2-2-4 Implementation Plan

2-2-4-1 Implementation Policy

This project is expected to be implemented under the framework of the Japanese Grant Aid Scheme. Therefore, the implementation of the project must be approved by the Government of Japan and the project will be mobilized after signing of the Exchange of Notes (E/N) between the two Governments. Following subsections describe about the basic requirements and/or special conditions for implementation of the project concerned.

(1) Implementation Agency

The implementation agency of the project shall be Water Service and Sanitation (WSS) under the administration of the Ministry of Transport, Communication and Public Works (MTCPW). Dili Water Supply and 12 District WSS offices are organized under the Urban Water Supply Division of WSS. WSS Head Office shall have a responsibility for implementation of the project while the Dili Water Supply and District WSS offices shall have responsibility for operation & maintenance and collection of water charge after completion of the project. At present, there is no WSS District office in Ermera and Maubisse but it is necessary to set up the WSS organization in the respective Subdistrict for management of the water supply. Following Figure-2-2-4-1 shows the organization structure of the implementation agencies concerned.

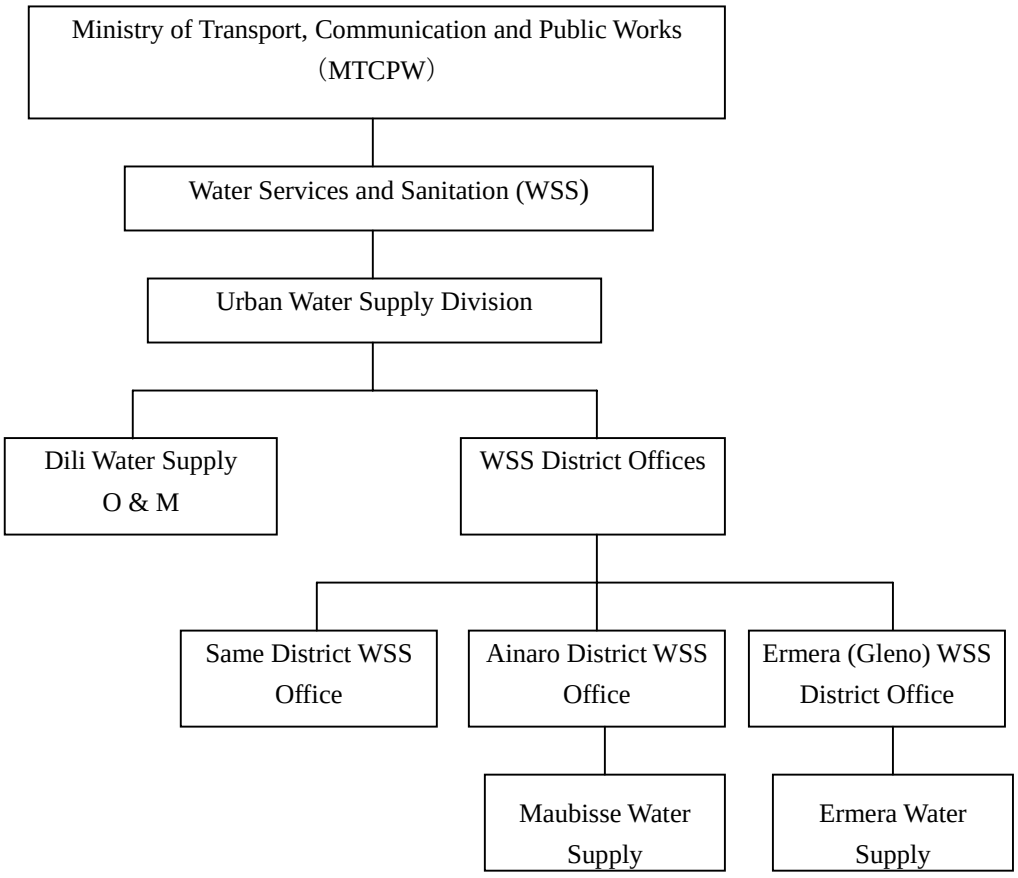


Figure-2-2-4-1 Organization Chart of the Implementation Agency

(2) Necessity for Deployment of Engineers

Water supply facilities under the project include civil structures, building structures, pipe laying, mechanical and electrical works. Construction works of these facilities require civil engineer(s), architect(s), mechanical engineer(s) and electrical engineer(s). However, because of the difficulties to procure the human resources at site, these engineers shall be dispatched from Japan. Human resource of skilled worker is also running short and these workers shall be employed from the third country(s).

(3) Use of Local Consultant

Engineering consultants are running short and there is no water supply consultant in Timor-Leste. Under the project, assistant engineer(s) working concurrently as interpreter will be employed for the construction supervision and will be transferred the construction supervision technique.

(4) Use of Local Construction Contractor

There are local and foreign construction contractors in Timor-Leste. Procurement of construction machines and labors will be made from the local construction contractor(s). Use of foreign construction contractor would be possible although the foreign construction contractors are reducing the business scale and their costs are generally expensive. Under the project, local skilled labors will be employed to work under the instructions of the skilled labor(s) to be employed from the third country(s) and for the technical transfer as well.

2-2-4-2 Implementation Conditions

(1) Safety Measures for Transportation of Pipes, Valves & Equipment in Steep Topographical Condition

The objective district towns are located in the mountain areas and take about 3 to 5 hours drive away from Dili. Traffics of the roads are low but there are many steep slope sections and winding road sections. Therefore, the transportation of pipes, valves, equipment and other construction material and equipment shall require careful measures for the safety proses.

(2) Construction Work at Water Intake and Installation of Raw Water Mains

Construction work of water intake and installation of raw water mains will be carried out in the steep topographical mountain areas. Some of the construction sites do not have any appropriate access roads and require construction of temporary access roads for transportation of construction materials, equipment and machines. Agricultural products such as coffee trees and banana trees are planted in places along the route(s) of the temporary access road and raw water mains and it shall require apprppriate consideration and cooperation of the resident people. Timor-Leste Government needs to prepare the compensation.

In the steep mountain areas, the steep slopes collapse from time to time in rainy season and construction work at water intake and installation of raw water mains shall not be implemented basically in rainy season for the safety of work.

⑶ Concrete Pouring in Rainy Season

Separation of concrete occurs as the concrete pouring work is carried out under the rain and so concrete pouring work shall not be carried out under the rain especially in rainy season.

⑷ Concrete Pouring and Curing in Dry Season

Water containment structures of water treatment plant needs water tightness. Concrete should not have cracks caused by shrinkage in drying process after pouring and fluctuation of air temperature. Accordingly, the control of slump in mixing cement as a matter of course and the curing concrete under the sun shall be made with careful attention by sprinkling water during the curing of concrete.

⑸ Procurement of Construction Material and Equipment

All the equipment for water treatment units, chemical dosing equipment, disinfection equipment, instrumentation equipment, pipes, fittings and valves shall be imported. Most of the construction material including Portland cement, sand & aggregates, steel bars, structural steel, concrete forms, and asphalt mixtures are available from the local market in addition to the procurement of construction machines from the local construction company(s).

2-2-4-3 Scope of Works

⑴ Works Undertaken by the Japanese Side

The following subsections show the scope of works undertaken by the Japanese side as the project will be implemented under the Japanese Grant Aid Scheme.

1) Construction Work Phase 1

(a) Dili		
a) Bemos WTP	①Water Purification Facilities	・ Distribution Well ・ Mixing Flume ・ Wash-water Elevated Tank
	②Building Facilities	・ Office House (Existing: Rehabilitation) ・ Generator House (Existing: Rehabilitation)
	③Mechanical Equipment	・ Coagulation Tank ・ Sedimentation Tank ・ Rapid Sand Filters ・ Coagulation Mixer ・ Sludge collector ・ Lift Pump ・ Flow Meter
	④Chemical Dosing Equipment	・ Aluminum Sulfate Solution Tank ・ Mixer for Aluminum Sulfate Solution Tank ・ Aluminum Sulfate Dosing Pump for high turbidity water ・ Aluminum Sulfate Dosing Pump for low turbidity water
	⑤Disinfection Equipment	・ Hypo-chlorite Solution Tank ・ Mixer for Hypo-chlorite Solution Tank ・ Pre-chlorination Dosing Pump ・ Post-chlorination Dosing Pump
	⑥Electrical Equipment	・ Power Control Panel ・ Distribution Panel ・ Water Level Meter ・ Emergency Generator Unit
b) Lahane WTP	①Raw Water Conveyance Facilities	・ Raw Water Mains
	②Water Purification Facilities	・ Receiving Tank
	③Building Facilities	・ Office House(Existing: Rehabilitation)
	④Mechanical Equipment	・ Clarifier (Existing: Rehabilitation) ・ Rapid Sand Filters (Existing: Rehabilitation) ・ In-plant Water Supply Pump ・ Flow Meter
	⑤Chemical Dosing Equipment	・ Mixer for Aluminum Sulfate Solution Tank ・ Aluminum Sulfate Solution Tank ・ Aluminum Sulfate Dosing Pump for high turbidity water ・ Aluminum Sulfate Dosing Pump for low turbidity water
	⑥Disinfection Equipment	・ Hypo-chlorite Solution Tank ・ Mixer for Hypo-chlorite Solution Tank ・ Pre-chlorination Dosing Pump ・ Post-chlorination Dosing Pump
	⑦Electrical Equipment	・ Incoming Panel ・ Transformer ・ Power Control Panel ・ Distribution Panel ・ Water Level Meter ・ Emergency Generator Unit

c) Benamauk WTP	①Water Purification Facilities	• Distribution Well • Wash-water Elevated Tank
	②Building Facilities	• Office House (Existing: Rehabilitation) • Generator House (Existing :Rehabilitation)
	③Mechanical Equipment	• Mixing Tank • Coagulation Tank • Sedimentation Tank • Rapid Sand Filters • Flash Mixer • Coagulation Mixer • Sludge Collector • Lift Pump • Flow Meter
	④Chemical Dosing Unit	• Mixer for Aluminum Sulfate Solution Tank • Aluminum Sulfate Solution Tank • Aluminum Sulfate Dosing Pump for high turbidity water • Aluminum Sulfate Dosing Pump for low turbidity water
	⑤Disinfection Equipment	• Hypo-chlorite Solution Tank • Mixer for Hypo-chlorite Solution Tank • Pre-chlorination Dosing Pump • Post-chlorination Dosing Pump
	⑥Electrical Equipment	• Incoming Panel • Transformer • Power Control Panel • Distribution Panel • Water Level Meter • Emergency Generator Unit
d) Distribution Network (Zone 1,5,6,7&8)	①Distribution Facilities	• Distribution pipes

