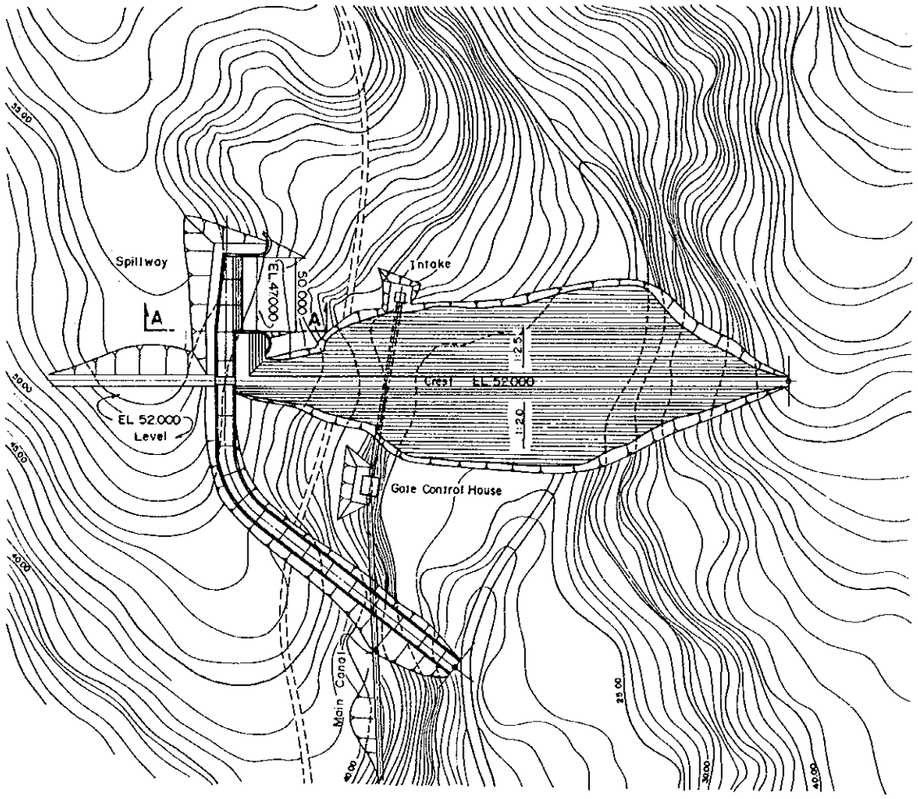
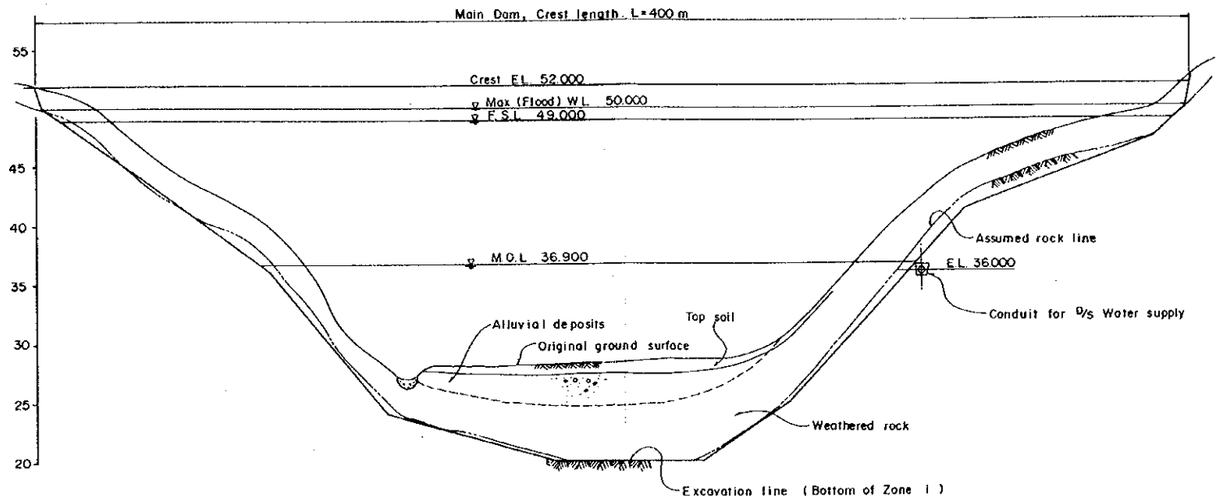
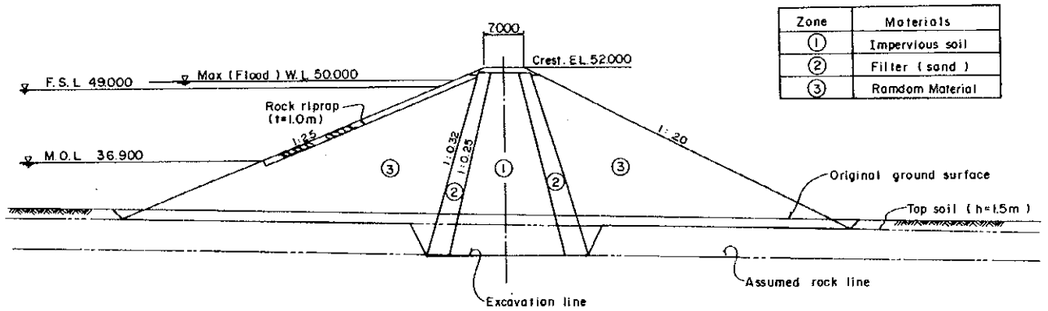


PLAN Scale A



PROFILE OF MAIN DAM

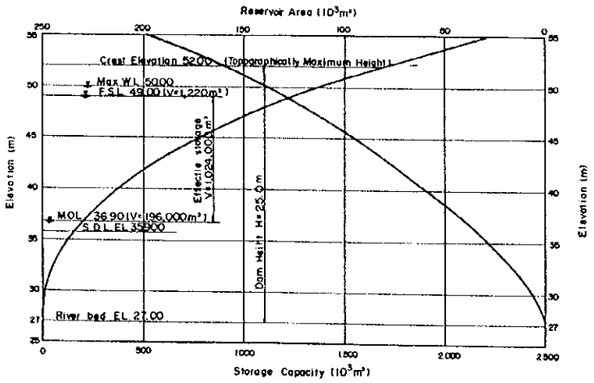
Scale H = 1 : 1000
V = 1 : 250



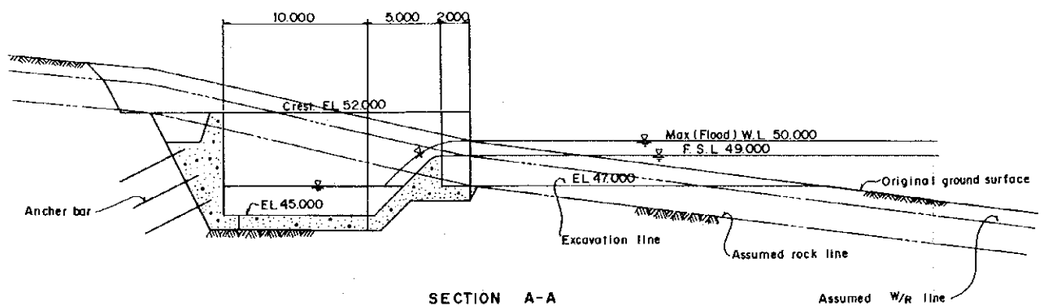
Zone	Materials
①	Impervious soil
②	Filter (sand)
③	Ramdom Material

MAXIMUM CROSS SECTION

Scale B



RESERVOIR STORAGE CURVE AT NCOHA-II



SECTION A-A

Scale C

Scale A 0 50 100 150 200m

Scale B 0 10 20 30 40 50m

Scale C 0 5 10 15 20m

DIRECTORATE GENERAL OF WATER RESOURCES DEVELOPMENT, MINISTRY OF PUBLIC WORKS

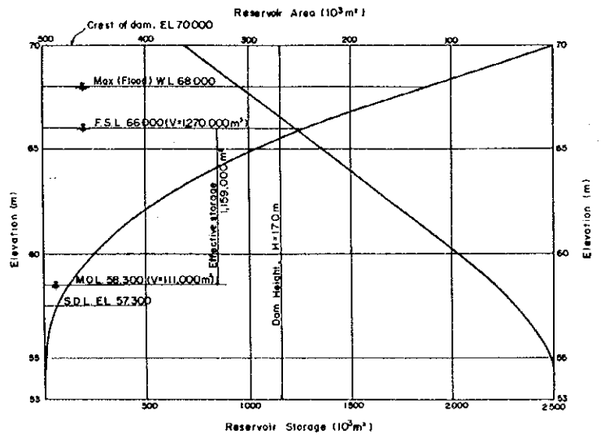
The Embung Development Project in East Nusa Tenggara and West Nusa Tenggara

