu	40.5	57.6	1.9
47	Pulau Kijang	40.2	43.6	3.4
48	Pulau Komang	40.1	57.8	2.1
49	Pulau Madinah	40.0	56.8	3.1
50	Pulau Panjang	39.9	52.6	7.5

Table V.81 (2/2) Age structure in villages related to
Lubukjambi irrigation canal, 1992

No.	Name of village (Desa)	Age group		
		<15 yrs	15 - 59 yrs	60 yrs <
51	Pulau Rengas	40.4	56.3	3.3
52	Pulau Tengah	40.3	58.0	1.7
53	rantau Silang	41.5	56.8	4.7
54	Rawang Binjai	40.3	56.5	3.2
55	Saik	34.3	58.4	7.3
56	Sawah	40.2	57.9	1.9
57	Seberang Pantai	39.9	55.0	5.1
58	Seberang TA. Hitam	39.9	53.2	6.9
59	Serosa	40.1	52.8	7.1
60	Siberakun	39.8	54.3	5.9
61	Sikelelawar	42.0	55.1	2.9
62	Simandolak	39.9	54.0	6.1
63	Simpang Tanah Lapang	41.1	56.3	2.6
64	Simpang Tiga	40.3	58.0	1.5
65	Sukaping	40.7	55.2	4.1
66	Sungai Ala	39.7	54.4	5.9
67	Sungai Manau	41.7	54.2	4.1
68	Sungai Pinang	38.9	53.9	7.2
69	Tanjung	39.9	53.8	6.3
70	Tanjung Medang	38.7	54.4	6.9
71	Taratak Air Hitam	40.2	57.3	2.5
72	Teluk Beringin	38.7	54.2	7.1
73	Toar	38.9	55.0	6.1

Table V.82 Number of people working in each occupation type in four districts related to Lubukjambi irrigation canal.

No	Occupation	Kecamatan (District)			
		K.Tengah	K.Hilir	K.Mudik	Cerenti
1	Agriculture	8,236	8,433	9,032	9,032
2	Industry	121	402	114	114
3	Local mining	39		125	125
4	Electricity			17	
5	Carpentar	99		127	115
6	Commercial		459	550	350
7	Transport	880		155	111
8	Bank			6	
9	Civil servant	235	399	323	225
10	Service	1,866	675	675	105

Source: District survey, 1992

Table V.83 Number of people educated at different levels in four districts (Kecamatans) related to Lubukjambi irrigation canal.

No	Educational level	Kecamatan			
		K.Tengah	K.Hilir	K.Mudik	Cerenti
1	Not educated	29	30.1	27	28.9
2	Primary school	58.7	59.6	56.6	59.9
3	Secondary school	7.5	6.2	8.2	7.3
4	Highschool	4.5	3.4	6.7	3.9
5	College	0.4	0.7	1.5	0.8
	Total (%)	100.1	100	100	100.8

Source: District survey, 1992

Table V.84 (1/2) Educational facilities at villages related to Lubukjambi irrigation canal.

No.	Name of village	Kindergarden	Primary school	Secondary school	High-school	College
1	Aur Duri		1			
2	Banuaran					
3	Benai	1	2	1	1	
4	Benai Kecil					
5	Beringin Jaya		1			
6	Bukit Kausan		1			
7	Bukit pedusunan		1			
8	Gunung	1	1			
9	Inuman		1			
10	Jeluar Patah		1	1		
11	Kampung Baru		1			
12	kampung Medan		1	2		
13	Kampung Tengah		1			
14	Kepala Pulah		1			
15	Koto Benai		1			
16	Koto gunung		1			
17	Koto Kari		1			
18	Koto Kuabu		1			
19	Koto lubuk Jambi			1		
20	Koto pangian					
21	Koto Sentajo		1			
22	Koto Taluk		2		1	
23	Koto Tuo					
24	Kp. Baru Sentajo		2			
25	Luai		1	1		
26	Lubuk Jambi		1			
27	Lubuk Jambi	1	1	2		
28	Muara Sentajo		1	1		
29	Mudik Hulu		1			
30	Parit TA. Hitan		1			
31	Pasar Baru baserah		1			
32	Pasar Teluk	2	3	3	1	
33	Pasar Usang Baserah		2			
34	Pasar usang Pangian		2			
35	Pebawa Hilir		2			
36	Pebawa Hulu		1			
37	Petapahan			1		
38	Pintu Godang		1	1		
39	Pisang Berebus		2			
40	Pulah kedundung		2			
41	Pulah Kumpai		1			
42	Pulau Augit		2			
43	Pulau binjai		1			
44	Pulau Bralo		1			
45	Pulau Godang		1			
46	Pulau Jambu		1			
47	Pulau Kijang		1			
48	Pulau Komang		1		1	
49	Pulau Madinah		1			
50	Pulau Panjang		1			

Table V.84 (2/2) Educational facilities at villages related to Lubukjambi irrigation canal.

No.	Name of village	Kindergarden	Primary school	Secondary school	High-school	College
51	Pulau Rengas		1			
52	Pulau Tengah		1			
53	rantau Silang					
54	Rawang Binjai		1			
55	Saik					
56	Sawah		4		1	
57	Seberang Pantai		2	1	1	
58	Seberang TA. Hitam		1			
59	Serosa		1			
60	Siberakun		2			
61	Sikelelawar		1			
62	Simandolak		3	1		
63	Simpang Tanah Lapang	1	1	1		
64	Simpang Tiga		2	3	2	
65	Sukaping		1			
66	Sungai Ala		1			
67	Sungai Manau		1			
68	Sungai Pinang		3			
69	Tanjung		1			
70	Tanjung Medang		1			
71	Taratak Air Hitam		1			
72	Teluk Beringin		1			
73	Toar		1	1		

Source: Population census 1990

Table V.85 Age Structure near Rengat Ring dike, 1992

No	District	Age Group (years)		
		< 15	15-59	60 <
1	Kampung Dagang	40.4	56.1	3.5
2	Sekip Hulu	38.1	55.7	6.2
3	Sekip Hilir	38.7	55.0	6.3
4	Kelurahan Pasiran	39.3	55.8	4.9

Source: Monography of Rengat district 1993

Table V.86 Livelihood, educational level and age structure
in Rengat

Livelihood/Education/Age structure	Population	
	Total	%
A. Livelihood		
- Agriculture	3,329	18.8
- Industry / house industry	88	0.5
- Commercial	13,668	77.2
- Service	1,523	21.1
- Others	620	3.5
B. Education		
- not educated / before school	4,603	26.0
- Primary school	3,212	20.4
- Secondary school	3,435	19.4
- High school	5,134	29.0
- college	921	5.2
C. Age group		
0 - 4	2,320	13.1
5 - 14	4,373	24.7
15 -24	3,258	18.4
25 -34	3,028	17.1
35 -44	1,983	11.2
45 -54	1,611	9.1
55 <	1,133	6.4

Source: Data Lapangan, 1995

Table V.87 Type of diseases in two districts of Sijunjung and Tanjung Gadang related to Lower Kuantan dam.

Diseases	Kec.Sijunjung		Kec.Tanjung Gadang	
	Total	%	Total	%
Influenza	1969	35.2	1721	36.5
Skin disease	1220	22.6	704	22.9
Diarrhea	899	16.1	513	16.7
Anemia	820	14.7	314	10.2
Rheumatic	684	13.2	416	13.6
Total	5592	101.8	3068	99.9

Source: Sensus in 1994

Table V.88 Number of health facilities in
Kec.Sijunjung and Kec.Tanjung Gadang related to
Lower Kuantan dam, 1994

Medical facilities	Sijunjung	Tanjung Gadang
Doctor	5	5
Nurse	8	160
Midwife	4	15
Shaman	19	
Schaman for baby	43	54
Sub-midwife		10
Health adviser		6
Sanitary		2
Clinic		3
Small clinic		3
Hospital		24
Pharmacy		2

Table V.89(1/2) Health facilities in villages related to Lubukjambi irrigation cannal.