2) Construction Work Phase 2

(a) Same		
a) Merbati System	①Merbati Water Intake	• Infiltration Pipes
	②Merbati Service Reservoir	• Service Reservoir • Superstructure of Disinfection Equipment • Flow Meter • Chlorine Dosing Equipment
b) Darelau System	①Darelau Water Intake	• Intake Chamber (Existing: Rehabilitation)
	②Raw Water Conveyance Facilities	• Raw Water Mains
	③Holarua Service Reservoir	• Service Reservoir • Superstructure of Disinfection Equipment • Flow Meter • Chlorine Dosing Equipment
c) Kotalala System	①Kotalala Water Intake	• Superstructure of Disinfection Equipment • Chlorine Dosing Equipment
	②Raw Water Conveyance Facilities	• Raw Water Mains
	③Posto Elevated Tank	• Flow Meter
d) Same Distribution Network	①Distribution Facilities	• Distribution pipes
	②Water Service Facilities	• Public Water Taps

(b) Ainaro		
a) Nugupo WTP	①Water Intake	・ Water Intake Weir (Existing: Rehabilitation ・ Water Intake Facilities
	②Raw Water Conveyance Facilities	・ Raw Water Mains
	③Water Purification Facilities	・ Renovation of Existing Slow Sand Filters to Sedimentation Tank ・ Slow Sand Filters ・ Clear Water Basin/ Service Reservoir
	④Building Facilities	・ Office house ・ Staff house
	⑤Mechanical Equipment	・ In-plant Water Supply Pump ・ Flow Meter
	⑥Disinfection Equipment	・ Hypo-chlorite Solution Tank ・ Mixer for Hypo-chlorite Solution Tank ・ Chlorine Dosing Pump
	⑦Electrical Equipment	・ Incoming Panel ・ Transformer ・ Power Control Panel ・ Distribution Panel ・ Water Level Meter ・ Emergency Generator Unit
b) Same Distribution Network	①Distribution Facilities	・ Distribution pipes
	②Water Service Facilities	・ Public Water Taps

3) Construction Work Phase 3

(a) Ermera		
a) Haturegas Raitara Sys.	①Water Intake	・ Water Intake Weir ・ Grit Chamber
	②Raw Water Conveyance Facilities	・ Raw Water Mains
	③Water Purification Facilities	・ Receiving Tank ・ Service Reservoir
	④Building Facilities	・ Office House ・ Staff House
	⑤Mechanical Equipment	・ Mixing Tank ・ Coagulation Tank ・ Sedimentation Tank ・ Rapid Sand Filters ・ Wash-water Tank ・ Flash Mixer ・ Coagulation Mixer ・ Sludge Collector ・ Backwash Pump ・ In-plant Water Supply Pump ・ Flow Meter
	⑥Chemical Dosing Equipment	・ Aluminum Sulfate Solution Tank ・ Mixer for Aluminum Sulfate Solution Tank ・ Aluminum Sulfate Solution Tank ・ Aluminum Sulfate Dosing Pump for high turbidity water ・ Aluminum Sulfate Dosing Pump for low turbidity water

	⑦Disinfection Equipment	・ Mixer for Hypo-chlorite Solution Tank ・ Hypo-chlorite Solution Tank ・ Pre-chlorination dosing pump ・ Post-chlorination dosing pump
	⑧Electrical Equipment	・ Power Control Panel ・ Distribution Panel ・ Water Level Meter ・ Emergency Generator Unit
b) Mota Bura System	①Raw Water Conveyance Facilities	・ Raw Water Mains
	②Motabura Service Reservoir	・ Superstructure of Disinfection Equipment ・ Flow Meter ・ Chlorine Dosing Equipment
c) Ersoi System	①Poetete Service Reservoir	・ Superstructure of Disinfection Equipment ・ Flow Meter ・ Chlorine Dosing Equipment
d) Ermera Distribution Network	①Distribution Facilities	・ Distribution pipes
	②Water Service Facilities	・ Public Water Taps
(b) Maubisse		
a) Bucana System	① Bucana Water Intake	・ Water Intake Chamber (Existing: Rehabilitation)
	②Raw Water Conveyance Facilities	・ Raw Water Mains
	③Pousada Service Reservoir	・ Superstructure of Disinfection Equipment ・ Flow Meter ・ Chlorine Dosing Equipment
b) Raikuak Ulun System	①Raikuak Ulun Water Intake	・ Groundwater Collection Well ・ Underground Weir
	②Raw Water Conveyance Facilities	・ Raw Water Mains
	③Leputo Service Reservoir	・ Service Reservoir ・ Superstructure of Disinfection Equipment ・ Flow Meter ・ Chlorine Dosing Equipment
c) Erulu System	①Erulu Water Intake	・ Intake Chamber (Existing: Rehabilitation)
	②Raw Water Conveyance Facilities	・ Raw Water Mains
	③Erulu Service Reservoir	・ Superstructure of Disinfection Equipment ・ Mechanical Equipment ・ Chlorine Dosing Equipment
d) Maubisse Distribution Network	①Distribution Facilities	・ Distribution pipes
	②Water Service Facilities	・ Public Water Taps

(2) Works Undertaken by the Government of Timor-Leste

The works tabulated in the followings are the obligation of the Government of Timor-Leste in case of implementation of the project under the Japanese Grand Aid Scheme in each phase of construction work. The cost of the allotted works to the Timor-Leste Government was estimated and indicated the summary in Section 2-5 in Chapter 2 and the breakdown cost in Appendix-5 for the reference.

1) Construction Work Phase 1

(a) Dili	1) Bemos WTP	Land acquisition for administration road
		Gate & Fence
	2) Benamauk WTP	Land acquisition for staff house
		Drop wire of high voltage incoming line
		Rehabilitation of access road
		Demolition & removal of existing wall
		Construction of concrete block wall
b) General		Cost of water for washing, dilution water & test run

2) Construction Work Phase 2

(b) Same	1)Merbati Water Intake	Land acquisition for infiltration pipes
		Land rent for temporary road for costruction
		Compensation for agricultural products
		Gate & Fence
	2)Merbati Service Reservoir	Land acquisition for service reservoir site
		Gate & Fence
	3)Darelau Water Intake	Gate & Fence
	4)Darelau Raw Water Mains	Compensation for agricultural products
	5)Holarua Service Reservoir	Land acquisition for service reservoir site
		Gate & Fence
	6)Kotalala Raw Water Mains	Compensation for agricultural products
(c) Ainaro	1)Sarai Water Intake	Land acquisition for water intake
		Land rent for temporary road for construction
		Compensation for agricultural products
		Gate & Fence
	2)Nugupo WTP	Land acquisition for WTP site
		Drop wire of high voltage incoming line
		Gate & Fence
		Rehabilitation of access road
(d) General		Cost of water for washing, dilution water & test run

3) Construction Work Phase 3

(a) Ermera	1) Haturegas Raitara Water Intake	Land acquisition for water intake site
	2) Raw Water Mains	Land rent for temporary road for construction
		Compensation for agricultural products
	3) New WTP	Land acquisition for WTP site
		Drop wire of low voltage incoming line
		Gate & Fence
		Construction/Rehabilitation of access road
(b) Maubisse	1) Bukana Water Intake	Land acquisition for intake site
		Compensation for agricultural products
	2) Bukana Raw Water Mains	Compensation for agricultural products
	3) Raikuak Ulun Water Intake	Land acquisition for intake site
		Compensation for agricultural products
		Rehabilitation of access road
	4) Raikuak Ulun Raw Water Mains	Compensation of agricultural products for installation of the pipeline
		Land rent for temporary road for construction
		Compensation for agricultural products for the temporary road
	5) Leputo Service Reservoir	Land acquisition for service reservoir site
		Gate & Fence
	6) Erulu Water Intake	Land acquisition for water intake
	7) Erulu Raw Water Mains	Compensation for agricultural products
(c) General		Cost of water for washing, dilution water & test run

2-2-4-4 Consultant Supervision

As the project is implemented under the grant aid scheme, the detail design and construction supervision for the project shall be performed in consideration of the following issues through the establishment of an appropriate management system.

- To grasp the background and the contents of the Basic Design Study,
- To grasp the procedures and the system of the Grant Aid Scheme,
- To grasp the contents of the E/N concluded by the bilateral countries,
- To grasp always about the basic policy of WSS and the tendency of assistance groups,
- To reconfirm the conditions of the required works undertaken by the Government of Timor-Leste clarified through the Basic Design Study, and
- To reconfirm the procedures of the Customs clearance and tax exemption priviledges and confirm with WSS lest it should cause the delay of construction work schedule.

After conclusion of the E/N, the Government of Timor-Leste will proceed to sign the consulting service contract consisting of the detail design and construction supervisory services summarized as follows.

⑴ Detail Design Services

Detail design services by the Consultant consist of the detail design stage and the bidding stage. Basically, the detail design is carried out to materialize the contents of the basic design through the following steps.

- Fieldwork in the project sites,
- Execution of detail design in Japan, and
- Preparation of bid document.

Folloing the detail design stage, bidding will be held in Japan in accordance with the following procedures.

- Assisting the prequalification evaluation of the bidders,
- Attendance to the bidding,
- Evaluation of the bids and bid documents
- Assisting the construction contract negotiation, and
- Assisting the conclusion of the construction contract.