GENERAL PLAN OF NCOHA-II EMBUNG

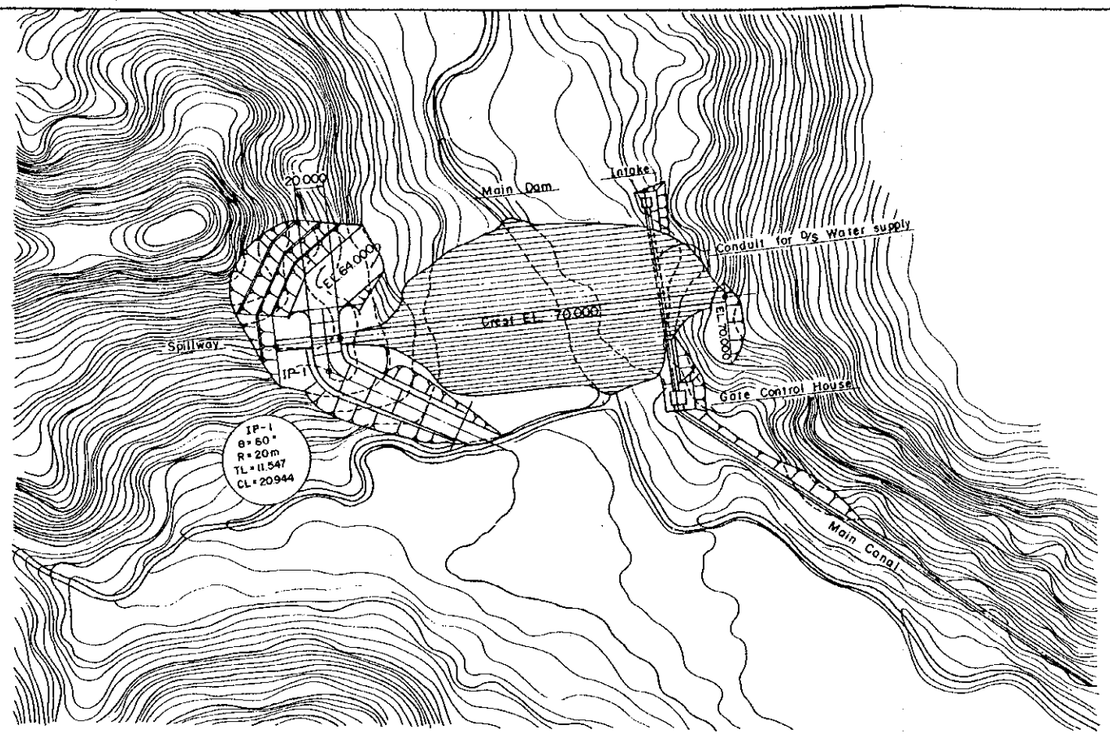
No. | Area

JAPAN INTERNATIONAL COOPERATION AGENCY

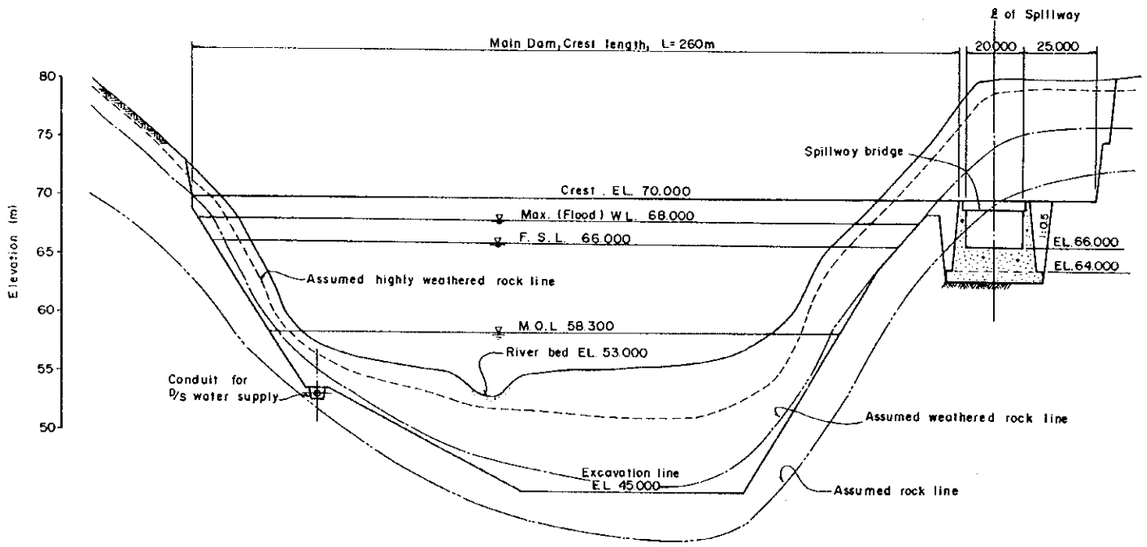
図 6.17　ヌチョハ II溜池一般図



RESERVOIR STORAGE CURVE AT NTONGGU-II

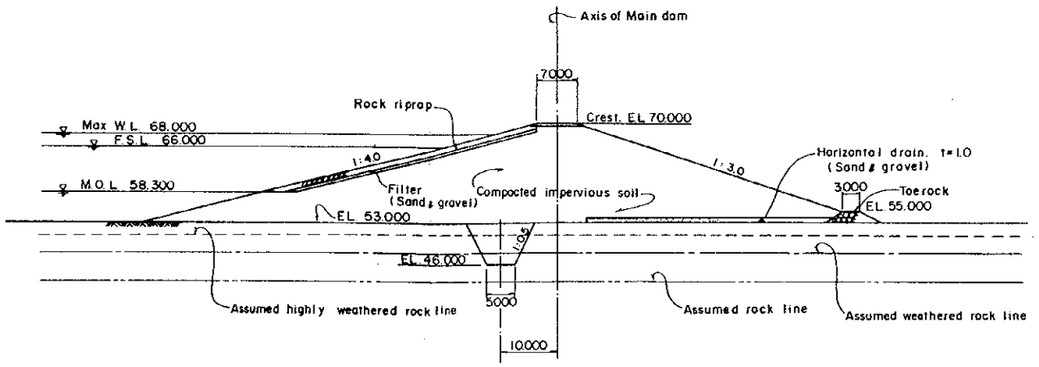


PLAN Scale A



PROFILE OF MAIN DAM

Scale : H=1:1000
V=1:250



TYPICAL SECTION OF MAIN DAM

Scale B

Scale A 0 50 100 150 200m

Scale B 0 10 20 30 40 50m

DIRECTORATE GENERAL OF WATER RESOURCES DEVELOPMENT, MINISTRY OF PUBLIC WORKS

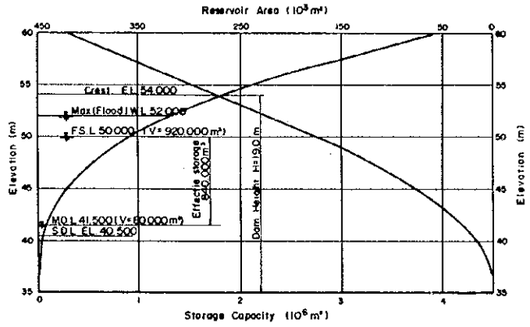
The Embung Development Project in East Nusa Tenggara and West Nusa Tenggara