No.	Villages	Clinic	Chirdren's hospital	Family planning service	Health adviser	Medical man
1	Aur Duri					2
2	Banuaran		1	1		1
3	Benai	1	1	1		1
4	Benai Kecil		1	1	1	
5	Beringin Jaya		1	1	1	1
6	Bukit Kausan					4
7	Bukit pedusunan					2
8	Gunung		1	1		3
9	Inuman		1	1	1	2
10	Jeluar Patah		1	1		1
11	Kampung Baru			1		
12	kampung Medan		1	1		1
13	Kampung Tengah		1	1		2
14	Kepala Pulah		1	1		2
15	Koto Benai		1	1		1
16	Koto gunung		1	1	2	2
17	Koto Kari		1	1		1
18	Koto Kuabu		1	1	1	4
19	Koto lubuk Jambi		1	1	2	1
20	Koto pangian		1	1		2
21	Koto Sentajo		1	1		2
22	Koto Taluk		3	1	4	
23	Koto Tuo		1	1		2
24	Kp. Baru Sentajo		1	1		1
25	Luai			1	1	
26	Lubuk Jambi		1	1		1
27	Lubuk Jambi	1	1	1	5	1
28	Muara Sentajo		1	2		2
29	Mudik Hulu		1	1	1	2
30	Parit TA. Hitan		1	1		1
31	Pasar Baru baserah		1	1		1
32	Pasar Teluk		2	2	2	3
33	Pasar Usang Baserah	1	1	2		1
34	Pasar usang Pangian		1	1		1
35	Pebawa Hilir					
36	Pebawa Hulu		1		2	
37	Petapahan		1	1		2
38	Pintu Godang		1	1		1
39	Pisang Berebus		1	1	1	1
40	Pulah kedundung		1	1		1
41	Pulah Kumpai		1			2
42	Pulau Augit		1			1
43	Pulau binjai		1			2
44	Pulau Bralo		1			
45	Pulau Godang		2	1		2
46	Pulau Jambu		1	1		2
47	Pulau Kijang		1	1		3
48	Pulau Komang		1	2	1	3
49	Pulau Madinah		1	1		1
50	Pulau Panjang		1	1		2

Table V.89(2/2) Health facilities in villages related to Lubukjambi irrigation canal.

No.	Villages	Clinic	Chirdren's hospital	Family planning service	Health adviser	Medical man
51	Pulau Rengas		1			1
52	Pulau Tengah		1	1		2
53	rantau Silang		1	1		1
54	Rawang Binjai		1	2		1
55	Saik		1		2	2
56	Sawah	1	1	1	3	2
57	Seberang Pantai		1	1	1	3
58	Seberang TA. Hitam		1	1		2
59	Serosa		1	1		2
60	Siberakun		1	1	3	2
61	Sikelelawar					2
62	Simandolak		1	1		1
63	Simpang Tanah Lapang		1	1		1
64	Simpang Tiga		1	1		1
65	Sukaping		1			1
66	Sungai Ala		1	1	1	3
67	Sungai Manau		1	1	1	
68	Sungai Pinang		1	1		5
69	Tanjung		1	1		2
70	Tanjung Medang		1	1		2
71	Taralak Air Hitam		1	1		1
72	Teluk Beringin		1		1	2
73	Toar		1	1		2

Source:Population sensus 1990

Table V.90 Health facilities in three villages related to Rengat ring dike.

Health facilities	Village		
	Kampung Dagang	Sekip Hilir	Sekip Hulu
Hospital		1	
Medical office			3
Clinic			
Small clinic	1		
No licenced medical doctor	1	3	2
Children's hospital	4	1	9
Medical doctor	4	3	2
Health adviser	4	7	6
Shaman	3	1	3

Source: Monograhy of Rengat city 1992

Table V.91 Number of domestic animals at
Kec.Sijunjung and Kec.Tanjung Gadang, 1995

Type of domestic animals	Sijunjung	Tanjung Gadang
Buffalo	1,663	2,163
Cow	1,412	1,950
Goat/sheep	1,394	475
Chicken	25,262	78,480
Duck		2,148

Source: Field survey, 1995

Table V.92 General facilities in Sijunjung and Tanjung Gadang district, 1992

No.	Health facilities	Sijunjung	Tanjung Gadang
1	Hospital		
2	Clinic		
3	Small clinic		
4	Doctor		
5	Nurse		
6	Midwife		
7	Village midwife		
8	Old fashioned doctor		
9	Streetside shop/small shop		
10	Mosque		
11	Small mosque		
12	Market		
13	Bank		
14	Family planning service		
15	Children's hospital		
16	Primary school		
17	Secondary school		
18	Highschool		
19	Regional course		
20	Sports field		

Source: District survey, 1992

Table V.93 Small industry/house industry at
Kec.Tanjung Gadang district, 1995

Small industry/house industry	Tanjung Gadang
Brick manufacturing	6
Ice manufucturing	8
Threshing/Rice Miling	14
Tofu manufatcuring	2
Blacksmith	3
Car service station	3
Motorbike service station	4
Bicycle service station	5
Car wash	2
Furniture shop	5
Quarrying	3

Source: Field survey, 1995

Table V.94 General facilities, 1992

No.	Type of facilities	K. Mudik	K. Tengah	K. Hilir	Cerenti
1	Hospital				
2	Clinic				
3	Small clinic				
4	Doctor				
5	Nurse				
6	Midwife				
7	Village midwife				
8	Old fashioned doctor				
9	Streetside shop/small shop				
10	Mosque				
11	Small moque				
12	Market				
13	Bank				
14	Family planning sevice				
15	Children's hospital				
16	Primary school				
17	Secondary school				
18	High-school				
19	Village course				
20	Sports field				

Source: District survey, 1992

Table V.95(1/2) Area of paddy fields and upland ricefields

No.	Administrative area	Wet paddy field (ha)	Dry paddy field (ha)
1	Aur Duri	89.0	861.0
2	Banuaran	61.0	359.0
3	Benai	6.5	143.5
4	Benai Kecil	15.0	150.0
5	Beringin Jaya	320.4	349.0
6	Bukit Kausan	260.0	690.0
7	Bukit pedusunan	90.0	1195.0
8	Gunung	6.0	1243.0
9	Inuman	50.0	3050.0
10	Jeluar Patah		2817.0
11	Kampung Baru	312.0	1216.0
12	kampung Medan	35.0	475.0
13	Kampung Tengah	130.0	410.0
14	Kepala Pulah	169.0	431.0
15	Koto Benai	19.0	151.0
16	Koto gunung	75.0	1075.0
17	Koto Kari	25.0	300.0
18	Koto Kuabu	15.0	4535.0
19	Koto lubuk Jambi	21.0	819.0
20	Koto pangian	21.5	358.5
21	Koto Sentajo	29.0	396.0
22	Koto Taluk	90.0	459.5
23	Koto Tuo	35.0	405.0
24	Kp. Baru Sentajo	94.3	412.7
25	Luai	30.0	900.0
26	Lubuk Jambi	13.0	4487.0
27	Lubuk Jambi	0.5	850.5
28	Muara Sentajo	147.0	356.0
29	Mudik Hulu	231.0	2569.0
30	Parit TA. Hitan	25.0	1752.0
31	Pasar Baru baserah		110.0
32	Pasar Teluk	2.0	225.0
33	Pasar Usang Baserah	17.5	172.5
34	Pasar usang Pangian		800.0
35	Pebawa Hilir	29.0	831.0
36	Pebawa Hulu	11.4	898.0
37	Petapahan	179.0	908.0
38	Pintu Godang	68.5	406.5
39	Pisang Berebus	225.0	1041.0
40	Pulah kedundung	75.0	1350.0
41	Pulah Kumpai	185.0	1015.0
42	Pulau Augit	620.0	730.0
43	Pulau binjai	264.5	725.5
44	Pulau Bralo	109.0	891.0
45	Pulau Godang	55.0	370.0
46	Pulau Jambu	40.5	1.9
47	Pulau Kijang	34.5	645.5
48	Pulau Komang	375.0	200.0
49	Pulau Madinah	109.5	551.0
50	Pulau Panjang	39.9	7.5

Table V.95(2/2) Area of paddy fields and upland ricefields

No.	Administrative area	Wet paddy field (ha)	Dry paddy field (ha)
51	Pulau Rengas	126.0	824.0
52	Pulau Tengah	27.0	205.0
53	rantau Silang	60.0	710.0
54	Rawang Binjai	300.0	900.0
55	Saik	200.0	800.0
56	Sawah	185.0	990.0
57	Seberang Pantai	110.0	760.0
58	Seberang TA. Hitam	278.1	2548.9
59	Serosa	50.0	3850.0
60	Siberakun	4.5	459.5
61	Sikelelawar	45.0	945.0
62	Simandolak	269.0	171.0
63	Simpang Tanah Lapang		
64	Simpang Tiga	200.0	1475.0
65	Sukaping	132.0	968.0
66	Sungai Ala	137.0	4013.0
67	Sungai Manau	181.0	929.0
68	Sungai Pinang	200.0	3900.0
69	Tanjung	167.0	4033.0
70	Tanjung Medang	80.0	2940.0
71	Taratak Air Hitam	21.0	1729.0
72	Teluk Beringin	57.0	720.0
73	Toar	154.0	1204.0

Source: Population sensus 1990

No.	Type of vehicle	K. Mudik	K. Tengah	K. Hilir	Cerenti
1	Bicycle drawn carriage	32	45	63	16
2	Pedicab		4		
3	Buffalo-drawn carriage		5		
4	Horse-drawn carriage	35			
5	Motor-bicycle drawn carriage		15	14	11
6	3 wheel motor-drive vehicle	37			
7	4 wheels motor-drive vehicle	37	34	28	16
8	Canoe without motor	4	26	15	6
9	Canoe with outboard motor	1	10	12	6
10	Motorboat	1	1		
11	Others		14	1	

Source: District census, 1990

Table V.97 Land and water transportation in four villages related to
Rengat ring dike.