⑵ Construction Supervision Services

Construction supervision shall perform the services categorized broadly into the following three tasks of the consultant in each stage.

1) Construction Supervision

- ✜ Kickoff Meeting with the contractor and the relevant parties concerned,
- ✜ Approval of shop drasings and work drawings,

- ❖ Inspection of major materials and equipment before shipment,
- ❖ Construction supervison at sites,
- ❖ Attendance to the installation work of equipment,
- ❖ Preparation of service reports during the construction period, and
- ❖ Issuance of the certificates for performance/completion of the work and for payments.

2) Performance/Completion of Works

- ❖ Inspection of performance/completion of the works,
- ❖ Inspection of defective works, etc.
- ❖ Issuance of the reports for performance/completion of the works,
- ❖ Services related with handover of the facilities, and
- ❖ Preparation of project completion report.

3) Operation and Maintenance

- ❖ Preparation of operation & maintenance manual of water treatment plant and operation and maintenance plan,
- ❖ Training by the experts for the WSS staff in charge of operation and maintenance of water treatment plant,
- ❖ Commisioning test of water treatment plant including water quality analysis and training.

Considering the prescribed consulting services, the following consultant staff will be deployed in the detail design and the construction supervision stages.

Table-2-2-4-1 Staffing Plan

	Required (Dili, Same & Ainaro)	Phase 1 Dili (man)	Phase 2 Same & Ainaro (man)	Phase 3 Ermera & Maubisse (man)
Detail Design	Project Manager	1	1	1
	Civil Work Design	1	1	1
	Piping Work Design	1	1	1
	Building Work Design	1	1	1
	Mechanical Work Design	1	1	1
	Electrical Work Design	1	1	1
	Cost Estimation	2	2	2
	GIS	1	1	1
	Survey Work	1	1	1
	Total	10	10	9
Construction Supervision	Project Manager *	1	1	1
	Civil and Piping Works	1	2	2
	Piping Work	1	-	-
	Building Work	1	1	1
	Mechanical Work :*	1	1	1
	Electrical Work *	1	1	1
	Total	6	6	6
Note: The staff marked by * indicate the intermittent work to be deployed as required.				

2-2-4-5 Procurement Plan

(1) General

The major equipment for the rehabilitation and improvement of water treatment plants including water purification equipment, chemical dosing equipment, disinfection equipment, instrumentation equipment and the piping materials for raw water mains and distribution network will be considered to be procured from Japan. Most of the construction materials such as steel bars, cement, aggregates, timbers, fuel and other general purpose paint will be procurable locally.

(2) Cement

Cement is imported from Indonesia and available from the market in Dili.

(3) Aggregates and Asphalt Compounds

Fine aggregates and course aggregates are available by sieving the raw material from the riverbed of the adjacent river in each site by sieving. Asphalt compounds is produced and available from the local market.

(4) Steel Bars

Steel bars of the size from 10 to 25mm are imported from Australia and available in Dili.

(5) Piping Material

Ductile Iron Pipe (DIP)

Under the project, the pipe laying work for distribution network will be carried out even in the rainy season. The special type rigid joints will be used for joining the pipes in stead of using concrete thrust blocks to avoid pouring concrete in rainy season. Mouth end of ductile iron pipe have special projections to use the special type rigid joint. This type of the pipes, fittings and joints of DIP are produced only in Japan so ductile iron pipes and piping materials will be procured from Japan.

Poly-vinyl Chloride Pipe (PVC)

Under the project, similar to the ductile iron pipe, same type of joints are used for poly-vinyl pipes and ,therefore, the pipes, fittings and fittings of PVC will be procured from Japan.

Steel Pipe

Steel pipe is used for raw water mains because of the advantages of pipe laying work in the mountain areas. Steel pipe shall have an appropriate quality for the pipe itself and the outer/inner coating/lining shall have the predetermined thickness of the films with the entire barrel of the pipe. Accordingly, the Japanese products produced under the severe quality control in the factory are planned to be procured for the piping material for steel pipes.

Sluice Valve and Air Valve

Sluice valves and air valves require complete water tightness and quality painting. Therefore, the Japanese products produced under the severe quality control in the factory will be procured for the sluice valves and air valves.

(6) Water Purification Unit and Instrumentation Equipment

Under the project, the factory made precision unit products divided into several packages will be transported to the site and assembled and operated for the water purification units. Accordingly, the reliable Japanese water purification units produced under the strict quality control system of the factory will be procured together with the associated instrumentation equipment for operation of the unit.

(7) Chemical Dosing Equipment and Disinfection Equipment

Chemical dosing equipment and disinfection equipment are the major equipment in water quality management of the water purification processes and the dosing amount control and adjustment will be the key factor for the functioning. Therefore, the precise Japanese products will be procured for the project use.

Regarding other materials, the products of Timor-Leste shall be used to the maximum extent. However, the difficulties in procurement cause a delay of the construction schedule or the poor quality products, in such a case, those materials shall be procured from Japan.

The following Table-2-2-4-3 shows the procurement sources of the major materials and equipment to be used for the project.

Table-2-2-4-2 Procurement Sources of Major Materials and Equipment

Category	Materials & Equipment	Timor-Leste	Japan	Third Country	Remarks
General Construction Materials	Cement			○	Quality products procurable in time shall be imported from Indonesia or other country(s).
	Concrete Admixtures			○	Quality products procurable in time shall be imported from Australia or other country(s).
	Aggregates (crushed gravel, gravel, sand)	○			Procure from Dili or collect from the Kasa river
	Steel Bars			○	Quality products procurable in time shall be imported from Australia or other country(s).
	Timber			○	Procurement of the imported material.
	Asphalt Compounds	○			Produced locally and the quality is acceptable.
	Water Proofing Material		○		Consider the quality and stability of supply.
	Ladders, covers		○		As same as above
Temporary Work	Scaffolding, Staging		○		As same as above
	Timber for formwork			○	Procurement of the imported material.
Piping Materials	Ductile Iron Pipe		○		Consider the quality and stability of supply.
	Steel Pipe		○		As same as above
	Poly-vinyl Chloride Pipe		○		As same as above
	Poly-ethylene Pipe		○		Consider the quality and stability of supply.
	Reinforced Concrete Pipe	○			Produced locally and the quality is acceptable.
	Special Rigid Joints		○		Consider the quality and stability of supply.

	Sluice Valve and Air Valve		○		As same as above
Materials for Building Work	Concrete Blocks	○			Produced locally and the quality is acceptable.
	Fittings for doors and windows			○	Procurement of the imported material.
	Roofing Material			○	As same as above
	Water service, Sanitation and Drains			○	As same as above
Mechanical Equipment l	Water Purification Unit		○		Consider the quality and stability of supply.
	Filter Sand & Gravel		○		As same as above
	Chemical Dosing Equipment		○		As same as above
	Disinfection Equipment		○		As same as above
	Flow Meter		○		As same as above
Electrical Equipment and Instrumentation Equipment	Incoming & Transformer Panel		○		Consider the quality and stability of supply.
	Distribution Panel		○		As same as above
	Instrumentation Equipment		○		As same as above
	Monitoring Equipment		○		As same as above
	Emergency Generator Unit		○		As same as above
	Water Level Meter		○		As same as above
	Lighting Equipment			○	Procurement of the imported material.
	General Wiring Materials		○		Consider the quality and stability of supply.
	Special Cables		○		As same as above
Equipment Procurement	Water Quality Test Set		○		As same as above

The imported materials and equipment will the procured from the Dili Port and through inland transportation.

2-2-4-6 Quality Control Plan

The project include civil work, building work, mechanical work, and electrical work for the construction of intake facilities, water treatment facilities, water distribution facilities and piping work for raw water mains and water distribution network. For execution of the construction work, the quality control will be carried out to control items categorized in each work as listed in the following Table-2-2-4-4.

Table-2-2-4-3 Method of Quality Control

Category of Work	Control Item	Method	Frequency
Piping Material	Strength/Dimension	Confirmation of Factory Certificate	Every time for Approval
	Appearance/Dimension	Visual check/Measurement of	Every time of Delivery at Site
Piping Work	Depth of Insert	Dimension	
	Torque Strength	Filler Gauge	
	Welding	Torque Wrench	Entire Length of Pipeline
	Water Leakage	Color Check	
		Water Pressure Test	

Concrete Work	Aggregates Cement Fresh Concrete Concrete Strength	Particle Size Test Confirmation of Quality Certificate Slump Compressive Strength Test	Every Quarry Every Place of Procurement Every Time of Casting Place of Casting or Every 150m^3
Steel Bars	Strength Arrangement of Steel Bars	Confirmation of Quality Certificate Steel Bars Distribution State Check	Every Place of Procurement Every Time of Casting
Performance of Structures	Appearance and Dimension	Visual Check and Measurement of Dimension	Major Members/Places of the Structures
Water Proofing	Quality of Material State of Water Proofing Films Water Leakage	Confirmation of Quality Certificate Visual Check Water Leakage (Containing) Test	Every Time for Approval Every Water Containing Structure Same as above
Mechanical Work Electrical Work	Accuracy of Setting Function	Measuring the Setting Position Load Test	Every Equipment Every Equipment during the Test
Water Quality	Distribution Water Quality	Water Quality Test	Before Starting the Service

2-2-4-7 Implementation Plan

The project will be implemented in two phases. The first phase, Phase 1, will implement the construction work of water supply facilities for Dili, Same and Ainaro and the second phase, Phase 2, will implement the works for Ermera and Maubisse.

The construction work in each phase will be executed in accordance with the implementation schedule shown in Figure-2-2-4-2,Figure-2-2-4-3 and Figure-2-2-4-4 in addition to the period of key works summarized as follows.