GENERAL PLAN OF NTONGGU-II EMBUNG

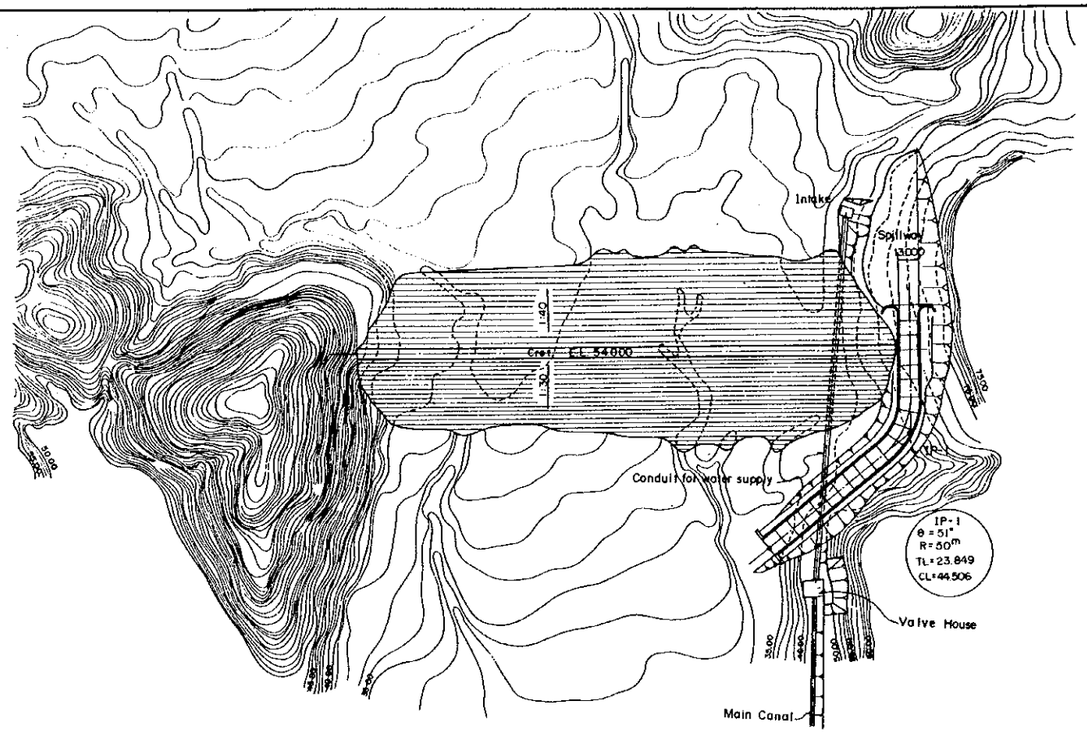
No. Area

JAPAN INTERNATIONAL COOPERATION AGENCY

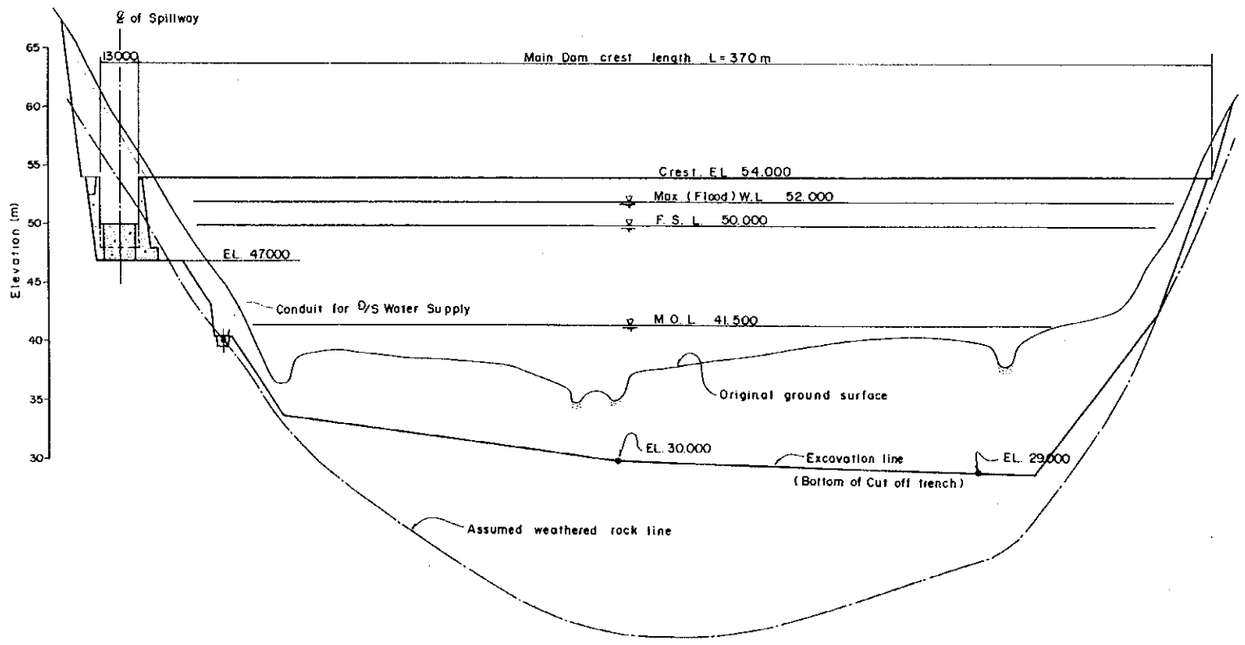
図 6.18 ヌトゥング II 溜池一般図



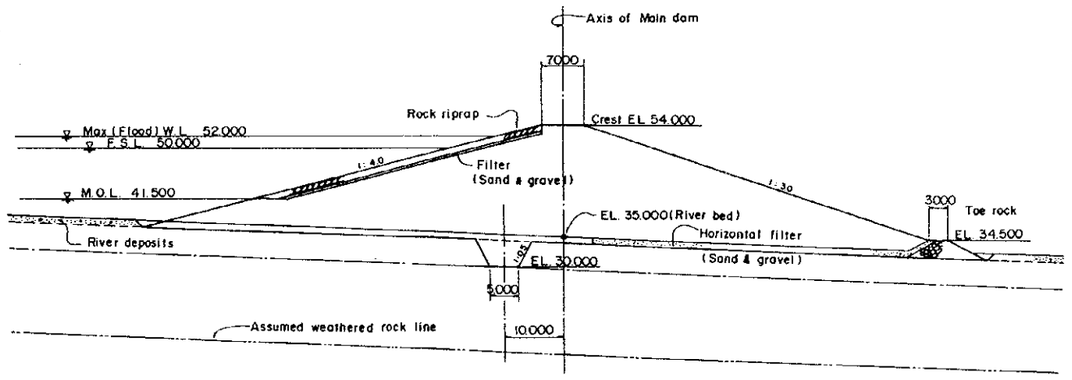
RESERVOIR STORAGE CAPACITY CURVE FATUKMETANG



PLAN Scale A



PROFILE OF MAIN DAM
Scale H = 1 : 1,000
V = 1 : 250



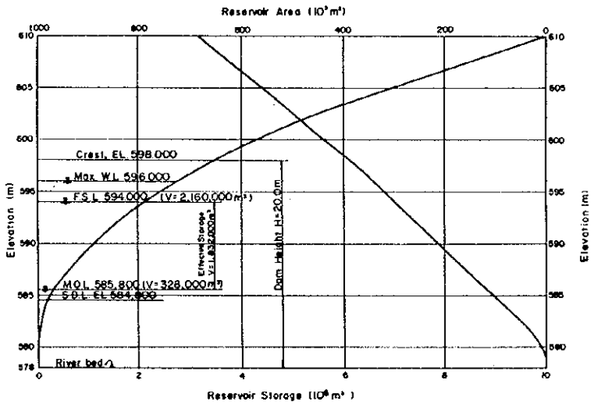
MAXIMUM CROSS SECTION OF MAIN DAM
Scale B

Scale A 0 50 100 150 200m

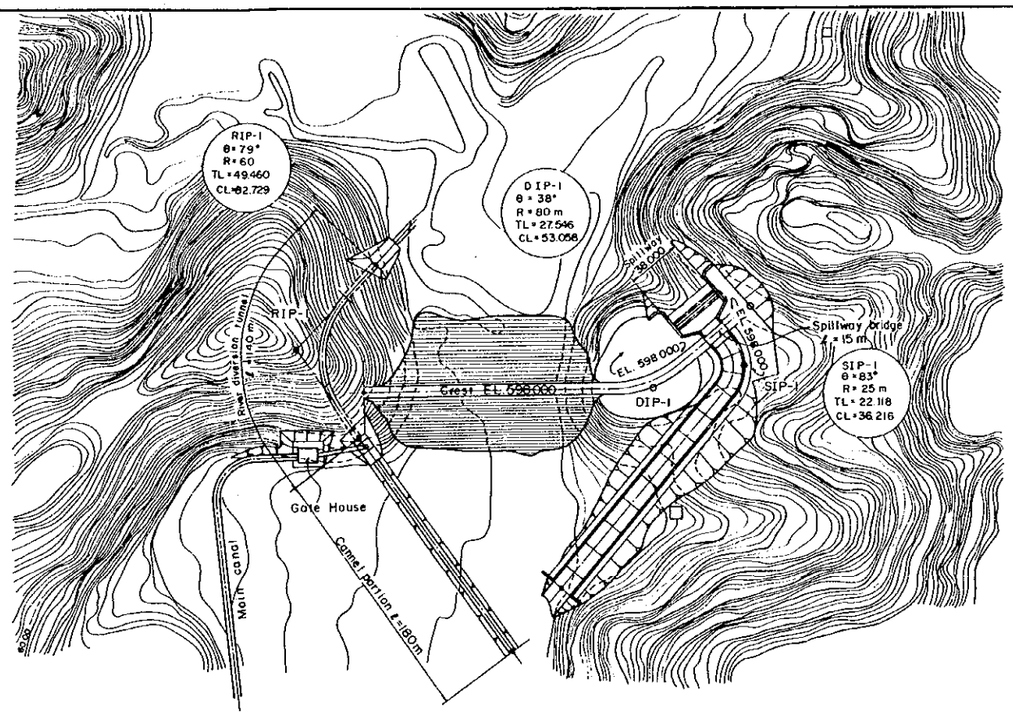
Scale B 0 10 20 30 40 50m

DIRECTORATE GENERAL OF WATER RESOURCES DEVELOPMENT, MINISTRY OF PUBLIC WORKS	
The Embung Development Project in East Nusa Tenggara and West Nusa Tenggara	
GENERAL PLAN OF FATUKMETANG EMBUNG	
No.	Area
JAPAN INTERNATIONAL COOPERATION AGENCY	