No.	Administrative district	Transports		Transports on water
		Motorbike	Car	
1	Kampung Dagang	2	1	2
2	Sekip Hulu	2	1	3
3	Sekip Hilir	2	1	
4	Kelurahan Pasiran			

Source: City survey of Rengat 1992

Table V.98 Type and number of
vehicles in Rengat District.

No.	Type of vehicle	Rengat District
1	Bicycle drawn carriage	
2	Pedicab	8
3	Buffalo-drawn carriage	
4	Horse-drawn carriage	
5	Motor-bicycle drawn carriage	31
6	3 wheel motor-drive vehicle	
7	4 wheels motor-drive vehicle	26
8	Canoe without motor	26
9	Canoe with outboard motor	24
10	Motorboat	13
11	Others	

Source: Rengat city survey, 1990

Table V.99 Evaluation of Significant Impacts of Kuantan Dam Construction Works
Area : Lower Kuantan dam
Activity Stage : Pre-Construction Stage

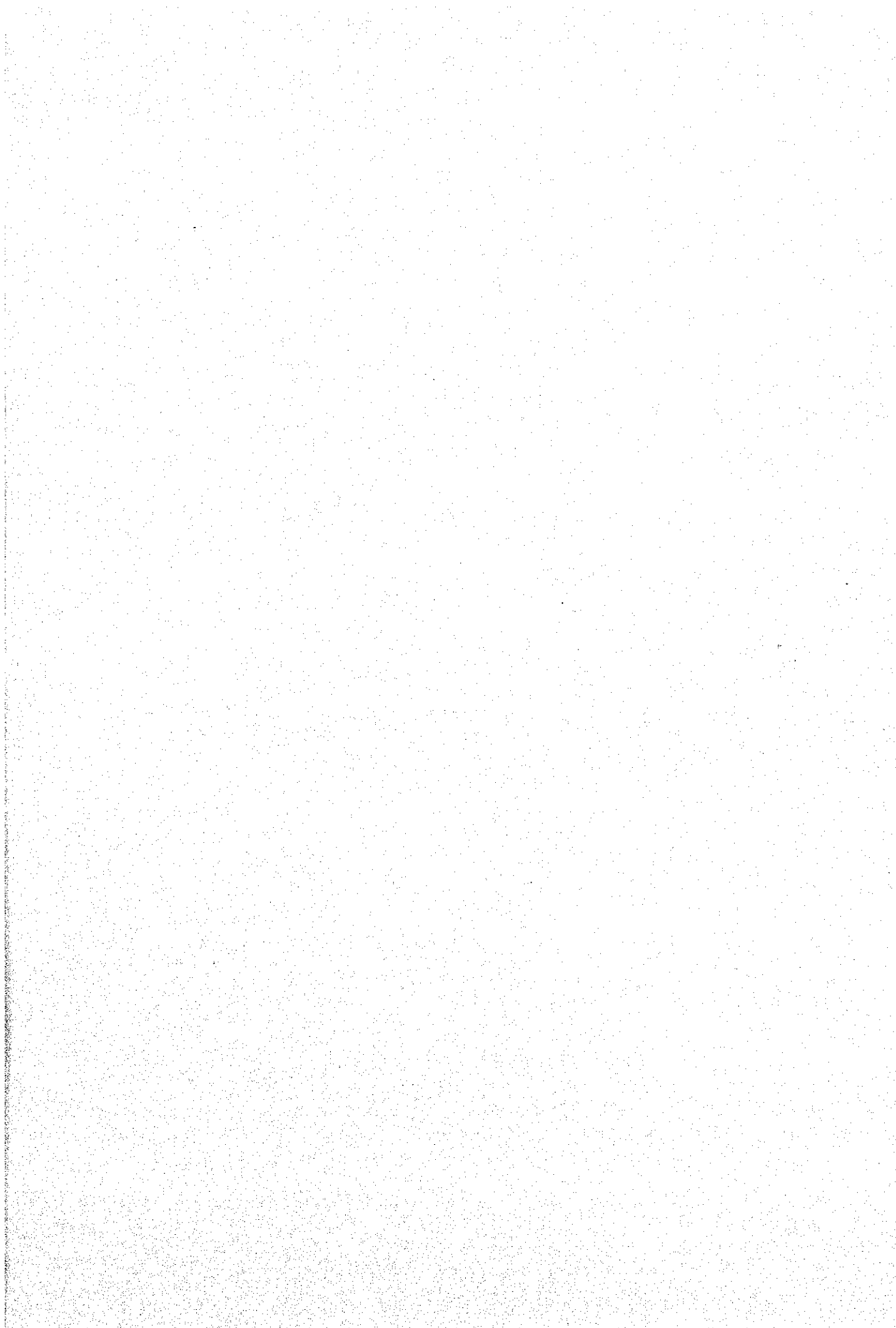| ENVIRONMENT COMPONENTS	Kinds of impact	PRE-CONSTRUCTION STAGE				
		1. Survey/ Investigation			2. Compensation/ Land release	
		Remark	Scale		Remark	Scale
GEOPHYSICS-CHMISTRY		Nothing			Nothing	
BIOLOGY		Nothing			Nothing	
SOCIOECONOMY AND CULTURE						
1. Public Perception/	a. No.of people	7 desa:14.5%, 2 desa:2.2 %	1		7 desa:14.5%, 2 desa:2.2 %	1
Attitude	b. Extent of area	2 provinces	3		2828/7100x100=40%	3
	c. Duration	Pre-construction	2		Pre-construction	1
	d. Intensity	can be controlled	2		little nuisance to public order	2
	e. No.of Components	1 component	1		4 components	1
	f. Period	cummulative, not long	3		cummulative but not too long	3
	g. Recoverage	possibly be restored	1		possibly be restored	1
	Average of scale		1.9			1.7
2. Livelihood/	a. No.of people				1539/1772=86.8%	5
Employment	b. Extent of area				2 regencies	4
	c. Duration				Pre- and under Construction	2
	d. Intensity					3
	e. No.of Components				Only 4, but include Socioeconomy	3
	f. Period				cummulative but not too long	3
	g. Recoverage				possibly be restored	2
	Average of scale					3.1
3. Land ownership	a. No.of people				8187/73462x100=11.1%	2
	b. Extent of area				2 regencies	4
	c. Duration				Pre-construction	1
	d. Intensity				Small, but affect people	2
	e. No.of Components				Only 4	1
	f. Period				cummulative but not too long	3
	g. Recoverage				not restored	3
	Average of scale					2.3
4. Income	a. No.of people				8187/73462x100=11.1%	2
	b. Extent of area				2 regencies	4
	c. Duration				Pre-construction	1
	d. Intensity					2
	e. No.of Components				Only 4	1
	f. Period				cummulative but not too long	3
	g. Recoverage				not restored, but temporal income up	2
	Average of scale					2.1
5. Public facilities	a. No.of people				8187/73462x100=11.1%	2
	b. Extent of area				Very small	1
	c. Duration				Pre-construction	1
	d. Intensity				light, but affect people	2
	e. No.of Components				Only 4	1
	f. Period				cummulative but not too long	3
	g. Recoverage				possibly restored	2
	Average of scale					1.7

Table V.99 Evaluation of Significant Impacts of Kuantan Dam Construction Works
Area : Lower Kuantan dam
Activity Stage : Construction Stage