Phase 1

Detail Design Services : About 9.0months including bidding
Construction Work (Dili) : About 21.0months including procurement

Phase 2

Detail Design Services : About 9.0months including bidding
Construction Work (Same & Ainaro) : About 19.5months including procurement

Phase 3

Detail Design Services : About 7.5months including bidding
Construction Work (Ermera & Maubisse) : About 13.5months including procurement

Figure-2-2-4-2 Implementation Schedule (Phase-1 Project : Dili)

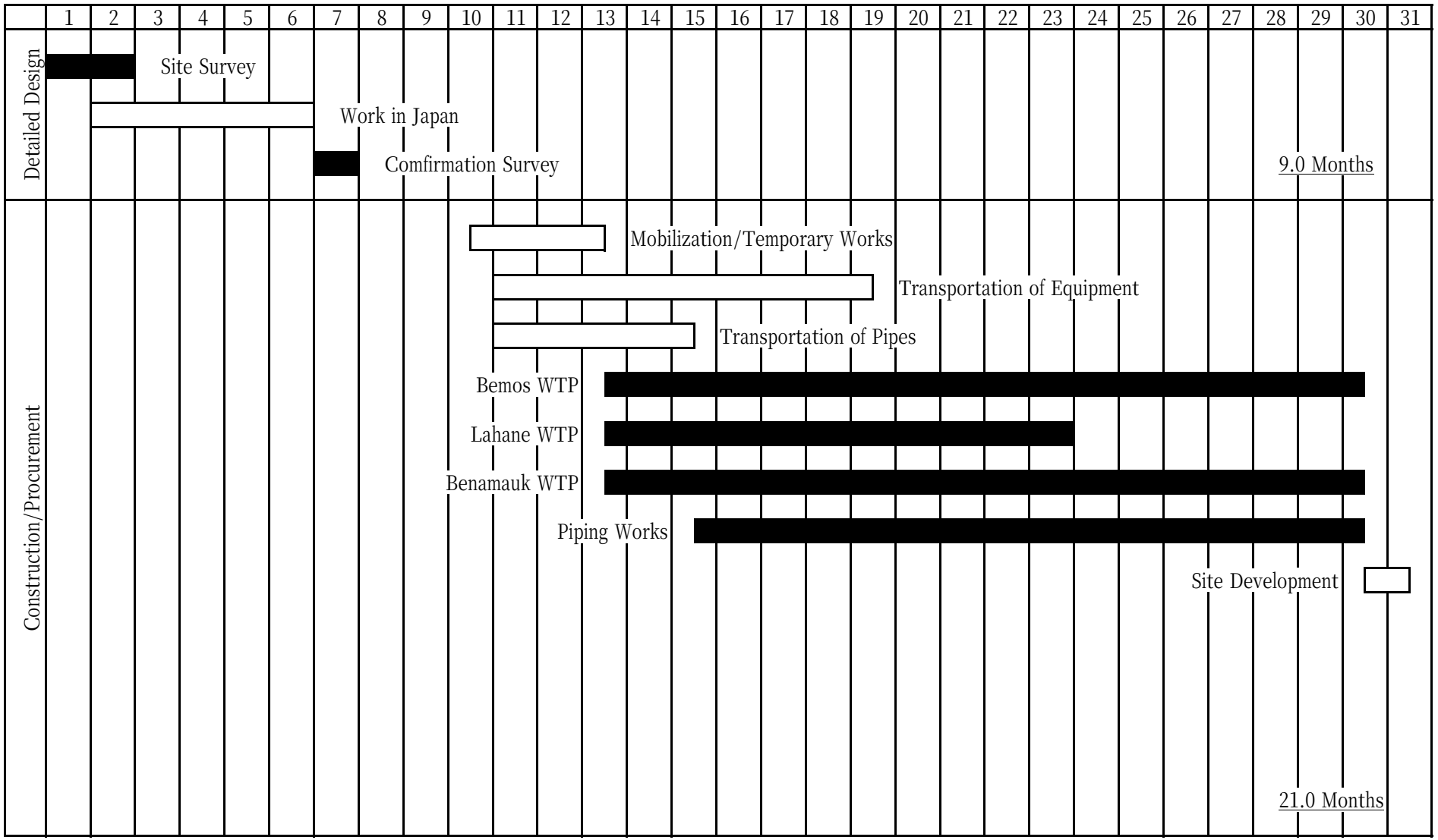


Figure-2-2-4-3 Implementation Schedule (Phase-2 Project : Same&Ainaro)

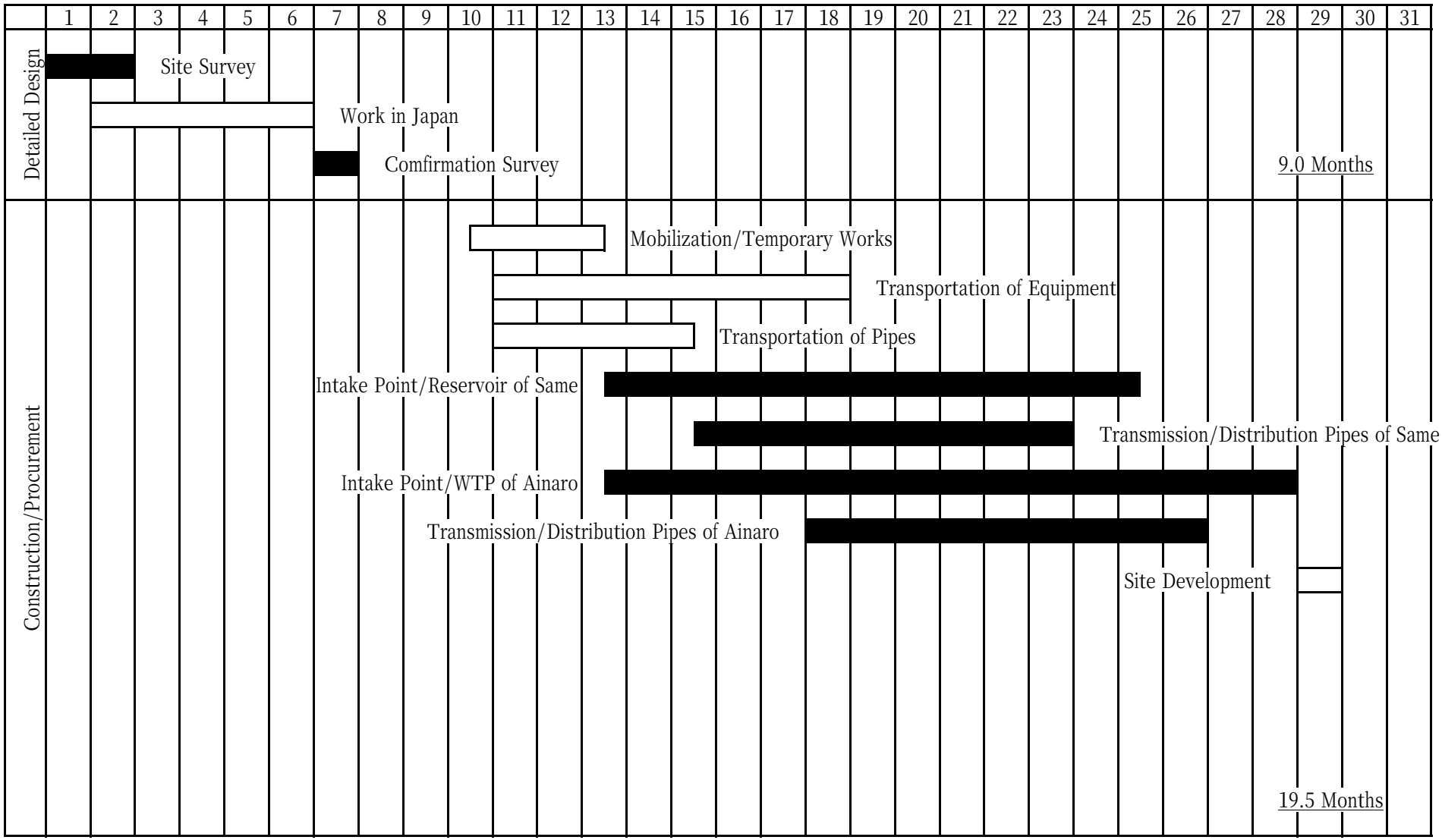
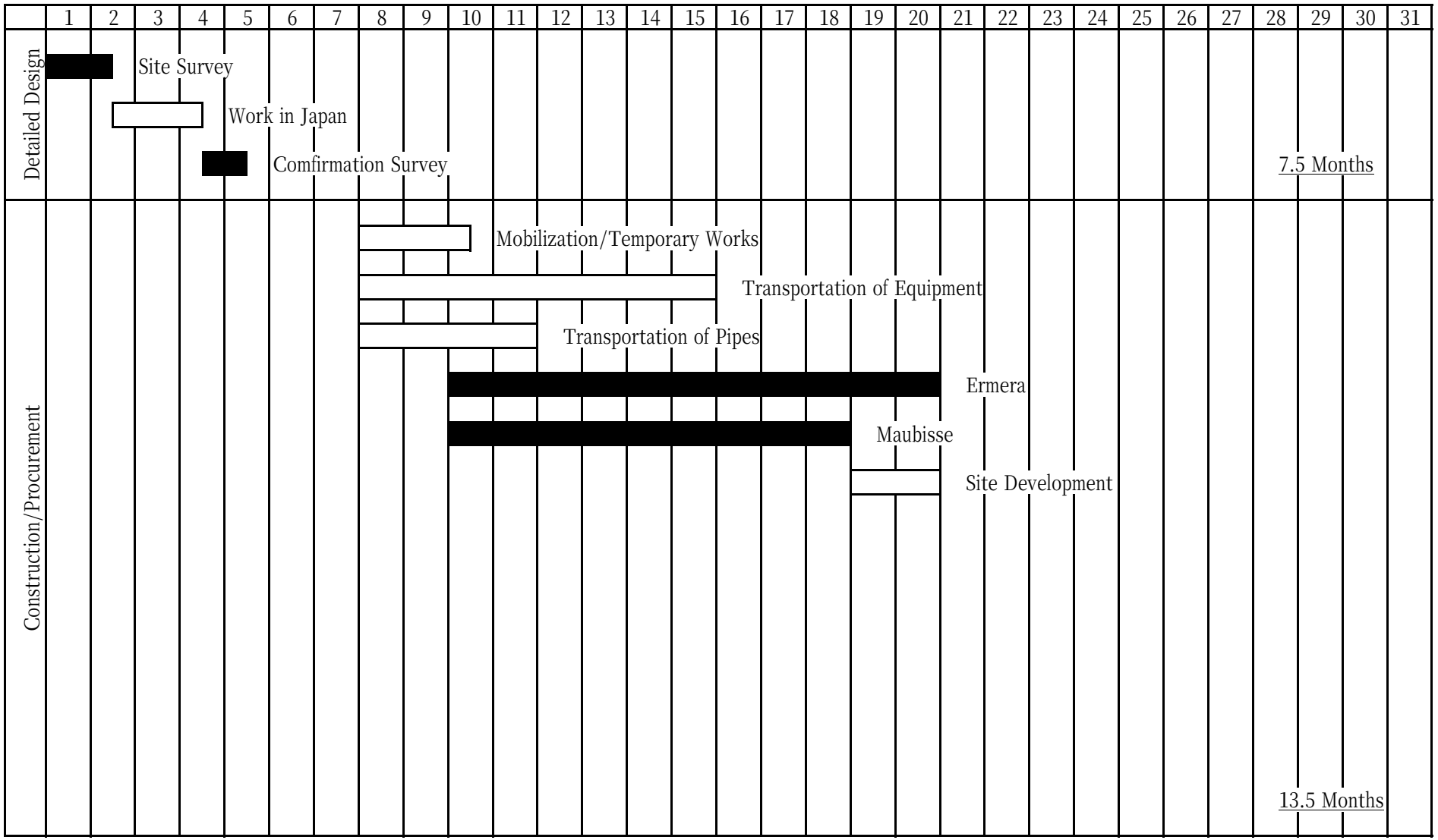