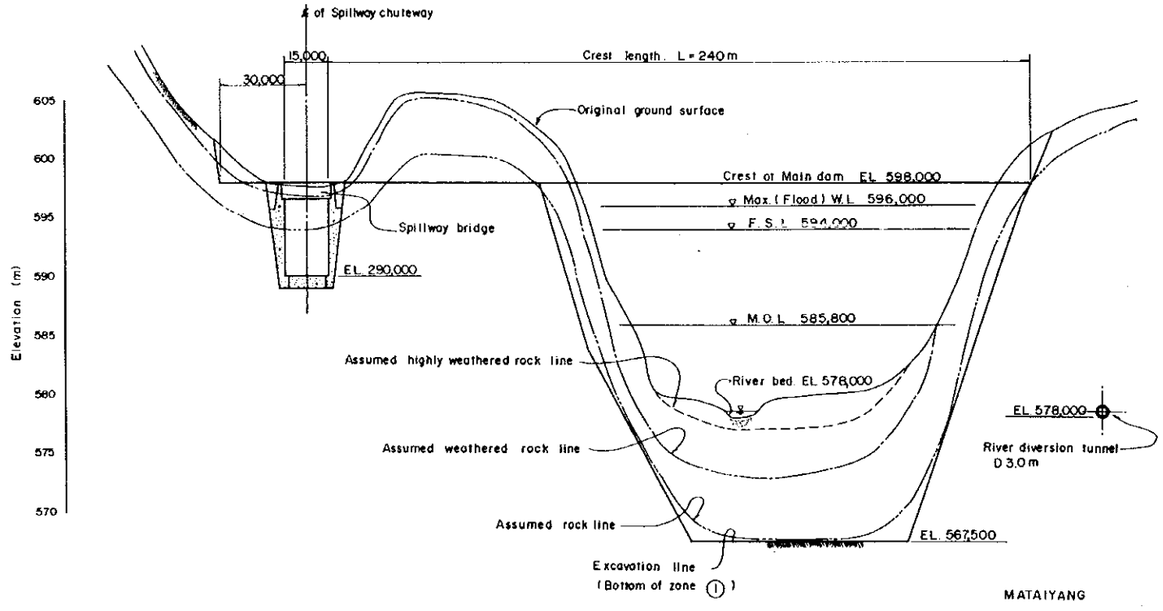
図 6.19　ファトゥクメタン溜池一般図



RESERVOIR STORAGE CURVE AT MATAIYANG



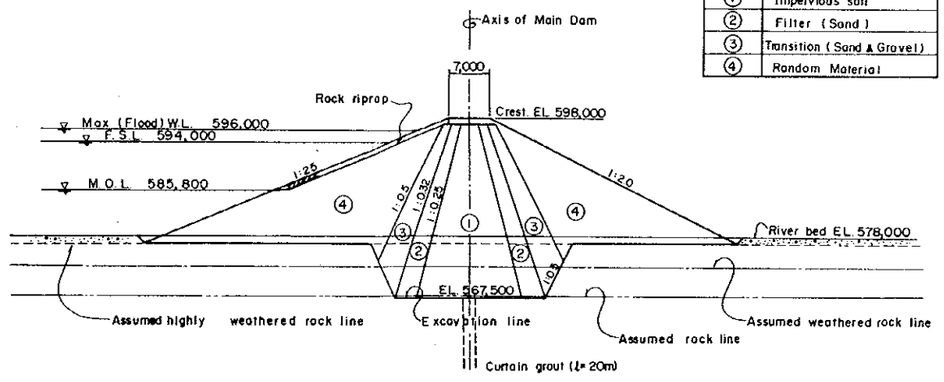
PLAN Scale A



PROFILE OF MAIN DAM
Scale : H=1:1,000
V=1:250

MATAIYANG

Zone	Material
①	Impervious soil
②	Filter (Sand)
③	Transition (Sand & Gravel)
④	Random Material



MAXIMUM CROSS SECTION OF MAIN DAM
Scale B

Scale A 0 50 100 150 200m

Scale B 0 10 20 30 40 50m

図 6.20 マタイヤン溜池一般図

DIRECTORATE GENERAL OF WATER RESOURCES DEVELOPMENT, MINISTRY OF PUBLIC WORKS	
The Embung Development Project in East Nusa Tenggara and West Nusa Tenggara	
GENERAL PLAN OF MATAIYANG EMBUNG	
No.	Area
JAPAN INTERNATIONAL COOPERATION AGENCY	