ENVIRONMENT COMPONENTS	Kinds of impact	CONSTRUCTION STAGE							
		1. Mobilization of heavy equipment		2. Recruitment of manpower		3. Land clearance		4. Construction implementation	
		Remark	Scale	Remark	Scale	Remark	Scale	4-1.River improvement	Scale	4-2. Main construction	Scale
GEOPHYSICS-CHIMISTRY											
1. Air quality/ noise	a. Extent	2430/73462 (3.3%)	1			400 people, 0.5 %	1	400 people, 0.5%	1	400 people, 0.5 %	1
	b. Area	small, only around roads	1			small, only around the site	1	2 ha of the location	1	small	1
	c. Duration	construction stage	2			construction stage	2	construction stage	3	construction stage	3
	d. Intensity	increase	2			increase	2	increase	2	increase	2
	e. No.of components	3 components	1			3 components	1	5	2	2	1
	f. Period	neutralized	1			neutralized	1	neutralized	1	neutralized	1
	g. Recoverage	possibly eliminated	1			possibly eliminated	1	possibly eliminated	1	possibly eliminated	1
	Average of scale		1.3				1.3		1.57		1.43
2. Physiography/ geology	a. Extent					No one is affected	1	No one is affected	1	No one is affected	1
	b. Area					small, only around the site	1	small	1	small	1
	c. Duration					construction stage	2	construction stage	3	construction stage	3
	d. Intensity					increase	2	low	1	increase	2
	e. No.of Components					3 components	1	5 components	2	2 components	1
	f. Period					neutralized	1	neutralized	1	neutralized	1
	g. Recoverage					possibly eliminated	1	possibly eliminated	1	not possible to eliminate	5
	Average of scale						1.29		1.43		2
3. Water quality	a. Extent					1626/73462 (2.2 %)	1	1626/73462 x 100% = 2.2%	1		
	b. Area					small, just one subdistrict	1	small	1		
	c. Duration					construction stage	3	construction stage	3		
	d. Intensity					increase	2	increase	2		
	e. No.of Components					7	2	5	2		
	f. Period					neutralized	1	in a long time	2		
	g. Recoverage					can not to be eliminated	1	can not to be eliminated	1		
	Average of scale						1.6		1.71		
4. Land use system	a. No.of people					1626/73462 (2.2 %)	1				
	b. Extent of area					small, just around the site	1				
	c. Duration					construction stage	3				
	d. Intensity					significant	3				
	e. No.of Components					7	2				
	f. Period					neutralized	1				
	g. Recoverage					possible	1				
	Average of scale						1.7				
5. River Flow Pattern	a. Extent							No one is affected	1		
	b. Area							small	1		
	c. Duration							construction stage	3		
	d. Intensity							low	2		
	e. No.of Components							5 components	2		
	f. Period							cummulative, in a long time	2		
	g. Recoverage							impossible to eliminate	5		
	Average of scale								2.29		
BIOLOGY		Nothing		Nothing							
6. Terrestrial Flora	a. Extent										
	b. Area					small,	1				
	c. Duration					construction + post- stage	4				
	d. Intensity					low	2				
	e. No.of Components					7	2				
	f. Period					neutralized	1				
	g. Recoverage					not possible to eliminate	4				
	Average of scale						2.0				

Table V.99 Evaluation of Significant Impacts of Kuantan Dam Construction Works
Area : Lower Kuantan dam
Activity Stage : Construction Stage

| ENVIRONMENT COMPONENTS | Kinds of impact | CONSTRUCTION STAGE | | | | | | 4. Construction implementation | | | |
| | | 1. Mobilization of heavy quipment | | 2. Recruitment of manpower | | 3. Land clearance | | | | | |
		Remark	Scale	Remark	Scale	Remark	Scale	4-1.River improvement	Scale	4-2. Main construction	Scale
7. Terrestrial Fauna	a. Extent					small,	1				
	b. Area					construction + post- stage	4				
	c. Duration					low	2				
	d. Intensity					7	2				
	e. No.of Components					cummulative, for a long time	1				
	f. Period					can be eliminated	1				
	g. Recoverage										
	Average of scale						1.6				
8. Aquatic Fauna	a. Extent							small	1		
	b. Area							construction or post- stage	4		
	c. Duration							Diversity less decline	2		
	d. Intensity							5	2		
	e. No.of Components							neutralized	1		
	f. Period							impossible to eliminate	4		
	g. Recoverage								2		
	Average of scale										
SOCIOECONOMY AND CULTURE											
9. Public Perception/ Attitude	a. No.of people			Ku.Mudik 282/73462 (0.3%)	1						
	b. Extent of area			wider, 2 gegencies	3						
	c. Duration			construction stage	2						
	d. Intensity			light, positive	2						
	e. No.of components			3 components, small	1						
	f. Period			cummulative, short time	3						
	g. Recoverage			eliminated, recover	2						
	Average of scale				2.0						
10. Customs/ traditions	a. No.of people			400/22372 (1.8%)	1						
	b. Extent of area			very small and limited	1						
	c. Duration			construction stage	2						
	d. Intensity			light on local community	2						
	e. No.of Components			5 components	2						
	f. Period			cummulative, long time	2						
	g. Recoverage			possibly eliminated	1						
	Average of scale				1.6						
11. Livelihood/ Employment	a. No.of people			400/22372 (1.8%)	1						
	b. Extent of area			wider, but in Kab.Indr. Hulu	3						
	c. Duration			construction stage	3						
	d. Intensity			light but people are affected	2						
	e. No.of Components			3 components, small	1						
	f. Period			cummulative, short time	3						
	g. Recoverage			possibly eliminated, recover	2						
	Average of scale				2.3						

Table V.99 Evaluation of Significant Impacts of Kuantan Dam Construction Works
Area : Lower Kuantan dam
Activity Stage : Construction Stage

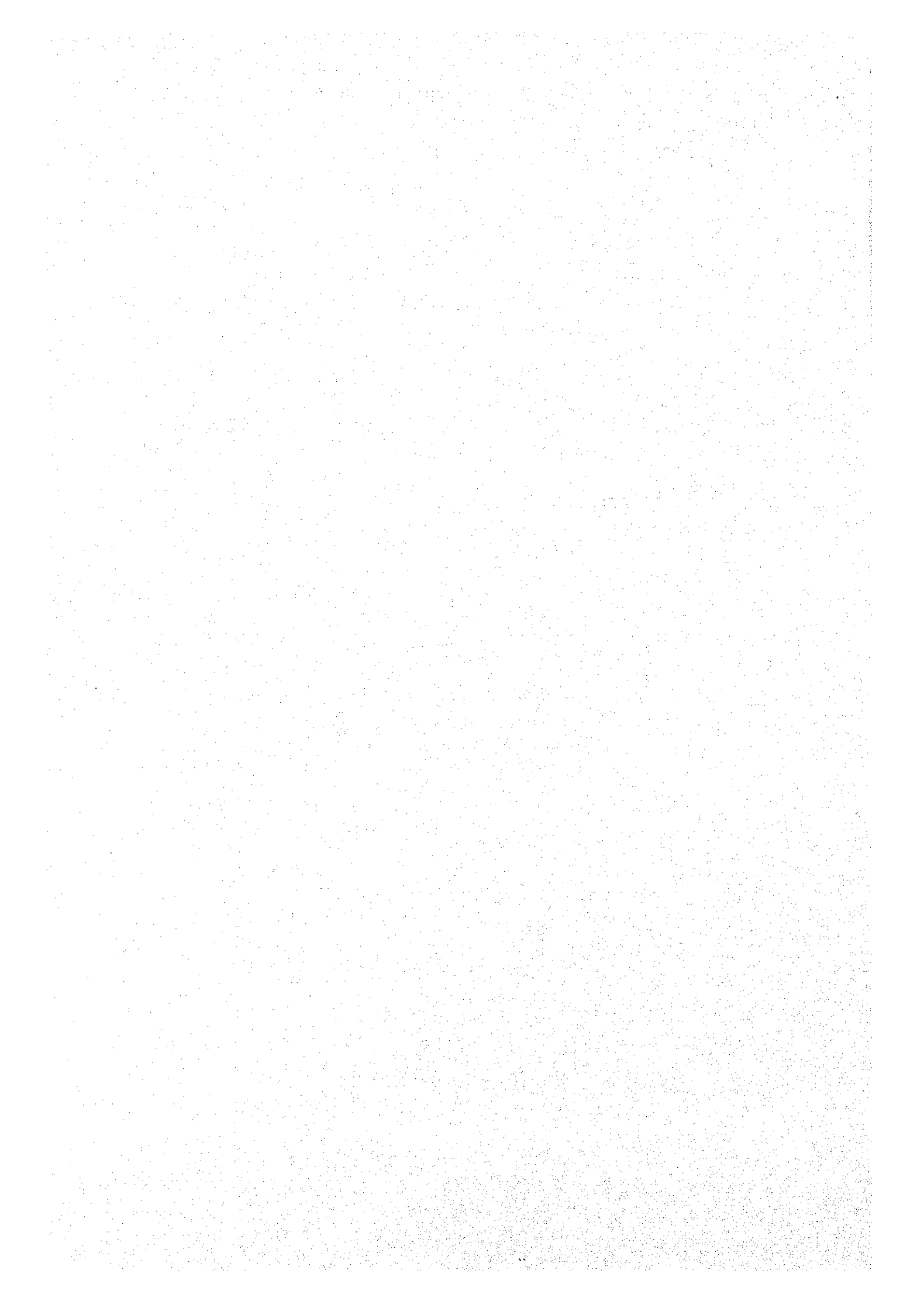| ENVIRONMENT COMPONENTS	Kinds of impact	CONSTRUCTION STAGE						4. Construction implementation			
		1. Mobilization of heavy quipment Remark	Scale	2. Recruitment of manpower Remark	Scale	3. Land clearance Remark	Scale	4-1.River improvement	Scale	4-2. Main construction	Scale
12. People's income	a. No.of people			400/22372 (1.8%)	1						
	b. Extent of area			wider, but in Kab.Indr. Hulu	3						
	c. Duration			construction stage	3						
	d. Intensity			light	2						
	e. No.of Components			3 components, small	1						
	f. Period			cummulative, short time	3						
	g. Recoverage			possibly eliminated, recover	2						
	Average of scale				2.1						
13. Environment aesthetics	a. No.of people	633/73462 (0.8%)	1			1626/73462 (2.2 %)	1				
	b. Extent of area	very small, around works	1			small, just around the site	1				
	c. Duration	construction stage	3			construction stage	2				
	d. Intensity	very light	1			low	2				
	e. No.of Components	3 components	1			7.0	2				
	f. Period	cummulative, not quickly	1			cummulative, for a long time	2				
	g. Recoverage	possibley eliminated	1			can be eliminated	1				
	Average of scale		1.3				1.6				
14. Public health	a. No.of people	2430/73462 (3.3%), less	1			2039/73462 (2.8 %)	1	2039/73462 x 100 % = 2.8 %	1	400 people, 0.5 %	1
	b. Extent of area	wider	3			small	2	small, 9.28 ha	2	small	2
	c. Duration					construction stage	2	construction stage	3	construction stage	3
	d. Intensity	disturbance is medium	3			medium	3	low	2	low	2
	e. No.of Components	3 components, less	1			7.0	2	8.0	1	2	1
	f. Period	cummulative, but short time	3			cummulative, in a short time	3	cummulative, in a short time	3	cummulative, in a short time	3
	g. Recoverage	eliminated and controlled	3			can be eliminated, controllable	1	can be eliminated	2	can be eliminated	2
	Average of scale		2.3				2.0		2		2
15. Public facilites	a. No.of people	2430/73462 (3.3%), less	1								
	b. Extent of area	relatively small	1								
	c. Duration	construction stage	2								
	d. Intensity	less significant	1								
	e. No.of Components	3 components	3								
	f. Period	eliminated and controled	2								
	g. Recoverage										
	Average of scale		1.7								