Figure-2-2-4-4 Implementation Schedule (Phase-3 Project : Ermera&Maubisse)



2-3 Obligations of Recipient Country

The following items were mutually agreed basically for the obligations of the Government of Timor-Leste as the project will be implemented under the Japanese Grant Aid Scheme.

a. Land acquisition for the project sites
b. To clear level and reclaim the site when needed
c. To construct gates and fences in and around the sites
d. To construct road within the sites(access roads)
e. To provide facilities for the distribution of electricity, water supply, drainage and other incidental facilities
f. General furniture
g. To bear the following fees to a bank of Japan for the banking services based upon the B/A
   ① dvising fee of A/P
   ② Payment fee
h. To ensure prompt unloading and customs clearance at the port of disembarkation in recipient country
i. Tax exemption matter is under negotiation
j. To accord Japanese nationals whose services may be required in connection with the supply of the products and the services under the verified contact such facilities as may be necessary for their entry into the recipient country and stay therein for the performance of their work
k. To allocate budgetary appropriation and assign the necessary staff for proper and effective operation and maintenance for the facilities by the Project
l. To maintain and use properly and effectively the facilities constructed and equipment provided under the Grant
m. To solve all problems raised by the related communities
n. To bear all the expenses, other than those to be borne by the Grant, necessary for construction of the facilities as well as for transportation and installation of the equipment

In conection with the implementation of the project under the Japanese Grant Aid Scheme, the actual works undertaken by the side of reciepient country has been prescribed in Section 2-5 in Chapter 2 and the breakdown in Appendix-5 with the cost estimated for reference to the Timor-Leste Government agencies concerned. According to the estimated cost of the alloted works, the total cost has been estimated to be 61.2million Japanese Yen (JP¥) in total for Dili and the four (4) district towns. The cost of each phase of the project is estimated as 9.9 million JP¥ in Phase1, 27.2 million JP¥ in Phase 2 and 24.1 million JP¥ in Phase3.

The budget of WSS in 2002/2003 was 31.3 million JP¥ approximately. The cost of the allotted works by the recipient country or WSS accounts for 3% , 9 % and 8% for Phase 1, Phase 2 and Phase 3, respectively, as compared to the said annual budget. In addition to the annual budget, WSS is scheduling to start collection of water charge in Dili for the first city in the Timor-Leste probably before the end of 2003. In view of the said conditions and the on-going official procedures for the introduction of the water charge system, it is considered possible for WSS to implement the allotted work with the cost born by the the Timor-Leste Government.

2-4 Project Operation Plan

This section deals with the daily operation and maintenance plan of the objective facilities of the Study after completion of the rehabilitation work. In addition, the quick actions are needed for the major issues tackled by WSS on the relevant matters. Namely, the operation and maintenance plan shall be proposed here in for the issues on the establishment of the Project Management Unit of WSS to take place of the existing PMU managed by ADB and the issues related with staffing, procurement of staff, capacity building for the introduction of water charging and collection system.

2-4-1 Operation and Maintenance of the Objective Facilities

In addition to the daily operation and maintenance of the water supply system, the elements for management of waterworks include the long term issues such as an effective use of the facilities, measures for water leakage, accident/risk management, stable water supply, healthy financial management, asset management, etc. Since the daily operation and maintenance is a key factor for sustainability of the project, this Study proposes an approach to the plan for daily operation and maintenance of the objective facilities such as operation, monitoring, inspection, control & adjustment, repair of each component comprising the system.

Operation and maintenance of the facilities shall be made based on the Operation and Maintenance Manual prepared in order to keep appropriate technical level, which meets with the local conditions. The Operation and Maintenance Manual shall be prepared by the Construction Work Contractor of the Project. During the test run period after completion of the construction work, the Contractor instructed by the Consultant for the construction supervisory services, shall execute the on-the-job training to the operation and maintenance staff of WSS.

The contents of the operation and maintenance training for Dili and four District towns are commonly selected for the facilities of (1) water sources, water intake and raw water conveyance facilities, (2) water purification and water transmission facilities, and (3) water distribution and service facilities, and the training subjects comprised and listed below. The training for Same and Maubisse excludes the training on treatment facilities except for the training for disinfection equipment since there is no water treatment facilities installed for these two towns. The Operation and Maintenance Manual shall be completed finally after taking into account of the special conditions occurring during the test run period.

- Water sources, water intake and raw water conveyance facilities
  - Monitorig of water source and cleaning,
  - Monitoring of water leakage and illegal connection,
  - Control of water conveyance amount
- Water purification and water transmission facilities
  - Monitoring of influent water quality,
  - Operation of water purification facilities (coagulation, settling, filtration and disinfection),
  - Chemical dosing control,
  - Inspection and repair of mechanical and electrical equipment, and

- ✜ Control of purified water quality

- Water distribution and service facilities
  - ✜ Control of water distribution amount,
  - ✜ Monitoring of service water pressure,
  - ✜ Monitoring of water leakage and illegal conncetions, and
  - ✜ Control of distributed and served water quality

Methods of the operation and daily and regular maintenance shall be conducted in accordance with the items prepared in the standard form(s) and submitted to the WSS Head Office for a monthly report. In addition, the procurement of materials and equipment required for the maintenance works shall be also carried out by filing the standard request form practiced presently and approved by the WSS Head Office.

2-4-2 Required Numbers of Staff for Operation, Maintenance and Management

2-4-2-1 Staffing of WSS Head Office for Implementation of the Development Projects

In the end of August 2003, the assistance project of TFET for WSS will be completed and the organization of PMU will be dissolved after accomplishment of the services. WSS will lose the function for implementation of the development projects after August of this year(2003). Under the present status on the halfway for rehabilitation, improvement and development of the water supply facilities, WSS need to organize a task group for PMU services within the Head Office for promotion and implementation of the new projects.

The new task group, PMU-WSS, is proposed to be created through reorganization of the existing Development and Rehabilitation Section as a basic group. Two groups in the Subsection, Planning & Design and Bidding & Construction Supervision are proposed. The number of staff proposed to be deployed for each Subsection consist of one(1) person for Dili and six(6) persons for 12 Districts.

2-4-2-2 Staffing for Collection of Water Charge

Currently, the Customer Service deploys the staff of four(4) meter readers, three(3) billing officers and two(2) customer service officers. When the water charging is introduced after completion of the projects, the numbers of house connection will increase to about 20,000. In order to collect water fee every month to secure the regular income source to WSS, it is required to increase the staff member for reading, billing and collection of water charge. This organization is required as well for the District WSS offices where there is no staff deployed for the customer services and secure the staff towards implementation of water charge collection. The required numbers of meter reader & collection will be estimated based on 50 housed per staff per day as a standard capacity.

2-4-2-3 Staffing for Operation and Maintenance of the Objective Facilities

For operation and maintenance of Dili water supply at present, forty (40) staff are deployed including one (1) manager, 18 people for water intake and treatment facilities and 21 people for water distribution facilities . District WSS offices in Ermera(Gleno), Same and Ainaro deploys 5 or 6 staff members respectively for the daily services and management of waterworks. To achieve the purpose of operation and maintenance of the water supply system to control water quantity and quality for stable supply of water to the people, the numbers of staff shall be increased for the operation of the objective facilities and the total water supply system. The operation and

maintenance will be conducted for the facilities proposed earlier ; (1) water sources, water intake and raw water conveyance facilities, (2) water purification and water transmission facilities, and (3) water distribution and service facilities through deployment of at least one(1) person for each facility. Operation of the treatment plants shall be made for 24 hours and include the staff for the shift work.

2-4-3 Proposed Restructuring of WSS for Operation, Maintenance and Management

Considering the status of the reduction of assistance projects by the international assistance groups, the immediate major theme of WSS lies on installation of foundation stone for an independent management work on the healthy financial base. Minimization of costs is one of the measure for approaching to the healthy financial status and the deployment of the required minimum numbers of staff is a base for management of waterworks.