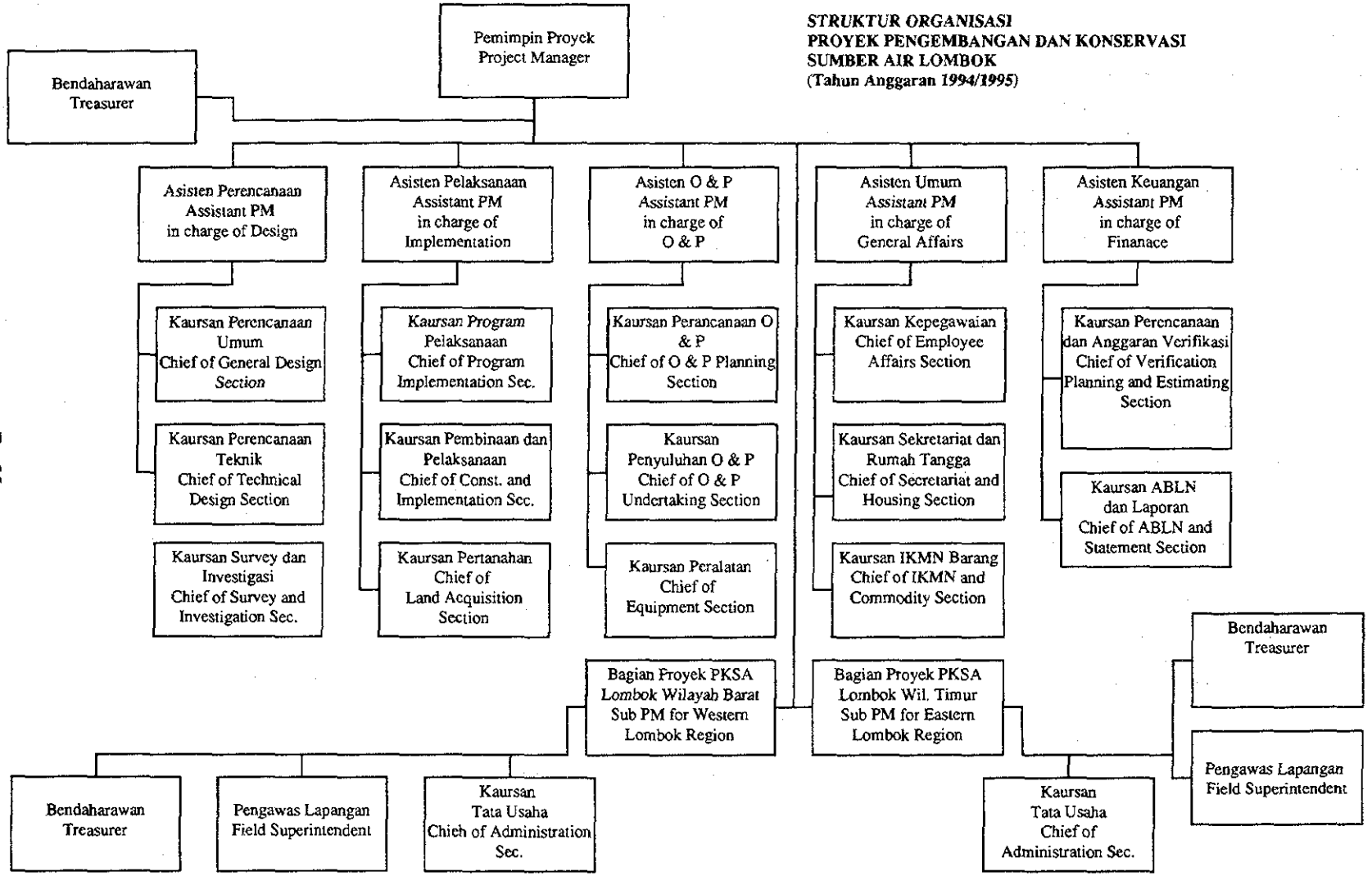


図 8.1　　ロンボクPKSA組織図

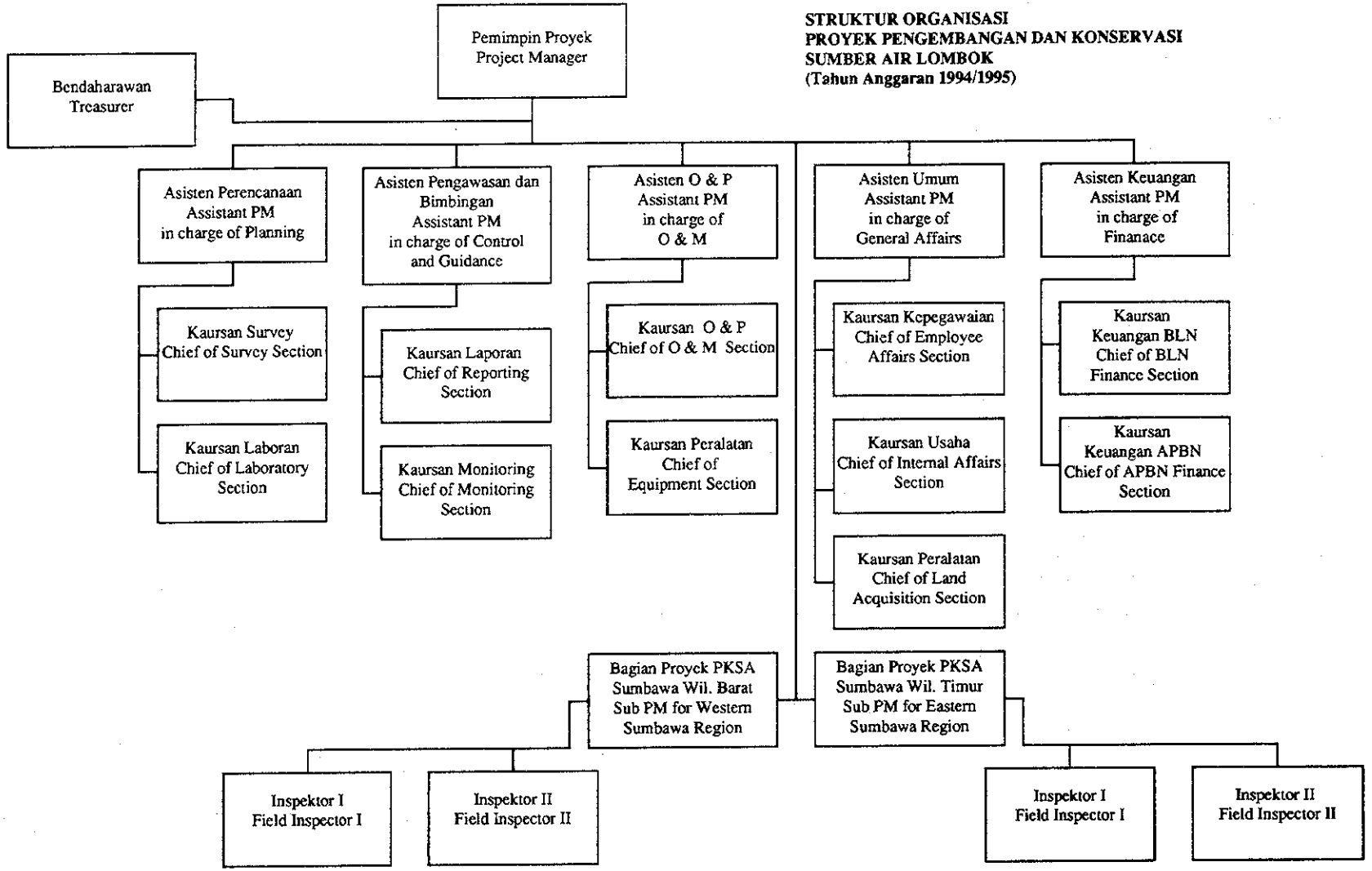


図 8.2　スンバワPKSA組織図

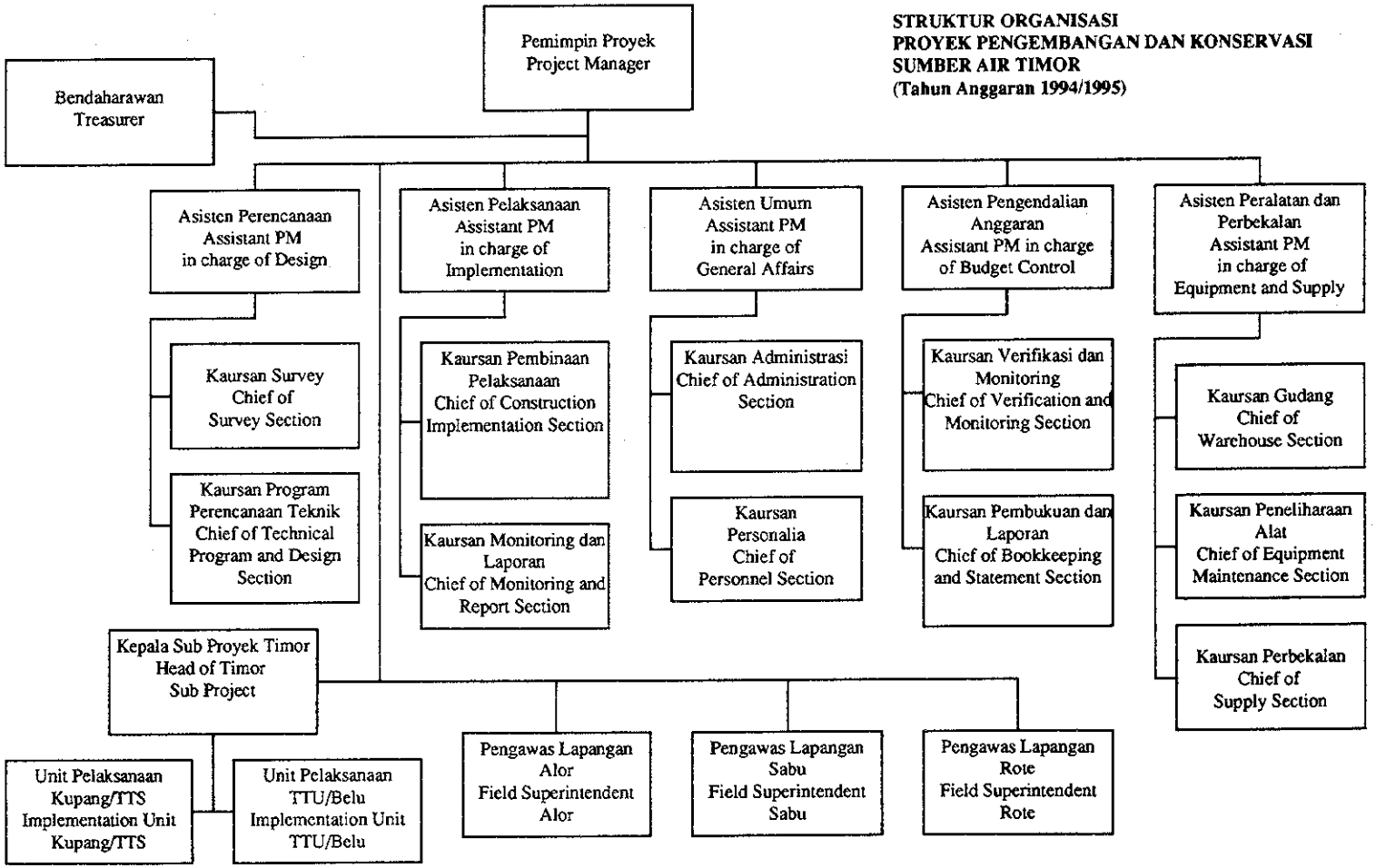


図 8.3　チモールPKSA組織図

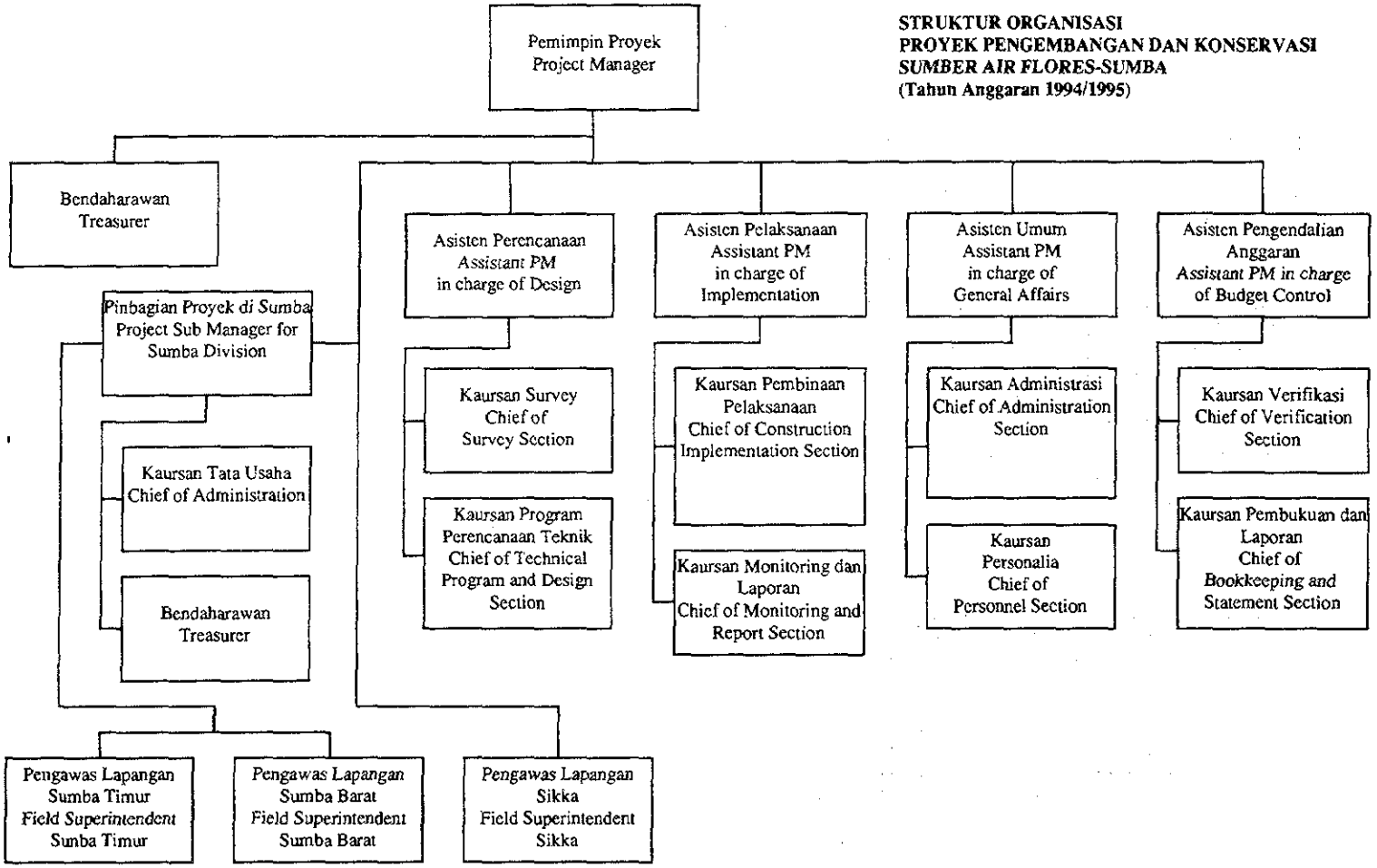


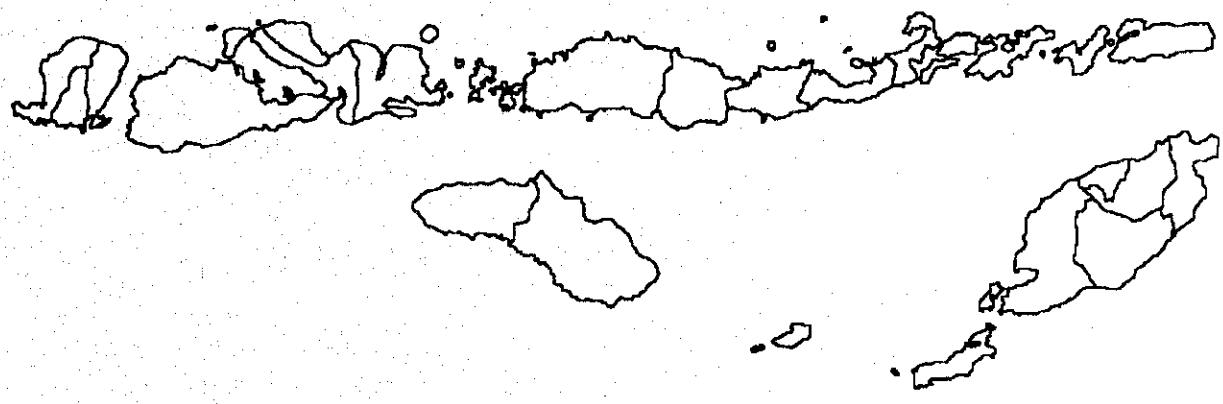
図 8.4　スンバ・フローレスPKSA組織図

第4巻

インドネシア国　ヌサ・テンガラ地域
小規模溜池農村開発計画調査

代表地区フィージビリティ調査報告書

添付資料



1. Physical Environmental Impacts

Place I : Catchment area
Place II : Embung and reservoir area planned
Place III : River and riverbed
Place IV : Riverside
Place V : Beneficial area
Place VI : Downstream area other than beneficial area