Table V.99   Evaluation of Significant Impacts of Kuantan Dam Construction Works
Area : Lower Kuantan dam
Activity Stage : Post-Construction Stage

ENVIRONMENT COMPONENTS	Kinds of impact	PROJECT ACTIVITY Dam operation / maintenance	Scale
GEOPHYSICS-CHMISTRY			
1. Microclimate	a. No.of people	No one is affected	1
	b. Extent of area	7,100 ha, 6 % of the concerned area	1
	c. Duration	Post-construction stage	5
	d. Intensity	very low	1
	e. No.of Components	10	3
	f. Period	neutralizable	1
	g. Recoverage	impossible to eliminate not any compound effect	4
	Average of scale		2.42
2. Erosion, sedimentaion	a. No.of people	No one is affected	1
	b. Extent of area	7,100 ha, 6 % of the concerned area	1
	c. Duration	Post-construction stage	5
	d. Intensity	low	2
	e. No.of Components	10	3
	f. Period	cummulative, takes a long time	2
	g. Recoverage	impossible to eliminate compound effect	5
	Average of scale		2.86
3. Water quality	a. No.of people	all people is affected, 100 %	5
	b. Extent of area	relatively small	1
	c. Duration	Post-construction stage	5
	d. Intensity	meet the requirement oc Class-C decline of dissolved solid matters	3
	e. No.of Components	10	3
	f. Period	cummulative, takes a long time	2
	g. Recoverage	impossible to eliminate	1
	Average of scale		3.14
4. Land use system	a. No.of people	No one is affected	1
	b. Extent of area	7,100 ha, 0.9 % of the concerned area	1
	c. Duration	Post-construction stage maintenance stage	5
	d. Intensity	becomes a flood area	3
	e. No.of Components	10	4
	f. Period	cummulative, takes a long time	2
	g. Recoverage	possible to eliminate	1
	Average of scale		2.57
BIOLOGY			
1. Terrestrial biota	a. No.of people	No one is affected	1
	b. Extent of area	7,100 ha, 0.9 % of the concerned area	1
	c. Duration	Post-construction stage	5
	d. Intensity	Index value of plants is high	3
	e. No.of Components	10	4
	f. Period	cummulative, takes a long time	2
	g. Recoverage	impossible to eliminate compound effect	4
	Average of scale		3.14

Table V.99 Evaluation of Significant Impacts of Kuantan Dam Construction Works
Area : Lower Kuantan dam
Activity Stage : Post-Construction Stage

ENVIRONMENT COMPONENTS	Kinds of impact	PROJECT ACTIVITY Dam operation / maintenance	Scale
2. Aquatic biota	a. No.of people	No one is affected	1
	b. Extent of area	7,100 ha, 0.9 % of the concerned area	1
	c. Duration	Post-construction stage	5
	d. Intensity	Index value of plants is medium	2
	e. No.of Components	10	4
	f. Period	cummulative, takes a long time	2
	g. Recoverage	impossible to eliminate possible to control	2
	Average of scale		2.57
SOCIOECONOMY AND CULTURE			
1. Livelihood/ Employ- ment opportunities	a. No.of people	73,492	4
	b. Extent of area	Indragiri Hulu regencies	3
	c. Duration	construction stage	5
	d. Intensity	high, 50-75 % are affected	4
	e. No.of Components	3	1
	f. Period	cummulative, in a short time	3
	g. Recoverage	impossible to eliminate no compound effect	4
	Average of scale		3.42
2. Environmental aesthetics	a. No.of people	73,492	4
	b. Extent of area	Indragiri Hulu regencies	3
	c. Duration	construction stage	5
	d. Intensity	aesthetic value is low	2
	e. No.of Components	16	4
	f. Period	cummulative, in a short time	4
	g. Recoverage	impossible to eliminate	3
	Average of scale		3.0
3. Income	a. No.of people	73,492	4
	b. Extent of area	Indragiri Hulu regencies	3
	c. Duration	construction stage	5
	d. Intensity	high, 50-75 % are affected	4
	e. No.of Components	3	1
	f. Period	cummulative, in a short time	3
	g. Recoverage	impossible to eliminate no compound effect	4
	Average of scale		3.4
4. Public health	a. No.of people	No one is affected	2
	b. Extent of area	impact area is small	2
	c. Duration	Pre-construction	4
	d. Intensity		3
	e. No.of Components	10	4
	f. Period	cummulative, in a short time	3
	g. Recoverage	can be eliminated and controlled	2
	Average of scale		2.9

Table V.100 Evaluation of Significant Impacts of Lubukjambi Intake Weir and Irrigation System Construction Works

Area : Lubukjambi weir and irrigation channel

Activity Stage : Pre-Construction Stage

ENVIRONMENT COMPONENTS	Kinds of impact	PRE-CONSTRUCTION STAGE			
		1. Survey/ Investigation	Scale	2. Compensation/ Land release	Scale
GEOPHYSICS-CHMISTRY					
BIOLOGY					
SOCIOECONOMY AND CULTURE					
1. Public Perception/ Attitude	a. No.of people	833/59884x100=1.4%	1	833/59884x100=1.4%	1
	b. Extent of area	380/9376x100=4%	1	380/9376x100=4%	1
	c. Duration		2	Pre-construction	1
	d. Intensity	can be controlled	2	little nuisance to public order	2
	e. No.of Components	1	1	4	1
	f. Period	not cummulative, not long	3	cummulative but not too long	3
	g. Recoverage	possibly be restored	1	possibly be restored	1
	Average of scale		1.6		1.4
2. Livelihood/ Employment	a. No.of people			181/9350x100=1.9%	1
	b. Extent of area			very small area	1
	c. Duration			Pre- and under Construction	2
	d. Intensity				3
	e. No.of Components			Only 4, but include Socioeconomy	3
	f. Period			cummulative but not too long	3
	g. Recoverage			possibly be restored	2
	Average of scale				2.1
3. Land ownership	a. No.of people			883/59744x100=1.4%	1
	b. Extent of area			wider	3
	c. Duration			Pre-construction	1
	d. Intensity			Small, but affect people	2
	e. No.of Components			Only 4	1
	f. Period			cummulative but not too long	3
	g. Recoverage			not restored	3
	Average of scale				2.0
4. Income	a. No.of people			883/59744x100=1.4%	1
	b. Extent of area			Very small	1
	c. Duration			Pre-construction	1
	d. Intensity				2
	e. No.of Components			Only 4	1
	f. Period			cummulative but not too long	3
	g. Recoverage			not restored, but temporal income up	2
	Average of scale				1.6
5. Public facilities	a. No.of people			883/59744x100=1.4%	1
	b. Extent of area			Very small	1
	c. Duration			Pre-construction	1
	d. Intensity			light, but affect people	2
	e. No.of Components			Only 4	1
	f. Period			cummulative but not too long	3
	g. Recoverage			possibly restored	2
	Average of scale				1.6