Proposed number of staff for the sections and subsections requiring restructuring was made with respect to and in comparison of the existing organization as summarized in Table 2-4-1 and Table-2-4-2 for WSS Head Office and WSS District offices respectively. The proposed restructuring resulted in increase of staff member by 83 persons in total. WSS Head Office and Dili Water Supply increased 46 persons while the 12 WSS District offices increased 37 persons. Accordingly, the total member of 257 staff of WSS will make efforts for upgrading the services and operate and maintain the objective facilities of the project.

According to the proposed restructuring plan, the number of staff directly engaged in operation and maintenance of water supply systems for Dili and four(4) District towns are summarized as follows.

- Dili Waterworks : 48 persons(Intake and Purification Plants: 27 persons, Water Distribution:21 persons, increase of 16 persons)
- Ermera (Gleno) WSS District Office : 12 persons(increase of 7 persons)
- Manufahi (Same) WSS District Office : 8 persons（increase of 3 persons）
- Ainaro WSS District Office : 15 persons (increase of 9 persons)

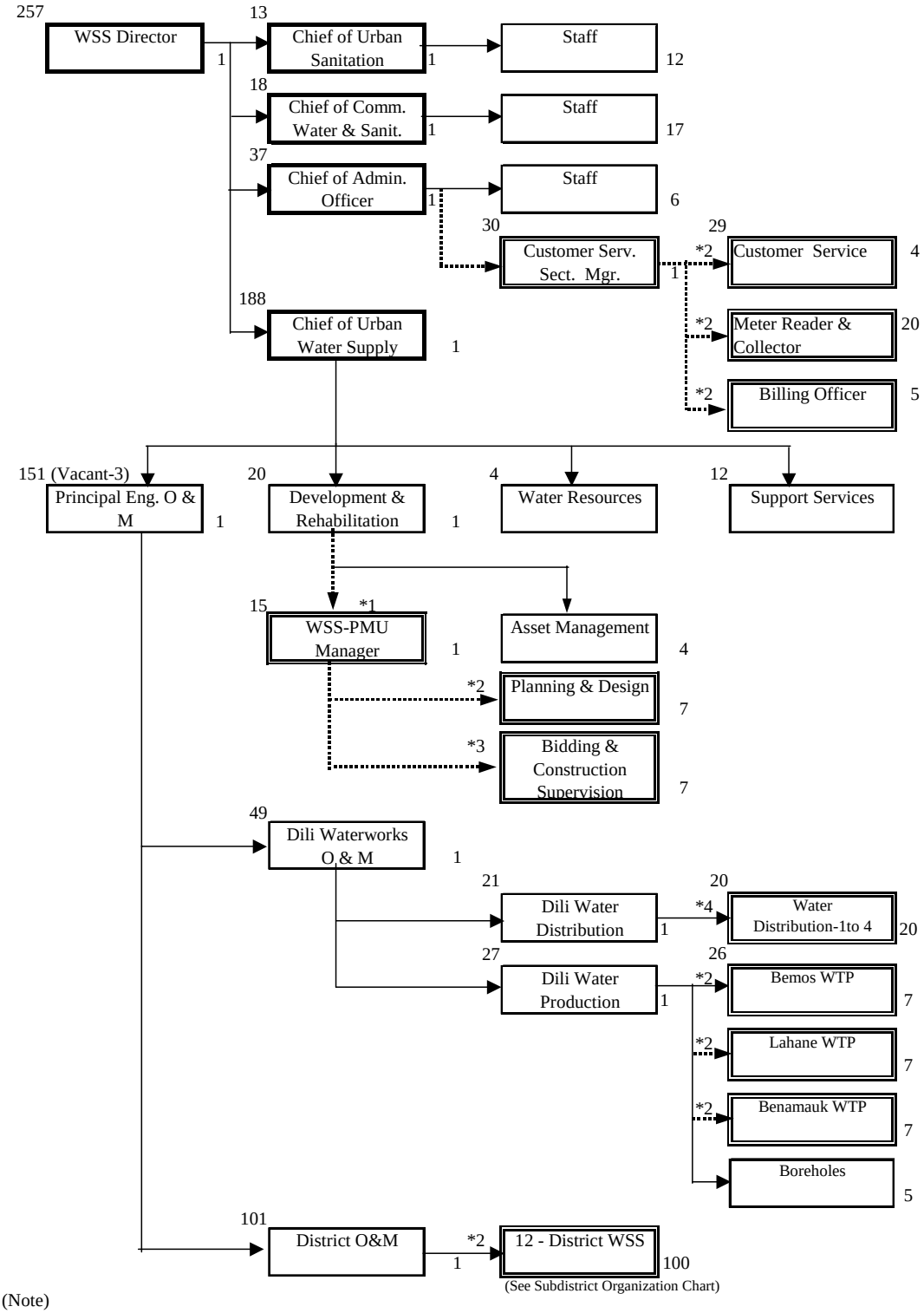
It shall be noted that the numbers of assistant technicians of subdistrict towns are not included in the restructuring plan of WSS since the water supply systems are operated and maintained by the communities and they are recruited from the community residents. Overall organization of the restructuring plan is shown in Figure-2-4-1 and Figure-2-4-2 for WSS Head Office & Dili Water works and WSS District offices respectively.

Table-2-4-1 Proposed Restructuring Plan for WSS Head Office & Dili Waterworks

Existing Sections		Existing Nos.	Restructured Sections		Required Nos.	Balance
Development and Rehabilitation			Development and Rehabilitation			
	Development and Rehabilitation Manager	1		Development and Rehabilitation Manager	1	0
	None	-		WSS-PMU Manager	1	+1
	Engineering, Planning & Design	6		Planning & Design, Bidding and Construction Supervision	14	+8
	Asset Management	4		Asset Management	4	0
Customer Service			Customer Service			
	Customer Service Manager	1		Customer Service Manager	1	0
	Customer Service Staff	2		Customer Service Staff	4	+2
	Water Meter Reader	4		Water Meter Reader and Bill Collctor	20	+16
	Billing Officer	3		Billing Officer	5	+2
Dili Water Supply Operation and Maintenance			Dili Water Supply Operation and Maintenance			
	Dili Water Supply O&M Manager	1		Dili Water Supply O&M Manager	1	0
	Water Purification Manager	1		Water Purification Manager	1	0
	Water Distribution Manager	1		Water Distribution Manager	1	0
	Bemos WTP	4		Bemos WTP	7	+3
	Lahane WTP	3		Lahane WTP	7	+4
	Benamauk WTP	2		Benamauk WTP	7	+5
	Water Distribution Facilities	16		Water Distribution Facilities	20	+4
	Borehole Pump Stations	5		Borehole Pump Stations	5	0
District Water Supply O & M			District Water Supply O & M			
	District Water Supply O&M Manager	1		District Water Supply O&M Manager	1	0
	Staff of 12-WSS District offices	63		Staff of 12-WSS District offices	100	+37
Subtotal		118	Subtotal		200	+82
Other Sections and Subsections		56(1)	Other Sections and Subsections		57	+1
Total		174 (1)	Total		257	+83
Note: The figures (1) in parenthesis indicate the Manager of Administration and Urban Sanitation who is assigned for the two positions.						

Table-2-4-2 Proposed Restructuring Plan for WSS District Offices

Existing Sections		Existing Nos.	Restructured Sections		Required Nos.	Balance
Ermera(Gleno) District WSS			Ermera(Gleno) District WSS			
	WSS District Manager	1		Ermera(Gleno) WSS	1	0
	Senior Technician	1		Senior Technician	1	0
	None	0		Plant Manager for Ermera	1	+ 1
	Technician: Gleno & Ermera	1		Technician	1	0
	None	0		Technician: Assigned for Ermera	1	+1
	None	0		Water Quality Staff for Ermera	1	+ 1
	Assistant Technician: Gleno	2		Assistant Technician: Gleno	2	0
	None	0		Assist. Tech. for O&M for Ermera	2	+ 2
	None	0		Assistant Technician: Ermera（recruit from the community）	(6)	(6)
	None	0		Accountant for water charge	1	+1
	None	0		Water Meter Reader and Bill Collector	1	+1
Manufahi (Same) District WSS			Manufahi (Same) District WSS			
	WSS District Manager	1		WSS District Manager	1	0
	Senior Technician	1		Senior Technician	1	0
	Technician	1		Technician	1	0
	None	0		Water Quality Staff for Same	1	+ 1
	Assistance Technician	2		Assistance Technician	2	0
	None	0		Accountant for water charge	1	+1
	None	0		Water Meter Reader and Bill Collector	1	+1
Ainaro District WSS			Ainaro District WSS			
	WSS District Manager	1		WSS District Manager	1	0
	Subdistrict Manager	1		Subdistrict Manager	1	0
	Senior Technician	1		Senior Technician	1	0
	None	0		Plant Manager for Ainaro	1	+1
	Technician	1		Technician for Ainaro	1	0
	None	0		Water Quality Staff for Ainaro	1	+1
	None	0		Technician: Assigned for Maubisse	1	+1
				Water Quality Staff for Maubisse	1	+1
	None	0		Technician: Assigned for Hato Buliko	1	+1
	None	0		Technician: Assigned for Hato Hudo	1	+1
	Assistant Technician: Ainaro	2		Assistant Technician: Ainaro	2	0
	None	0		Assistant Technician :Maubisse (recruit from the community)	(2)	(2)
	None	0		Assistant Technician: Hato Buliko (recruit from the community)	(2)	(2)
	None	0		Assistant Technician :Hato Hudo (recruit from the community)	(2)	(2)
	None	0		Accountant for water charge	1	+1
	None	0		Water Meter Reader and Bill Collector	2	+2
Other 9 District WSS Offices			Other 9 District WSS Offices			
	WSS District Manager	9		WSS District Manager	9	0
	Senior Technician	9		Senior Technician	9	0
	Technician	9		Technician	9	0
	Assistant Technician	20		Assistant Technician	20	0
	None	0		Accountant for water charge	9	+9
	None	0		Water Meter Reader and Bill Collector	9	+9
	Total	63		Total	100 (12)	+37 (12)
Note: The figures in the parenthesis （ ） indicate the volunteer staff from the community.						