Embung Site: 1: Lokok Meniris
2: Pelangan
3: *Montong Krarak*
4: Aik Beta
5: Tiu Tui
6: *Penyempeng*
7: Ncoha(II)
8: Ntonggu(II)
9: Fatukmetang
10: Mataiyang

Positive Impact with Project

Negative Impact with Project

Environmental component	Environmental Issue	Actual or Potential	Places Environmental Issues Occur I II III IV V VI	Evaluation is available or not available	Actual and Potential Aspect	*Actual and Potential* Impact of Aspect	Places Environmental Impact Occur I II III IV V VI	Embung Site 1 2 3 4 5 6 7 8 9 10	Mitigatory Measures
LAND	Land use	Actual	I	not available					
		Potential	I	not available					
	Soil erosion	Actual	I	not available					
		Potential	I	not available					
	Soil fertility	Actual	I	not available					
		Potential	I	not available					
	Soil contamination	Actual	I	not available					
		Potential	I	not available					
WATER	River hydrology	Actual	III	available	· Flush flows in short duration are observed during the wet season.	· It frequently causes floods.	IV V	3 5 8 9 10	
		Actual	III	available	· ditto	· It causes frequently floods, scour and erosion of river bed.	III IV V	1 4 7	
		Actual	III	available	· *River flow discharge rapidly* increase during the wet season	· *It frequently causes floods.*	IV V	2 6	
		Potential	III	available	· Although being reduced by storage *function of the reservoir as compared* current situation, the river run-off will not change during floods.	· There are no changes of actual impacts.		1 2 3 4 5 6 7 8 9 10	
	River morphology	Actual	IV	available	· *Erosion and collapse of river banks* caused by floods and excess grazing are observed.	· There are no impacts.		1 4 7 8 9	
		Potential	IV	available	· *Any changes of aspect are not* anticipated.	· There are no impacts.		1 4 7 8 9	
		Actual	IV	available	· Erosion and collapse of river banks *caused by floods and excess grazing* are observed.	· Sedimentation in the river reduces flow area of the river.	III	2 5	
		Potential	IV	available	· Any changes of aspect are not *anticipated.*	· There are no changes of actual impacts.	III	2 5	

Place I : Catchment area
Place II : Embung and reservoir area planned
Place III : River and riverbed
Place IV : Riverside
Place V : Beneficial area
Place VI : Downstream area other than beneficial area

Embung Site: 1: Lokok Meniris
2: Pelangan
3: Montong Krarak
4: Aik Beta
5: Tiu Tui
6: Penyempeng
7: Ncoha(II)
8: Ntonggu(II)
9: Fatukmetang
10: Mataiyang

Positive Impact with Project

Negative Impact with Project

Environmental component	Environmental Issue	Actual or Potential	Places Environmental Issues Occur I	II	III	IV	V	VI	Evaluation is available or not available	Actual and Potential Aspect	Actual and Potential Impact of Aspect	Places Environmental Impact Occur I	II	III	IV	V	VI	Embung Site 1	2	3	4	5	6	7	8	9	10	Mitigatory Measures
		Actual				IV			available	· Erosion and collapse of river banks are not observed owing to vegetation of kinds of bamboo around the revirside.	· There are no impacts.									3								
		Potential				IV			available	· Erosion and collapse of river banks are not observed owing to vegetation of bushes around the revirside and geological condition of limestone.	· There are no impacts.																10	
		Actual				IV			available	· Erosion and collapse of river banks are not observed owing to rich vegetation around the revirside.	· There are no impacts.											6						
		Potential				IV			available	· Any changes of aspect are not anticipated.	· There are no impacts.									3		6					10	
	Flooding	Actual			III	IV			available	· Intensive flow induces floods occurrence during the wet season	· There are no impacts.									3		5			8	9	10	
		Actual			III	IV			available	· Intensive flow induces floods occurrence during the wet season	· Erosion along the river banks is accelerated by floods.			III			1			4			7					
		Actual			III	IV			available	· Rapidly increasing flow during the wet season induces flood occurrence.	· There are no impacts.							2				6						
		Potential			III	IV			available	· Flood discharge is not reduced because Embungs have no flood control purpose.	· There are no impacts. / There are no changes of actual impacts.			III			1	2	3	4	5	6	7	8	9	10		

Place I : Catchment area
Place II : Embung and reservoir area planned
Place III : River and riverbed
Place IV : Riverside
Place V : Beneficial area
Place VI : Downstream area other than beneficial area

Embung Site: 1: Lokok Meniris
2: Pelangan
3: Montong Krarak
4: Aik Beta
5: Tiu Tui
6: Penyempeng
7: Ncoha(II)
8: Ntonggu(II)
9: Fatukmetang
10: Mataiyang

Positive Impact with Project

Negative Impact with Project

Environmental component	Environmental Issue	Actual or Potential	Places Environmental Issues Occur I	II	III	IV	V	VI	Evaluation is available or not available	Actual and Potential Aspect	Actual and Potential Impact of Aspect	Places Environmental Impact Occur I	II	III	IV	V	VI	Embung Site 1	2	3	4	5	6	7	8	9	10	Mitigatory Measures
	Surface water availability	Actual					V		available	· Surface water is utilized for irrigation and livestock in the wet season. In the some parts, surface water led from other water resource is utilized for irrigation.	· To utilized well water as livestock supply in the dry season sometimes causes the shortage of domestic water supply.					V	1									
		Actual					V		available	· Surface water is utilized for irrigation and livestock in the wet season. In the dry season, both supply is insufficient.	· Ditto and it affects unstable activities of cultivation.					V		2								
		Actual					V		available	· Surface water is utilized for irrigation and livestock in the wet season.	· To utilized well water as livestock supply in the dry season often causes the shortage of domestic water supply.					V			3							
		Actual					V		available	· Surface water is utilized for livestock in the wet season.	· To utilized well water as livestock supply in the dry season sometimes causes the shortage of domestic water supply.					V										10
		Potential					V		available	· It is available to utilize surface water for irrigation and domestic.	· Supply or stable water supply for irrigation water bring the agricultural and related economic activities to positive. In addition, it mitigates the insufficiency of domestic water.					V		1	2	3						10
		Actual					V		available	· As surface water is utilized merely for livestock in the wet season, most of water runs to down.	· It affects low level of agricultural productivity.					V				4						
		Actual					V		available	· Although surface water is utilized for irrigation and livestock, irrigation water is insufficient in the some parts.	· It affects unstable agricultural productivity in the dry season.					V						6				
		Actual					V		available	· Although being utilized for livestock, surface water runs to down without being utilized as irrigation water due to unsuitable facilities.	· It affects low level of agricultural productivity.					V							7			
		Potential					V		available	· It is available to utilize surface water for irrigation	· Supply or stable water supply for irrigation bring the agricultural and related economic activities to positive.					V				4		6	7			
		Actual					V		available	· Surface water is utilized for livestock in the wet season.	· To utilized well water as livestock supply in the dry season sometimes causes the shortage of domestic water supply.					V					5					
		Actual					V		available	· Surface water is utilized for irrigation and livestock in the wet	· Ditto					V								8		

Place I : Catchment area
Place II : Embung and reservoir area planned
Place III : River and riverbed
Place IV : Riverside
Place V : Beneficial area
Place VI : Downstream area other than beneficial area

Embung Site: 1: Lokok Meniris
2: Pelangan
3: Montong Krarak
4: Aik Beta
5: Tiu Tui
6: Penyempeng
7: Ncoha(II)
8: Ntonggu(II)
9: Fatukmetang
10: Mataiyang

Positive Impact with Project

Negative Impact with Project

Environmental component	Environmental Issue	Actual or Potential	Places Environmental Issues Occur I II III IV V VI	Evaluation is available or not available	Actual and Potential Aspect	Actual and Potential Impact of Aspect	Places Environmental Impact Occur I II III IV V VI	Embung Site I 2 3 4 5 6 7 8 9 10	Mitigatory Measures
		Potential	V	available	· It is available to utilize surface water for irrigation and livestock.	· Supply or stable water supply for irrigation bring the agricultural and related economic activities to positive. In addition, it mitigates the insufficiency of livestock water and reduces shifting the responsibility to *domestic water supply*.	V	5 8	
		Actual	V	available	· As surface water is utilized merely for livestock in the wet season, almost of it runs down.	· Well water is always insufficient in dry season. In addition, level of agricultural productivity is very low.	V	9	
		Potential	V	available	· It is available to utilize surface water for irrigation, domestic and livestock.	· It mitigates the shortage of water supply of all. It also bring the agricultural and related economic activities to slightly positive.	V	9	
	Surface water quality	Actual	III	not available					
		Potential	III	not available					
	Groundwater levels	Actual	V	not available					
		Potential	V	not available					
	Groundwater quality	Actual	V	not available					
		Potential	V	not available					
ATMOSPHER	Dust, Odor, Noise	Actual	II	available	—	—			
		Potential	II	available	· During construction stage, some changes of atmosphere aspect are more prominent though most of them are localized and temporary.	· It influences the inhabitants who lives nearby the construction site and their activities.	V	4	These impacts can eliminate through the appropriate consideration for the activities such as safety control and transportation management by the contractor.