Table V.100 Evaluation of Significant Impacts of Lubukjambi Intake Weir and Irrigation System Construction Works
Area : Lubuk Jambi Weir and Irrigation Channel
Activity Stage : Construction Stage

ENVIRONMENT COMPONENTS	Kinds of impact	CONSTRUCTION STAGE						4. Construction implementation			
		1. Mobilization of heavy equipment		2. Mobilization of manpower		3. Land clearance		4-1.River improvement		4-2. Main construction	
		Remark	Scale	Remark	Scale	Remark	Scale	Remark	Scale	Remark	Scale
GEOPHYSICS-CHEMISTRY											
1. Air quality/ noise	a. Extent	4788/59774x100=8%	1			1120/59774x100=1.8%	1	400, 0.5%	1	1120/59744 x 100 = 1.8 %	1
	b. Area	small, only around roads	1			small, only around the site	1	2 ha of the location	1	small	1
	c. Duration	construction stage	2			construction stage	2	construction stage	3	construction stage	3
	d. Intensity	increase	2			increase	2	increase	2	increase	2
	e. No.of components	3 components	1			3 components	1	5	2	2	1
	f. Period	neutralized	1			neutralized	1	neutralized	1	neutralized	1
	g. Recoverage	possibly eliminated	1			possibly eliminated	1	possibly eliminated	1	possibly eliminated	1
	Average of scale		1.2				1.3		1.6		1.4
2. Physiography/ geology	a. Extent					No one is affected	1	No one is affected	1	No one is affected	1
	b. Area					small, only around the location	1	small	1	small	1
	c. Duration					construction stage	2	construction stage	3	construction stage	3
	d. Intensity					increase	2	low	1	increase	2
	e. No.of Components					3 components	1	5 components	2	2 components	1
	f. Period					neutralized	1	neutralized	1	neutralized	1
	g. Recoverage					possibly eliminated	1	possibly eliminated	1	not possible to eliminate	5
	Average of scale						1.3		1.4		2
3. Water quality	a. Extent					1453/59744 x 100% = 2.4 %	1	1626/73462 x 100% = 2.2%	1		
	b. Area					small, just one subdistrict area	1	small	1		
	c. Duration					construction stage	3	construction stage	3		
	d. Intensity					increase	2	increase	2		
	e. No.of Components					7	2	5	2		
	f. Period					neutralized	1	in a long time	2		
	g. Recoverage					can not to be eliminated	1	can not to be eliminated	1		
	Average of scale						1.6		1.7		
4. Land use system	a. No.of people					1453, 2 % of the total people	1				
	b. Extent of area					small, just around the site	1				
	c. Duration					construction stage	3				
	d. Intensity					significant	3				
	e. No.of Components					7	2				
	f. Period					neutralized	1				
	g. Recoverage					possible	1				
	Average of scale						1.7				
5. River Flow Pattern	a. Extent							No one is affected	1		
	b. Area							small	1		
	c. Duration							construction stage	3		
	d. Intensity							low	2		
	e. No.of Components							5 components	2		
	f. Period							cummulative, in a long time	2		
	g. Recoverage							impossible to eliminate	5		
	Average of scale								2.3		
BIOLOGY											
6. Terrestrial Flora	a. Extent										
	b. Area					small,	1				
	c. Duration					construction + post- stage	4				
	d. Intensity					low	2				
	e. No.of Components					7	2				
	f. Period					neutralized	1				
	g. Recoverage					not possible to eliminate	4				
	Average of scale						2.0				

Table V.100 Evaluation of Significant Impacts of Lubukjambi Intake Weir and Irrigation System Construction Works
Area : Lubuk Jambi Weir and Irrigation Channel
Activity Stage : Construction Stage

ENVIRONMENT COMPONENTS	Kinds of impact	CONSTRUCTION STAGE						4. Construction implementation			
		1. Mobilization of heavy quipment		2. Mobilization of manpower		3. Land clearance		4-1.River improvement		4-2. Main construction	
		Remark	Scale	Remark	Scale	Remark	Scale		Scale		Scale
7. Terrestrial Fauna	a. Extent										
	b. Area					small,	1				
	c. Duration					construction + post- stage	4				
	d. Intensity					low	2				
	e. No.of Components					7	2				
	f. Period					cummulative, for a long time	1				
	g. Recoverage					can be eliminated	1				
	Average of scale						1.6				
8. Aquatic Fauna	a. Extent										
	b. Area							small	1		
	c. Duration							construction or post- stage	4		
	d. Intensity							Diversity less decline	2		
	e. No.of Components							5	2		
	f. Period							neutralized	1		
	g. Recoverage							impossible to eliminate	4		
	Average of scale								2.0		
SOCIOECONOMY AND CULTURE											
9. Public Perception/	a. No.of people			435/59744 x 100 = 0.7%	1						
Attitude	b. Extent of area			2 regency	3						
	c. Duration			construction stage	3						
	d. Intensity			low	2						
	e. No.of components			3	1						
	f. Period			cummulative, in a short time	3						
	g. Recoverage			eliminated, controlled	2						
	Average of scale				2.1						
10. Customs/	a. No.of people			500/27482 x 100 = 1.8%	1						
traditions	b. Extent of area			limited area	1						
	c. Duration			construction stage	2						
	d. Intensity			low	2						
	e. No.of Components			5	2						
	f. Period			cummulative, in a long time	2						
	g. Recoverage			eliminated, controlled	1						
	Average of scale				1.6						
11. Livelihood/	a. No.of people			500/27482 x 100 = 1.8%	1						
Employment	b. Extent of area			Indragiri Hulu regency	3						
	c. Duration			construction stage	3						
	d. Intensity			low	2						
	e. No.of Components			3	2						
	f. Period			cummulative, in a short time	3						
	g. Recoverage			eliminated, controlled	2						
	Average of scale				2.3						
12. People's income	a. No.of people			500/27482 x 100 = 1.8%	1						
	b. Extent of area			Indragiri Hulu regency	3						
	c. Duration			construction stage	1						
	d. Intensity			low	2						
	e. No.of Components			3	1						
	f. Period			cummulative, in a short time	3						
	g. Recoverage			eliminated, controlled	2						
	Average of scale				1.9						

Table V.100   Evaluation of Significant Impacts of Lubukjambi Intake Weir and Irrigation System Construction Works
Area : Lubuk Jambi Weir and Irrigation Channel
Activity Stage : Construction Stage