(Note)

*1: This Section is proposed to take place the existing PMU under the TFET project controlled by ADB.

*2: This Section/ Sub-sections are proposed to increase the number of staff.

*3: This Sub-section is proposed to undertake bidding & construction supervisory services.

*4: This Section/ Sub-sections are proposed to decrease the number of staff.

Figure-2-4-1 Proposed Organization of WSS Head Office and Dili Waterworks

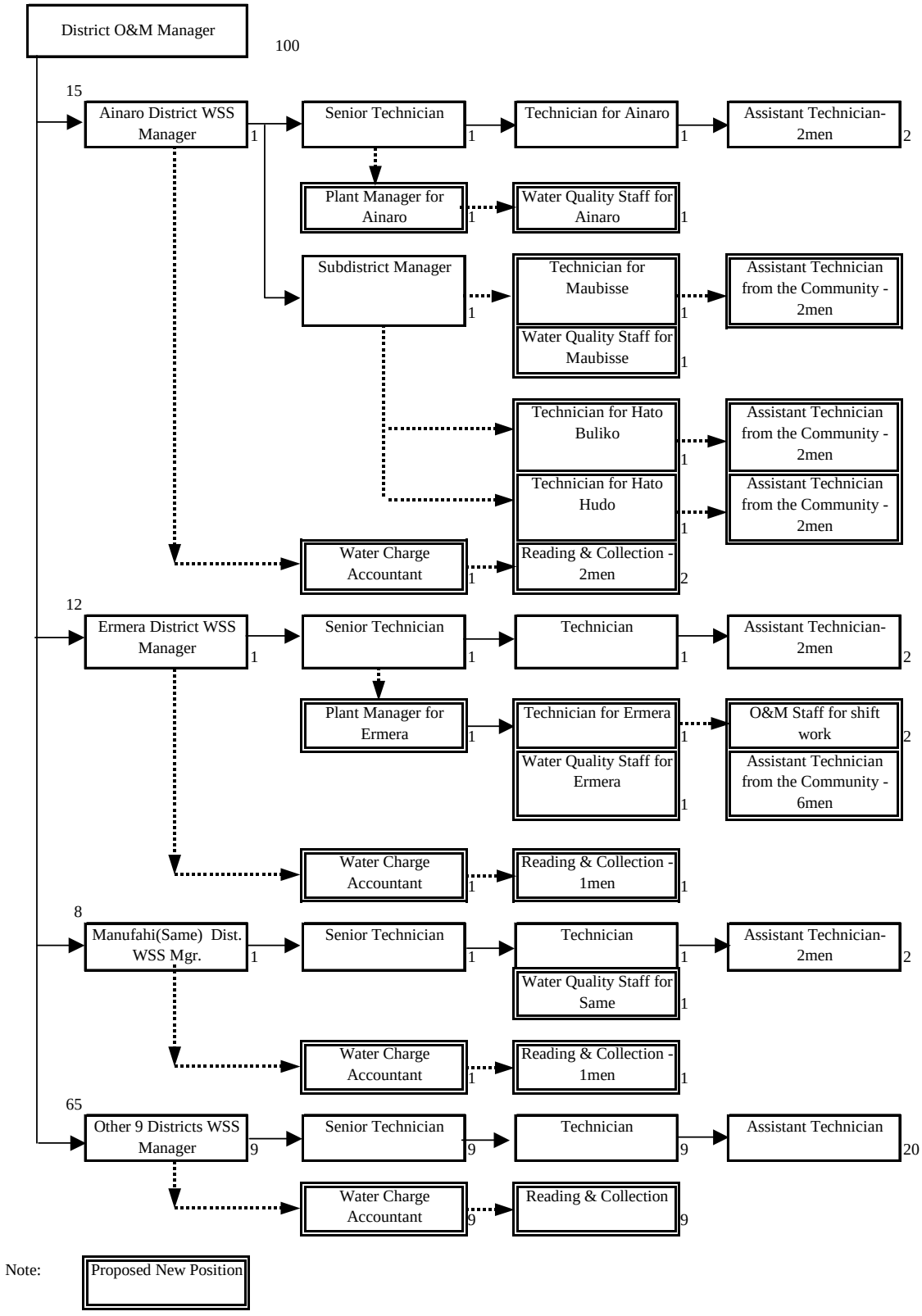


Figure-2-4-2 Proposed Organization of WSS District Offices

2-4-4 Allocation of Staff and Capacity Building Plan

2-4-4-1 Allocation of Staff

As mentioned in the proposed restructuring plan, 72 persons in total shall be added to WSS. The increase of 20 persons is made for the staff of Customer Services in WSS Head Office to cope with collection of water charging in Dili. Also, the increase of 13 persons for Dili Waterworks, seven (7) persons for Ermera (Gleno) WSS District Office, three (3) persons for Manufahi(Same) WSS District Office and nine (9) persons for Ainaro WSS are proposed to operate the objective facilities and to meet with the better services of water to the residents.

Recruitment of the Timores who have ever worked for the waterworks during the Indonesian time will be the recommendable means. These people will be able to acquire skill quickly to engage in the services of water as the Staff of WSS through the previous work experience in waterworks. There is an alternative to procure the operation and maintenance from the private sector involvement, however, the use of private sector will not be recommended at this stage. The following educational background is preferably required for each position in procurement of the staff.

Position	Educational and Work Background
Manager of Department and Section	University, Work experience more than 15 years
Senior Staff of WSS Head Office	University or Technical College, Work experience more than 10 years
Staff of WSS Head Office	College or High School
Engineer	University, Technical College, Work experience more than 10 years
Technician	Technical College or High School, Work experience more than 5 years
Field Manager	Technical College or High School, Work experience more than 10 years
Field Technician	Technical College or High School, Work experience more than 5 years
Field Staff	High School or Junior High School or Elementary School

2-4-4-2 Capacity Building Plan

Capacity building plan shall be carried out for acquiring the technical skill to perform smoothly the daily operation and maintenance of the objective facilities through clear assignment of the scope of work and the responsibility for the Sections, Subsection and the individual staff in charge.

As proposed earlier, the on-the -job training for operation and maintenance of the objective facilities will the carried out in the commissioning period by the Construction Work Contractor instructed by the Construction Supervisory Service Consultant. The participants of the on-the –job training or the capacity building program shall be the operation and maintenance staff and the field managers. The operation manual for the text of the training shall be prepared by the Contractor through the instruction by the Consultant.

In order to perform the daily work smoothly, the purpose of work shall be clearly understood and the works should be standardized. In addition, the assigned job and the responsibility of the person in charge must be clarified. The capacity building plan shall be prepared and carried out. The objective participants are every staff of WSS. The following courses are recommended.

(1) Clarification of scope of work and responsibilities of individual Sections/Subsections,
(2) Water supply administration and financial management for the managerial staff,
(3) Water supply planning, design and operation and maintenance technology for the technical staff.

Additionally, participation to the JICA group training and/or individual training will be effective

for the capacity building of the technical staff. It is worth to say that the utilization or participation to the training courses conducted in the third countries such as the training courses of National Waterworks Technology Training Institute, Bangkok, Thailand and Training Institute for Water Supply and Environmental Sanitation, Bekasi, Indonesia will be effective to include in the capacity building plan.

2-5 Project Cost Estimates

2-5-1 Estimated Cost of the Objective Facilities

(1) Cost Allotment to the Government of Japan

The following cost estimate is provisional and it would be further examined by the Government of Japan for the approval of the Grant Aid project.

Total Cost : Approximately 30.75 Hundred Million Yen

Estimated Cost:Hundred Million Yen

Item	Phase-Ⅰ	Phase-Ⅱ	Phase-Ⅲ	Total
Ⅰ Total	10.25	9.34	6.08	25.67
(1)Construction Cost	6.30	8.89	5.50	20.69
a.Direct Cost	(3.91)	(5.93)	(3.44)	(13.28)
b.Indirect Cost	(0.54)	(0.98)	(0.60)	(2.12)
c.Site Expenses	(1.44)	(1.43)	(1.12)	(3.99)
d.Overhead	(0.41)	(0.55)	(0.34)	(1.30)
(2)Cost for Procurement for Equipment	3.95	0.45	0.58	4.98
Ⅱ Consulting Fee	1.84	1.71	1.53	5.08
1.Design Fee	(0.62)	(0.62)	(0.54)	(1.78)
2.Supervision Fee	(1.12)	(0.99)	(0.90)	(3.01)
3.Soft Component Program Fee	(0.10)	(0.10)	(0.09)	(0.29)
Ground Total	12.09	11.05	7.61	30.75

(2) Cost Allotment to the Government of Timor-Leste

The followings are the estimated cost of the works shouldered by the Government of the Timor-Leste in connection with the implementation of the Japanese Grant Aid project.

Total Cost : Approx. 61.2 Million Yen

Item	Phase-1	Phase-2	Phase-3	Total
① Procurement of land and equipment costs	4.6 M. Yen	13.4 M. Yen	8.5M. Yen	26.5 M. Yen
② Construction cost of access roads	2.9 M. Yen	1.9 M. Yen	7.3 M. Yen	12.1 M. Yen
③ Cost for installation of power line, water, and telephone line	2.3 M. Yen	5.8 M. Yen	0.4 M. Yen	8.5 M. Yen
④ Miscellaneous costs	0.1 M. Yen	6.1 M. Yen	7.9 M. Yen	14.1 M. Yen
Total	9.9 M Yen	27.2 M Yen	24.1 M Yen	61.2 M Yen

(3) Conditions of Cost Estimates

- The Time of Cost Estimates:

  July-August 2003 (The previous month/the month to submit the Basic Design Study Report)

- Exchange Rate :

  Exchange Rate 1 US$=120.35Yen
  Local Currency 1 Local Currency (US$) =120.35 Yen

- Construction Phasing:

  The construction work shall be divided into three (3) phases as shown on the implementation time schedule in Section 2-2 with the required period of the major activities such as the detail design, construction work and/or procurement work in each phase of Project.