2. Biotic Environmental Impacts

Place I : Catchment area
Place II : Embung and reservoir area planned
Place III : River and riverbed
Place IV : Riverside
Place V : Beneficial area
Place VI : Downstream area other than beneficial area

Embung Site: 1: Lokok Meniris
2: Pelangan
3: Montong Krarak
4: Aik Beta
5: Tiu Tui
6: Penyempeng
7: Ncoha(II)
8: Ntonggu(II)
9: Fatukmetang
10: Mataiyang

Positive Impact with Project

Negative Impact *with Project*

Environmental component	Environmental Issue	Actual or Potential	Places Environmental *Issues Occur* I II III IV V VI	Evaluation is *available or* not available	Actual and Potential Aspect	Actual and Potential Impact of Aspect	Places Environmental Impact Occur I II III IV V VI	Embung Site 1 2 3 4 5 6 7 8 9 10	Mitigatory Measures
FAUNA	Fauna *community/* habitats	*Actual*	II	available	· There are not notable habitats and communities.	· There are no impacts.		1 2 3 4 5 6 7 5 6 10	
		Potential	II	available	· There are no changes of aspect.	· There are no impacts.		1 2 3 4 5 6 7 8 9 10	
FLORA	Forests/trees	Actual	II	available	· Any notable vegetation are not recognized.	· There are no impacts.		1 7 8 9	
		Potential	II	available	· There are no changes of aspect.	· There are no impacts.		1 7 8 9	
		Actual	II	available	· Vegetation of scattered open forests and bushes are recognized.	· There are no impacts.		3 4 5	
		Actual	II	available	· Vegetation of natural and open forests and bushes are recognized.	· There are no impacts.		6 10	
		Potential	II	available	· Logging induced by Embungs construction is required in the reservoir area.	· There are no impacts.		3 4 5 6 10	
		Actual	II	available	· Vegetation of natural and open forests and bushes are recognized. These trees are utilized for surroundings inhabitants and their activities.	· It causes soil erosion.	II	2	
		Potential	II	available	· Logging caused by Embungs construction is required in the reservoir area.	· Limitation of logging area by Embung construction accelerates logging activities in the catchment area of the reservoir.	I II	2	*Vegetations in the* catchment area should be protected and managed by means of artificial remedy.

3. Human Environmental Impacts

Place I : Catchment area
Place II : Embung and reservoir area planned
Place III : River and riverbed
Place IV : Riverside
Place V : Beneficial area
Place VI : Downstream area other than beneficial area

Embung Site: 1: Lokok Meniris
2: Pelangan
3: Montong Krarak
4: Aik Beta
5: Tiu Tui
6: Penyempeng
7: Ncoha(II)
8: Ntonggu(II)
9: Fatukmetang
10: Mataiyang

Positive Impact with Project

Negative Impact with Project

Environmental component	Environmental Issue	Actual or Potential	Places Environmental Issues Occur I II III IV V VI	Evaluation is available or not available	Actual and Potential Aspect	Actual and Potential Impact of Aspect	Places Environmental Impact Occur I II III IV V VI	Embung Site 1 2 3 4 5 6 7 8 9 10	Mitigatory Measures
SOCIAL	Human carrying capacity	Actual	V	available	· The capacity can be adapted to constant population growth due to agricultural activities in the whole	· There are no impacts.		1 2 6 8	
		Potential	V	available	· Further expansion of the capacity is expected by means of the provision of sufficient irrigation water supply all the year round.	· As it enables to employ a seasonal labour who will contribute to the division of agricultural work in this area.	V	1 2 6 8	
		Actual	V	available	· The capacity, which is attributed to low farm productivity due to irrigation during only wet season, can not afford.	· Low employment opportunity in the dry season induces the outflow of labor force to town area.	V	3	
		Potential	V	available	· Increase of the capacity is expected by means of the provision of sufficient irrigation water supply all the year round.	· It controls the labor force outflow, and contributes to their settling in order to work in this area.	V	3	
		Actual	V	available	· The capacity, which is attributed to low farm productivity due to rainfed irrigation, can not afford.	· Low employment opportunity induces the outflow of much labor force to town area.	V	4 5 7 10	
		Potential	V	available	· Improvement of the capacity is expected by means of the provision of irrigation water supply.	· It controls labor force outflow, contributes to their settling in order to work in this area.	V	4 5 7 10	
		Actual	V	available	· As there are not any notable economic activities , the capacity is too much limited .	· Low employment opportunity causes outflow of much labor force to town area.	V	9	
		Potential	V	available	· Advance of the capacity is expected by means of the introduction of irrigated cultivation.	· It controls the labor force outflow, and contributes to their settling in order to work in this area.	V	9	
	Resettlement	Actual		available	—	—		1 2 3 4 5 6 7 8 9 10	
		Potential	II	available	· Involuntary resettlement will not occur.	· There are no impacts.		1 3 6 9	
		Potential	II	available	· Although in the proposed reservoir area there are used land, which will be expropriated by means of the provision the recommended land in the beneficial area, involuntary resettlement will not occur because of living in the beneficial area.	· There are no impacts.		4 5 7	

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Positive Impact with Project

Negative Impact with Project

Environmental component	Environmental Issue	Actual or Potential	Places Environmental Issues Occur I	II	III	IV	V	VI	Evaluation is available or not available	Actual and Potential Aspect	Actual and Potential Impact of Aspect	Places Environmental Impact Occur I	II	III	IV	V	VI	Embung Site 1	2	3	4	5	6	7	8	9	10	Mitigatory Measures
		Potential		II					available	· The land transfer shall force the land users/owners to resettle nearby their farmland.	· It causes resistance or apprehension, and discord between resettled inhabitants and already living people in the beneficial area.		II			V												*An equivalent or better social* basis should be provided in the beneficial area.
		Potential		II					available	· As the dwellings and lands are submerged, involuntary resettlement occurs.	· Ditto and the changes of economic basis result in resistance against shifting from traditional style to new one.		II			V												Ditto and it is necessary to train settlers in order to follow the activities.
		Potential		II					available	· As the dwellings and lands are submerged, involuntary resettlement occurs.	· There are few impacts because resettled family is only one.																10	
	Settlement	Actual				V			available	· Settlement is not recommended among indigenous social communities.	· There are no impacts.							1	2	3	4	5	6	7	8	9	10	
		Potential				V			available	· Settlement is not composed of the project components.	· There are no impacts.							1		3	4	5	6	7		9	10	
		Potential				V			available	· Planned settlement is carried out from proposed reservoir area.	· It causes occurrence of discord between resettled inhabitants and already living people in the beneficial area due to difference of own custom and religion.					V												事業の実施に当たっては両者の相互理解を得るための事情聴取、説明会等の開催を十分に行なう必要がある。
	Population growth	Actual				V			available	· Constant population growth can be recognized.	· Increase of water demand due to the population growth accelerates the shortage of domestic water supply.					V		1	2	3						9	10	
		Potential				V			available	· Constant population growth will be further maintained by the medical and sanitary improvement of living condition due to stable domestic water supply.	· Sufficient domestic water supply in proportion to the population growth mitigates the shortage.					V		1	2	3						9	10	
		Actual				V			available	· Constant population growth can be recognized.	· There are no impacts.					V					4	5	6	7	8			
		Potential				V			available	· There are no changes of aspect.	· There are no impacts.					V					4	5	6	7	8			
	Demographic structure	Actual				V			available	· Although some people including young generation is likely to outflow to town area, structure is as same rate as nation's average.	· There are no impacts.							1	2	3	4	5	6	7	8	9	10	
		Potential				V			available	· There are few changes of aspect.	· There are no impacts.							1	2	3	4	5	6	7	8	9	10	

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Positive Impact with Project

Negative Impact with Project

Environmental component	Environmental Issue	Actual or Potential	Places Environmental Issues Occur I II III IV V VI	Evaluation is available or not available	Actual and Potential Aspect	Actual and Potential Impact of Aspect	Places Environmental Impact Occur I II III IV V VI	Embung Site 1 2 3 4 5 6 7 8 9 10	Mitigatory Measures
	Social equity	Actual	V	available	· Indigenous practice regarding domestic water usage, such as water right and distribution methods might incur inconvenience among them.	· Restriction of water use might confuse their general concept on water use.	V	1 2 3 4 5 6 7 8 9 10	
		Potential	V	available	· Social equity regarding water utilization is realized through unification of water distribution system	· Achievement of effective water distribution system is acceptable for inhabitants.	V	1 2 3 4 5 6 7 8 9 10	
	Health	Actual	V	available	· Lacking of acknowledge about disease prevention, i.e. excretion in the field is social problem in the health and sanitary points of view. Especially in the dry season, the shortage of domestic water supply causes deterioration of health condition.	· It causes prevailing oral contagious and rising of waterborne intestinal disease, especially among infant.	V	1 2 3 5 8 9 10	
		Potential	V	available	· Prevention of disease infection is expected by means of stable domestic water supply.	· Decrease of contagious disease and infant mortality rate are expected.	V	1 2 3 5 8 9 10	
		Actual	V	available	· Lacking of acknowledge about disease prevention, i.e. excretion in the field is social problem in the health and sanitary points of view.	· It causes prevailing oral contagious and rising of waterborne intestinal disease.	V	4 6 7	
		Potential	V	available	· There are no changes of aspect.	· There are no changes of actual impacts.	V	4 6 7	
HUMAN USE	Cultivation	Actual	V	available	· Although irrigated farming has been done by stable facilities throughout the year, it is possible to improve the cropping intensity and to expand the cultivable land.	· There are no impacts.	V	1 2 6 8	
		Actual	V	available	· Insufficient irrigation water, poor maintenance of irrigation facilities and water distribution management cause low productivity and limited cultivable land.	· Unstable farm management causes low farm income, investment and increase of unemployment rate	V	3 7	
		Actual	V	available	· Rainfed irrigation cause low productivity and limited cultivable land.	· Unstable farm management causes serious low income, investment and increase of unemployment rate.	V	4 5 9 10	
		Potential	V	available	· Improvement of farm productivity and/or increase of cultivated area are attained by adequate irrigation water supply.	· Improvement of farm income, investment and employment opportunity are realized by improvement of irrigation system.	V	1 2 3 4 5 6 7 8 9 10	