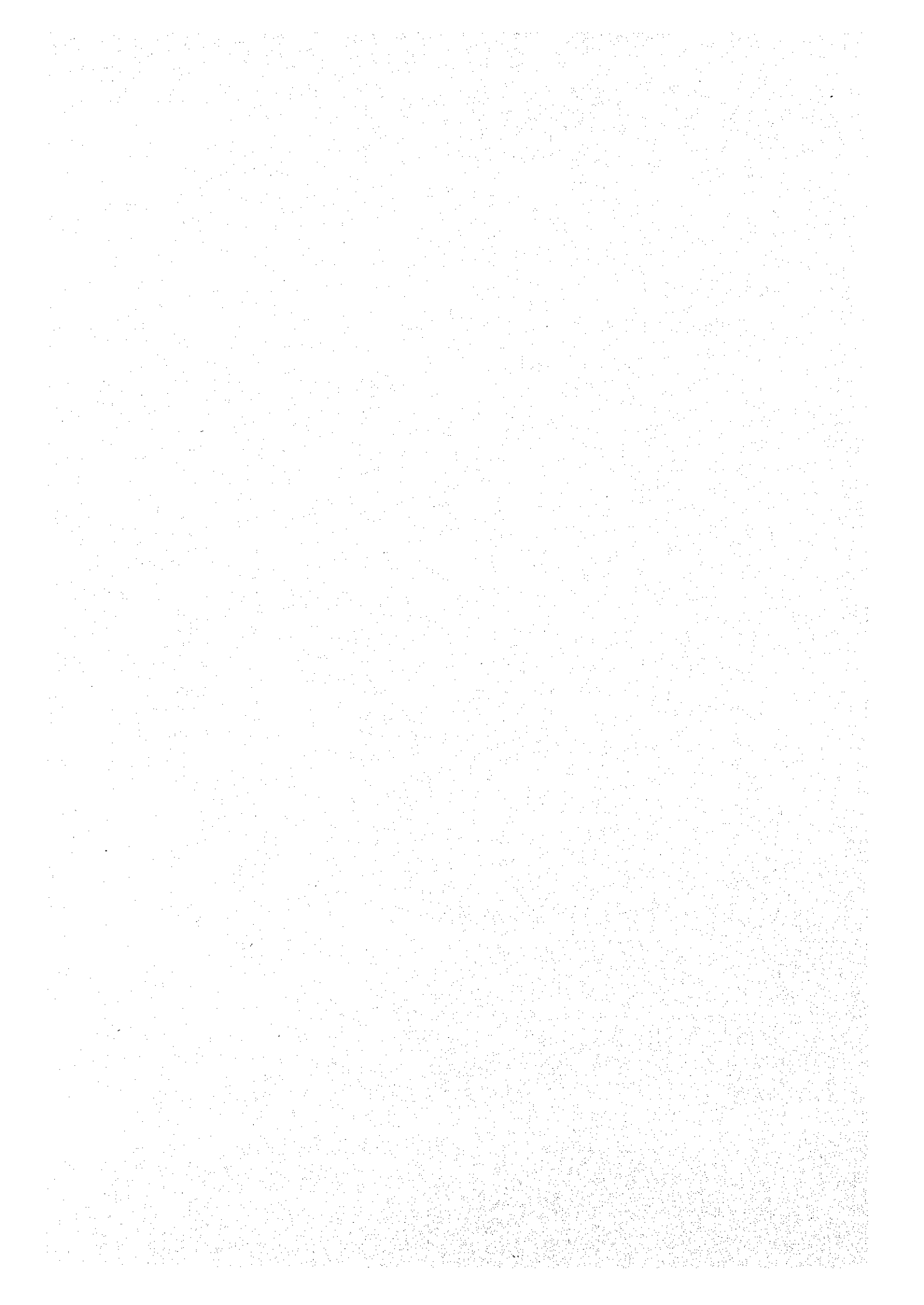| ENVIRONMENT COMPONENTS	Kinds of impact	CONSTRUCTION STAGE								
		1. Mobilization of heavy quipment		2. Mobilization of manpower		3. Land clearance		4. Construction implementation		
		Remark	Scale	Remark	Scale	Remark	Scale	4-1. River improvement	Scale	4-2. Main construction	Scale
13. Environment aesthetics	a. No.of people	2348/73462 x100=э.2%	1			1453, 2 % of the total people	1				
	b. Extent of area	very small, regional	1			small, just around the location	1				
	c. Duration	construction stage	3			construction stage	2				
	d. Intensity	very low	1			low	2				
	e. No.of Components	3 components	1			7.0	2				
	f. Period	cummulative, not quickly seen	1			cummulative, for a long time	2				
	g. Recoverage	possibley eliminated	1			can be eliminated	1				
	Average of scale		1.3				1.6				
14. Public health	a. No.of people	4788/59774x100=8%	1			620/59744 x 100 % = 2.5 %	1	2039/73462 x 100 % = 2.8 %	1	1120/59744 x 100 = 1.8 %	1
	b. Extent of area	Indragiri Hulu Regency	3			small	2	small, 9.28 ha	2	small	2
	c. Duration					construction stage	2	construction stage	3	construction stage	3
	d. Intensity	disturbance is medium	3			medium	3	low	2	low	2
	e. No.of Components	3 components	1			7.0	2	8.0	1	2	1
	f. Period	cummulative, but short time	3			cummulative, in a short time	3	cummulative, in a short time	3	cummulative, in a short time	3
	g. Recoverage	eliminated and controlled	3			can be eliminated, controllable	1	can be eliminated	2	can be eliminated	2
	Average of scale		2.3				2.3		2.0		2.0
15. Public facilites	a. No.of people	4788/59774x100=8%	1								
	b. Extent of area	relatively small	1								
	c. Duration	construction stage	2								
	d. Intensity	low	1								
	e. No.of Components	3	1								
	f. Period	cummulative, in a short time	3								
	g. Recoverage	eliminated, controlled	2								
	Average of scale		1.6								

Table V.100 Evaluation of Significant Impacts of Lubukjambi Intake Weir and Irrigation
System Construction Works

Area : Lubukjambi weir and irrigation channel

Activity Stage : Post-Construction Stage

ENVIRONMENT COMPONENTS	Kinds of impact	PROJECT ACTIVITY Weir and irrigation channel operation / maintenance	Scale
GEOPHYSICS-CHMISTRY			
1. physiography and geology	a. No.of people	No one is affected	1
	b. Extent of area	Indragiri Hulu regencies	2
	c. Duration	Post-construction stage	5
	d. Intensity	geometrical changes to river body	3
	e. No.of Components	3	1
	f. Period	cumulative, effects are long	1
	g. Recoverage	impossible to eliminate compound effect	5
	Average of scale		2.7
SOCIOECONOMY AND CULTURE			
1. Means of Livelihood/ Employ-ment opportunities	a. No.of people	34,733	3
	b. Extent of area	Indragiri Hulu regencies	3
	c. Duration	construction stage	5
	d. Intensity	high	4
	e. No.of Components	3	1
	f. Period	cummulative, in a short time	3
	g. Recoverage	impossible to eliminate no compound effect	4
	Average of scale		3.4
2. Income	a. No.of people	34,733	4
	b. Extent of area	Indragiri Hulu regencies	3
	c. Duration	construction stage	5
	d. Intensity	high, 50-75 % of people are affected	4
	e. No.of Components	3	1
	f. Period	cummulative, in a short time	3
	g. Recoverage	impossible to eliminate no compound effect	4
	Average of scale		3.4
3. Public health	a. No.of people	34,733	2
	b. Extent of area	wider area than the planned area	2
	c. Duration	construction stage	4
	d. Intensity	medium	3
	e. No.of Components	3	3
	f. Period	cummulative, in a short time	3
	g. Recoverage	can be eliminated and controlled	2
	Average of scale		2.9

Table V.101 Evaluation of Significant Impacts of Rengat Area Flood Protection Works
Area : Rengat Ring Dike
Activity Stage : Pre-Construction Stage

Environmental Components	Kinds of impact	PROJECT ACTIVITY 1. Survey/ Investigation Remark	Scale	2. Compensation/ Land release Remark	Scale
GEOPHYSICS-CHMISTRY		Nothing		Nothing	
BIOLOGY		Nothing		Nothing	
SOCIOECONOMY AND CULTURE					
1. Public Perception/ Attitude	a. No.of people	1757/17705x100=9.9%	1	1757/17705x100=9.9%	1
	b. Extent of area	84.5/2110x100=4%	1	84.5/2110x100=4%	1
	c. Duration		2	Pre-construction	1
	d. Intensity	can be controlled	2	little nuisance to public order	2
	e. No.of Components	1	1	4	1
	f. Period	not cummulative, not long	3	cummulative but not too long	3
	g. Recoverage	possibly be restored	1	possibly be restored	1
	Average of scale		1.6		1.4
2. Livelihood/ Employment	a. No.of people			40/2928x100=1.4%	1
	b. Extent of area			Only 1 district	2
	c. Duration			Pre- and under Construction	2
	d. Intensity				3
	e. No.of Components			Only 4, but include Socioeconomy	3
	f. Period			cummulative but not too long	3
	g. Recoverage			possibly be restored	2
	Average of scale				2.3
3. Land ownership	a. No.of people			1757/15423x100=11.4%	2
	b. Extent of area			1 subdistrict	2
	c. Duration			Pre-construction	1
	d. Intensity			Small, but affect people	2
	e. No.of Components			Only 4	1
	f. Period			cummulative but not too long	3
	g. Recoverage			not restored	3
	Average of scale				2.0
4. Income	a. No.of people			1757/15423x100=11.4%	2
	b. Extent of area			1 subdistrict	2
	c. Duration			Pre-construction	1
	d. Intensity				2
	e. No.of Components			Only 4	1
	f. Period			cummulative but not too long	3
	g. Recoverage			not restored, but temporal income up	2
	Average of scale				1.9
5. Public facilities	a. No.of people			7484/17705x100=40.3%	4
	b. Extent of area			Very small	1
	c. Duration			Pre-construction	1
	d. Intensity			light, but affect people	2
	e. No.of Components			Only 4	1
	f. Period			cummulative but not too long	3
	g. Recoverage			possibly restored	2
	Average of scale				2.0

Table V.101 Evaluation of Significant Impacts of Rengat Area Flood Protection Works
Area : Rengat Ring Dike
Activity Stage : Construction Stage

ENVIRONMENT COMPONENTS	Kinds of impact	CONSTRUCTION STAGE						4. Construction implementation			
		1. Mobilization of heavy quipment Remark	Scale	2. Mobilization of manpower Remark	Scale	3. Land clearance Remark	Scale	4-1.River improvement	Scale	4-2. Main construction	Scale
GEOPHYSICS-CHIMISTRY											
1. Air quality/ noise	a. Extent	1757/17705x100=10%	2			1857/17705x100=10.4%	2	400, 0.5%	1	1857/17705 x 100 = 10.4 %	2
	b. Area	small, only around roads	1			small, only around the location	1	2 ha of the location	1	small	1
	c. Duration	construction stage	2			construction stage	2	construction stage	3	construction stage	3
	d. Intensity	increase	2			increase	2	increase	2	increase	2
	e. No.of components	3 components	1			3 components	1	5	2	2	1
	f. Period	neutralized	1			neutralized	1	neutralized	1	neutralized	1
	g. Recoverage	possibly eliminated	1			possibly eliminated	1	possibly eliminated	1	possibly eliminated	1
	Average of scale		1.4				1.6		1.6		1.6
2. Physiography/ geology	a. Extent					No one is affected	1	No one is affected	1	No one is affected	1
	b. Area					small, only around the location	1	small	1	small	1
	c. Duration					construction stage	2	construction stage	3	construction stage	3
	d. Intensity					increase	2	low	1	increase	2
	e. No.of Components					3 components	1	5 components	2	2 components	1
	f. Period					neutralized	1	neutralized	1	neutralized	1
	g. Recoverage					possibly eliminated	1	possibly eliminated	1	not possible to eliminate	5
	Average of scale						1.29		1.4		2.0
3. Water quality	a. Extent					No one is affected	1	1626/73462 x 100% = 2.2%	1		
	b. Area					small, just one subdistrict area	1	small	1		
	c. Duration					construction stage	3	construction stage	3		
	d. Intensity					increase	2	increase	2		
	e. No.of Components					7	2	5	2		
	f. Period					neutralized	1	in a long time	2		
	g. Recoverage					can not to be eliminated	1	can not to be eliminated	1		
	Average of scale						1.67		1.7		
4. Land use system	a. No.of people					1757 people, 9.9 %	1				
	b. Extent of area					small, just around the location	1				
	c. Duration					construction stage	3				
	d. Intensity					significant	3				
	e. No.of Components					7	2				
	f. Period					neutralized	1				
	g. Recoverage					possible	1				
	Average of scale						1.71				
5. River Flow Pattern	a. Extent							No one is affected	1		
	b. Area							small	1		
	c. Duration							construction stage	3		
	d. Intensity							low	2		
	e. No.of Components							5 components	2		
	f. Period							cummulative, in a long time	2		
	g. Recoverage							impossible to eliminate	5		
	Average of scale								2.3		
BIOLOGY											
6. Terrestrial Flora	a. Extent					No one is affected	1				
	b. Area					small,	1				
	c. Duration					construction + post- stage	4				
	d. Intensity					low	2				
	e. No.of Components					7	2				
	f. Period					neutralized	1				
	g. Recoverage					not possible to eliminate	4				
	Average of scale						2.1				

Table V.101 Evaluation of Significant Impacts of Rengat Area Flood Protection Works
Area : Rengat Ring Dike
Activity Stage : Construction Stage

ENVIRONMENT COMPONENTS	Kinds of impact	CONSTRUCTION STAGE								
		1. Mobilization of heavy quipment Remark	Scale	2. Mobilization of manpower Remark	Scale	3. Land clearance Remark	Scale	4. Construction implementation 4-1.River improvement	Scale	4-2. Main construction	Scale
7. Terrestrial Fauna	a. Extent					No one is affected	1				
	b. Area					small,	1				
	c. Duration					construction + post- stage	4				
	d. Intensity					low	2				
	e. No.of Components					7	2				
	f. Period					cummulative, for a long time	1				
	g. Recoverage					can be eliminated	1				
	Average of scale						1.7				
8. Aquatic Fauna	a. Extent							No one is affected	1		
	b. Area							small	1		
	c. Duration							construction or post- stage	4		
	d. Intensity							Diversity less decline	2		
	e. No.of Components							5	2		
	f. Period							neutralized	1		
	g. Recoverage							impossible to eliminate	4		
	Average of scale								2.1		
SOCIOECONOMY AND CULTURE											
9. Public Perception/ Attitude	a. No.of people			432/17705 x 100 = 2.4%	1						
	b. Extent of area			2 regency	3						
	c. Duration			construction stage	3						
	d. Intensity			low	2						
	e. No.of components			3	1						
	f. Period			cummulative, in a short time	3						
	g. Recoverage			eliminated and controlled	2						
	Average of scale				2.1						
10. Customs/ traditions	a. No.of people			100/9861 x 100 = 1.0%	1						
	b. Extent of area			limited area	1						
	c. Duration			construction stage	2						
	d. Intensity			low	2						
	e. No.of Components			5	2						
	f. Period			cummulative, in a long time	2						
	g. Recoverage			eliminated and controlled	1						
	Average of scale				1.6						
11. Livelihood/ Employment	a. No.of people			100/9861 x 100 = 1.0%	1						
	b. Extent of area			Indragiri Hulu regency	3						
	c. Duration			construction stage	3						
	d. Intensity			low	2						
	e. No.of Components			3	2						
	f. Period			cummulative, in a short time	3						
	g. Recoverage			eliminated and controlled	2						
	Average of scale				2.3						
12. People's income	a. No.of people			100/9861 x 100 = 1.0%	1						
	b. Extent of area			Indragiri Hulu regency	3						
	c. Duration			construction stage	1						
	d. Intensity			low	2						
	e. No.of Components			3	1						
	f. Period			cummulative, in a short time	3						
	g. Recoverage			eliminated and controlled	2						
	Average of scale				1.9						

Table V.101 Evaluation of Significant Impacts of Rengat Area Flood Protection Works
Area : Rengat Ring Dike
Activity Stage : Construction Stage

ENVIRONMENT COMPONENTS	Kinds of impact	CONSTRUCTION STAGE									
		1. Mobilization of heavy quipment Remark	Scale	2. Mobilization of manpower Remark	Scale	3. Land clearance Remark	Scale	4. Construction implementation			
								4-1.River improvement	Scale	4-2. Main construction	Scale
13. Environment aesthetics	a. No.of people	2419/17705 x100=13.6%	2			1757 people, 9.9 %	1.0				
	b. Extent of area	very small, regional	1			small, just around the location	1.0				
	c. Duration	construction stage	3			construction stage	2.0				
	d. Intensity	very low	1			low	2.0				
	e. No.of Components	3 components	1			7.0	2.0				
	f. Period	cummulative, not quickly	1			cummulative, for a long time	2.0				
	g. Recoverage	possibley eliminated	1			can be eliminated	1.0				
	Average of scale		1.4				1.6				
14. Public health	a. No.of people	4788/59774x100=8%	1			1857/17705 x 100 = 10.4 %	2.0	2039/73462 x 100 % = 2.8 %	1	1857/17705 x 100 = 10.4 %	2
	b. Extent of area	Indragiri Hulu Regency	3			small	2.0	small, 9.28 ha	2	small	2
	c. Duration							construction stage	3	construction stage	3
	d. Intensity	disturbance is medium	3			medium	3.0	low	2	low	2
	e. No.of Components	3 components,	1			7.0	2.0	8.0	1	2	1
	f. Period	cummulative, but short time	3			cummulative, in a short time	3.0	cummulative, in a short time	3	cummulative, in a short time	3
	g. Recoverage	eliminated and controlled	3			can be eliminated, controllable	1.0	can be eliminated	2	can be eliminated	2
	Average of scale		2.3				2.2		2.0		2.1
15. Public facilites	a. No.of people	1757/17705x100=10%	2								
	b. Extent of area	relatively small	1								
	c. Duration	construction stage	2								
	d. Intensity	low	1								
	e. No.of Components	3	1								
	f. Period	cummulative, in a short time	3								
	g. Recoverage	eliminated and controlled	2								
	Average of scale		1.7								

Table V.101 Evaluation of Significant Impacts of Rengat Area Flood Protection Works
Area : Rengat Ring Dike
Activity Stage : Post-Construction Stage

ENVIRONMENT COMPONENTS Kinds of impact		PROJECT ACTIVITY Ring Dike operation / maintenance	Scale
GEOPHYSICS-CHEMISTRY			
BIOLOGY			
SOCIOECONOMY AND CULTURE			
1. Income	a. No.of people	15,423	4
	b. Extent of area	Rengat Regency	3
	c. Duration	construction stage	5
	d. Intensity	high, 50-75 % of people are affected	4
	e. No.of Components	3	1
	f. Period	cummulative, in a short time	3
	g. Recoverage	impossible to eliminate	4
		no compound effect	
	Average of scale		3.3
2. Public health	a. No.of people	15,423	2
	b. Extent of area	wider area than the planned area	2
	c. Duration	post-construction stage	4
	d. Intensity	medium	3
	e. No.of Components	3	4
	f. Period	cummulative, in a short time	4
	g. Recoverage	cannot be eliminated	2
		intensity is high	
	Average of scale		2.9
3. Environment aesthetics	a. No.of people	15,423	2
	b. Extent of area	wider area than the planned area	1
	c. Duration	post-construction stage	5
	d. Intensity	environmental aesthetic value is small	2
	e. No.of Components	3	4
	f. Period	cummulative, in a short time	4
	g. Recoverage	cannot be eliminated	2
	Average of scale		3