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	Livestock	Actual	V	available	As for water supply, · Surface water is used during the wet season, ground water is used in the dry season.	· Shortage of domestic water occurs in the dry season and women are compelled to heavy duties, such as water conveyance.	V	5 8 9	
		Potential	V	*available*	· It is possible to supply stable water for *livestock and effective water* distribution system is planned.	· Water supply quantity for livestock is ensured and heavy duties of women, e.g. water conveyance, is mitigated.	V	5 8 9	
	Fisheries	Actual	III	available	· Fisheries activities are not conducted at downstream of reservoir and at estuary.	· There are no impacts.		1 2 3 4 5 6 7 8 9 10	
		Potential	III	available	· There are no changes of aspect.	· There are no impacts.		1 2 3 4 5 6 7 8 9 10	
	Afforestation	Actual	II	available	· Reforestation or regreening campaign is not implemented. Logging is conducted to maintain inhabitants' daily life and economic activities.	· Deterioration of recharge of ground water is observed in the reservoir and catchment area, and logging accelerate soil erosion	II	2	
		Potential	II	available	· Limitation of logging area contributes to excess logging in the reservoir catchment area.	· Excess logging accelerate soil erosion and results in deterioration of ground water recharge capacity and increase of inflow of sediment into the reservoir.	I II III IV	2	Increase of recharge capacity of ground water and effect of erosion control are expected by effective *watershed management in the* catchment area.
	Domestic water supply	*Actual*	V	*available*	· Ground water is utilized for the domestic water supply. It is shortage because well water are not useful during the dry season because of the decline of water level.	· Women are compelled to water conveyance. The shortage causes deterioration of health and sanitary situation.	V	1 2 3 9	
		Actual	V	available	· Ground and spring water is utilized for the domestic water supply. It is shortage because well water are not useful during the dry season because of the decline of water level.	· Ditto	V	*10*	
		Potential	V	available	· Stable and sufficient domestic water supply shall be attained.	· Heavy duties of women are mitigated and *health situation is improved due to increasing* of preventive measures with using water.	V	1 2 3 9 10	

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		Actual	V	available	· Ground water is utilized for the domestic water of which quantity is sometimes influenced livestock water demand in the dry season.	· Women are compelled to water conveyance. The shortage causes deterioration of health and sanitary situation.	V	5 8	
		Potential	V	available	· As stable and sufficient livestock water supply shall be attained, influence to domestic water use is mitigated.	· Heavy duties of women are mitigated and health and sanitary situation is improved due to increasing of preventive measures with using water.	V	5 8	
ECONOMIC	Income	Actual	V	available	· The farmers get income by means of irrigated cultivation throughout the year.	· There are no impacts.	V	1 8	
		Actual	V	available	· Although the farmers get income by means of irrigated cultivation throughout the year, some parts are unstable income due to rainfed irrigation.	· Increase of farm productivity is not expected owing to the deficiency of investment (farm inputs)	V	2 6	
		Potential	V	available	· Increase of farm income with improvement of farm productivity is expected by improvement of cropping intensity due to stable supply of irrigation water.	· Increase of investment incentive and improvement of living standard are expected with increase of farm income.	V	1 2 6 8	
		Actual	V	available	· Although getting income by means of irrigated cultivation in the only wet season, the farmers are compelled to get unstable income due to rainfed irrigation in the dry season.	· Increase of farm productivity is not expected owing to the deficiency of investment (farm inputs).	V	3	
		Potential	V	available	· Increase of farm income with improvement of farm productivity is expected by improvement of cropping intensity and expansion of cultivable land due to stable supply of irrigation water.	· Increase of investment incentive and improvement of living standard are expected with increase of farm income.	V	3	
		Actual	V	available	· The farmers are compelled to get unstable income due to rainfed irrigation only.	· Increase of farm productivity is not expected owing to the deficiency of investment (farm inputs) at all.	V	4 5 7 10	
		Potential	V	available	· Increase of farm income with improvement of farm productivity is expected by irrigated cultivation due to stable supply of irrigation water.	· Increase of investment incentive and improvement of living standard are expected with increase of farm income.	V	4 5 7 10	

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		Actual	V	available	· The farmers are compelled to get very low income due to limited shift cultivation and simple fishery.	· It causes outflow to the town, and affects living standard of very low level.	V	9	
		Potential	V	available	· Slight farm income with improvement of farm productivity is expected by irrigated cultivation due to stable supply of irrigation water.	· It enable farmers to settle in this area, slight improvement of living standard are expected with farm income.	V	9	
	Employment	Actual	V	available	· Although employment opportunity is given by irrigated cultivation, positive employment can not be recognized.	· It affects stagnation of farm income.	V	1 2 3 6 8	
		Potential	V	available	· Stable employment opportunity is created by activation of farming practice on the strength of improvement of cropping intensity.	· Stability of farm income is expected.	V	1 2 3 6 8	
		Actual	V	available	· As employment opportunity is limited by unstable rainfed cultivation, positive employment can not be recognized and unemployment occurs in the dry season.	· It affects instability of farm income, and outflow to work as casual labour to the town area is recognized.	V	4 5 7 10	
		Potential	V	available	· Stable employment opportunity is created by activation of farming practice on the strength of irrigated cultivation.	· Stability of farm income is expected, and employment opportunity enables farmers to settle in this area.	V	4 5 7 10	
		Actual	V	available	· Employment opportunity is extremely limited by the bare shifting cultivation.	· It affects limited farm income, and outflow to work as casual labour to the town area is recognized too much.	V	9	
		Potential	V	available	· Employment opportunity is created by activation of farming practice on the strength of irrigated cultivation.	· Slight farm income is expected, and employment opportunity enables farmers to settle in this area.	V	9	

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CULTURAL	Historic/ archaeological sites	Actual		II					available	· Historic/archaeological sites, remains and cultural assets do not exist.	· There are no impacts.							1		3	4	5	6	7	8	9	10	
		Potential		II					available	· -	· There are no impacts.							1		3	4	5	6	7	8	9	10	
		Actual		II					available	· There exists the Hindu altar, which is erected due to praying safety and success of head work located at the proposed Embung, at the right bank of just upstream from the proposed Embung.	· This altar has been revered by Hindu believers living in the beneficial area of head work as a protection of water and human.					V			2									
		Potential		II					available	· This alter is submerged by the construction Embung.	· Hindu believer must have a fear against occurrence of calamities.					V												It is necessary to shift to an appropriate place which is decided by Hindu believers in consideration of historical background of
	Lifestyle (quality of life)	Actual					V		available	· Standard quality of life is maintained by farm income by means of irrigated cultivation throughout the year.	· There are no impacts.					V		1	2				6		8			
		Potential					V		available	· Improvement and stability of life is ensured by further increasing of farm income.	· Improvement of health situation is expected by repletion of food, clothing and dwelling environment, and inhabitants have an interest and positive view in education					V		1	2				6		8			
		Actual					V		available	· Although lower quality of life is maintained by farm income by means of irrigated cultivation in the wet season, improvement of quality is not recognized.	· Humble dwelling environment influences deterioration of health and sanitary situation. Inhabitants are not interested in education for family.					V				3								
		Potential					V		available	· Improvement and stability of life is expected by increasing of farm income due to improvement of cropping intensity and expansion of irrigated cultivation.	· Improvement of health situation is expected by repletion of especially dwelling environment, and inhabitants have an interest and positive view in education					V				3								

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		Actual	V	available	· Rainfed irrigation compels inhabitants to be limited lower quality of life.	· Humble dwelling and unclean clothing environment influences deterioration of health and sanitary situation. Inhabitants are not interested in education for family.	V	4 5 7 10	
		Potential	V	available	· Improvement and stability of life is expected by increasing of farm income due to irrigated cultivation throughout the year.	· Improvement of health situation is expected by repletion of especially dwelling and clothing environment, and inhabitants have an interest and positive view in education.	V	4 5 7 10	
		Actual	V	available	· Bare shifting cultivation compels inhabitants to be limited the lowest quality of life.	· Humble dwelling, unclean clothing and innutritious environment influences food deterioration of health and sanitary situation. Inhabitants are not interested in education for family.	V	9	
		Potential	V	available	· Improvement of life is expected by slight increasing of farm income due to irrigated cultivation.	· Improvement of health situation is expected by repletion of living environment and inhabitants have an interest and positive view in education.	V	9