- Others :

  The cost estimates was carried out in compliance with the methods and the procedures of the Japanese Grant Aid Scheme.

2-5-2 Annual Operation and Maintenance Cost of the Objective Facilities

The summary of estimated operation cost of each city and district town is presented in the following Table 2-5-1.

Table-2-5-1 Estimated Annual Operation Cost of the Objective Facilities

(unit:US$/year)

Item	Dili			Ermera	Same	Ainaro	Maubisse
	Bemos	Lahane	Benamauk				
1. Personnel Cost	9,006	8,682	8,682	8,724	9,612	7,395	6,591
2. Office Expeditures	4,512	4,512	4,512	39,720	4,476	39,720	4,080
3. Power Cost	2,834	8,363	1,870	708	234	626	0
4. Chemical Cost	27,982	36,376	8,394	4,808	7,090	4,676	1,626
Total	44,333	57,933	23,459	53,960	21,412	52,417	12,297
Cost per month (US$/month)	3,694	4,828	1,955	4,497	1,784	4,368	1,025
O&M Cost per Distributed Water (Cents/m3)	8.1	8.1	14.3	41.5	4.5	16.8	11.3
Ratio of water loss (%)	40.0	40.0	40.0	50.0	50.0	50.0	50.0
O&M Cost per Consumed Water (Cents/m3)	13.5	13.6	23.8	83.1	9.1	33.6	22.7

Note: Office expenditure for Ermera and Ainaro tentatively include the cost of fuels to run the generator for WTP use in daytime during the suspension of general power line.

The total operation cost has been divided by the water amount and estimated the cost per cubic meter of water at the bottom of the table. In this estimation, the ratio of water loss is assumed with the severe side by using the ratio estimated for the present water supply status. Practically, the distribution network will be rehabilitated and the water loss ratio will be decreased.

The annual operation costs for the five(5) cities has been estimated in the range of 13-83 Cents per cubic meter of consumed water.

Financial management of WSS to secure the budget for operation and maintenance of the objective facilities depend on the water charging system to be introduced in near future and the self-efforts of WSS. However, the implementing agency states clearly the introduction of the water

charging in Dili and the official procedures is underway for the final step of the official procedures. Also the introduction of the water charging system and the timing are verified by the written replies from the Ministry dated 28 April 2003.

2-6 Other Relevant Issues

2-6-1 Software Component

2-6-1-1 Issues and Necessity to Introduce the Software Component

As described in the present status of water supply activities, WSS has many issues to solve for the management of waterworks smoothly. Among the issues, the objective water supply systems of Dili and the four(4) district towns have the common issues summarized below for implementing the project. Those issues or the problems must be solved prior to the start of operation and maintenance of the facilities after completion of the rehabilitation work.

- The administration organization as well as the State herself have just established and the legal system is still in preparation. The organization of WSS is young as well and it is required to develop the organizational activities in every aspect including the institutional setup.
- Regarding the water supply facilities, the facility log books including the facility drawings, distribution network maps, etc. have ben lost and there is no data and information on operation and maintenance of the facilities. Furthermore, the investment is not made to the necessary hardwares for operation control such as flow meters and water quality test equipment. It is feared to face the difficulties for an appropriate operation and maintenance of water supply facilities due to the reasons as presecribed.
- Water charge is not collected at present. For the purpose to introduce the water charging system, there are many issues to prepare in advance with regard to the items such as the customer log books, employment/ education of water meter readers, raising awareness of the residents, etc. It is considered important since the issues concerned are closely related with the management issues of WSS after completion of the rehbilitation project.
- The objective facilities of the project covers the overall systems of water supply including the facilities of water source, raw water mains, water treatment plant, water service reservoir, and distribution network. Aquiring an operation and maintenance technique is an indispensable issue for WSS having an organizational problems presently with a shortage of human resources and unexperienced staff.

As prescribed above, the required elements of the software components extend over every aspect from development to operation & maintenance of the facilities in this country. However, it is required to select the technical assistance programs of the software components in consideration of the issues directly related with the project, effect to support the project, etc. Consequently, considering the said conditions, the following software components are proposed as the required minimal components for implementation of the project smoothly.

- Supporting the planning of service/distribution pipes and preparation of customer log book (Type for accelerating the works undertaken by the recipient country)
- Upgrading the water quality analysis techniques (Type for supporting the engineering)
- Training of slow sand filters (Especially in Ainaro: Type for supporting the engineering)

2-6-1-2 Purpose

(1) Supporting the Planning of Service/Distribution Pipes and the Preparation of Customer Log Book

At present, a complete customer log book has not yet been prepared in each city/town. Also, there is no service pipe section in WSS at present and the water distribution section undertake the services instead. Under the Basic Design Study, installation of service pipes and house connections are attached to the works undertaken by the recipient country. The software component or the technical assistance aims at ensuring the effects of the grant aid project through supporting the implementation work by the recipient country. Water is serviced to the customers only after installation of the service pipes and house connections and the collection of water charge will be carried out effectively with the customer log books prepared through the survey of existing pipe system and customer information.

(2) Upgrading the Water Quality Analysis Techniques

Excepting a part area in Dili, water is supplied without disinfection at present. Under the Basic Design Study, a basic water quality laboratory is planned at the major facility (water treatment plant, etc.) in each city/town. The software component in this category aims at laying a foundation to continue the required minimum monitoring for the safety of water supply to the residents through enabling the water quality analysis techniques in each city/town after completion of the rehabilitation work.

(3) Training of Slow Sand Filters

The software component in this category for the training of slow sand filtration system is carried out especially for Ainaro.

In Ainaro, there is a existing slow sand filtration system but the facility is not maintained totally at present. The reasons are because of no education for operation and maintenance of the facilities in Indonesian time and the design concept of the facility itself disabling easy maintenance of the facilities. Accordingly, the software component in this category aims at establishing the system to ensure appropriate operation and maintenance of the facilities after completion of the rehabilitation work through the training for planning and for the methods of operation and maintenance of the slow sand filters. In addition, it is expected to upgrade the capability of operation and maintenance of slow sand filters indirectly all over the country since the slow sand filtration is adopted in other rural districts such as Liquicha and Lospalos in Timor-Leste.

2-6-1-3 Expected Outcome

(1) Supporting the Planning of Service/Distribution Pipes and the Preparation of Customer Log Book

- Planning of service pipes in the area concerned will be completed and the installation works shall be started.
- Control work will become easy after analyzing the existing status of the distribution and service pipes,
- Capability for planning of distribution and service pipes of the counterpart member will be improved,

- Customer log book will be prepared and the service conditions will be grasped,
- Collection of water charge will become efficient,

(2) Upgrading the Water Quality Analysis Techniques

- Education to understand the necessity of water quality test,
- Acquiring the required minimum water quality test techniques, and
- Understanding the servicing of safe water and establishment of the required minimum monitoring system.

(3) Training of Slow Sand Filters

- The training of slow sand filtration system is carried out especially for Ainaro.
- Understanding the planning and design of slow sand filters,
- Service of good quality water through the appropriate operation and maintenance.

2-6-1-4 Contents of Activities

(1) Supporting the Planning of Service/Distribution Pipes and the Preparation of Customer Log Book(Accelerating the Works Undertaken by the Recipient Country)

1) Preparatory work and explanation for introduction of the software component
2) Field Survey
   (a)Confirmation of the new planning area,
   (b) Survey for the status of water service,
   (c)Survey for the existing distribution pipe network, and
   (d) Survey for obtaining the customer information.
3) Encoding the data obtained
4) Supporting the planning of the objective service area
5) Preparation of the customer log book of the objective service area

(2) Upgrading the Water Quality Analysis Techniques

1) Preparatory work and explanation for introduction of the software component
2) Instruction of the techniques
3) Preparation of the manual

(3) Training of Slow Sand Filters

1) Preparatory work and explanation for introduction of the software component
2) Instruction of the technology
3) Preparation of the manual

Chapter 3

Project Evaluation and Recommendation

Chapter 3 Project Evaluation and Recommendations

3-1 Project Effect

As a result of implementation of the Project, the rehabilitation work of three (3) water treatment plants and the rehabilitation works of distribution network in the zones 1,5,6,7 and 8 will be improved. Furthermore, all the ten (10) zones will be improved as the zones 2,3,4 and 9 were funded by Japanese Government through the UNOPS and zone 10 was funded by ADB in Dili. Meanwhile in the four (4) district towns of Ainaro, Same, Ermera and Maubisse, the rehabilitation works except for the service pipe installation and connection work cover all the water supply system. The service pipe installation and reticulation works will be carried out by WSS. Therefore, the Project will contribute to the improvement of water service condition of the entire service area. The following subsections describe some more direct and indirect effects of the Project and the recommendations for implementation of the Project.

3-1-1 Direct Effect of the Project

(1) Dili

- The rehabilitation work of Bemos WTP (2,000m^3/day), Lahane WTP (2,600m^3/day) and Benamauk WTP (600m^3/day) will facilitate the normal functioning and oprartion of water purification and will be a part of the water supply facilities to ensure good water quality and stable water supply.
- Installation of water level meters, water flow meters and water quality analysis set at each WTP will enable to improve operation of the WTPs through measurement of water level and flowrate.
- Rehabilitation of water distribution network in the zones 1,5,6,7, and 8 wlll improve the water service conditions in the poor water service areas and the non-service areas, furthermore, will help eliminate the illegal and inappropriate connections by the residents. As a result, the ratio of un-accountable water wil decrease from 40% to 28%.

(2) Ermera

- Construction of new Haruregas Raitara system will bring in the increase of system capacity from 138m^3/day to 438m^3/day in terms of maximum daily demand. Construction of water service reservoir will increase the storage capacity up to 12 hours in terms of retention time to cope with the fluctuation of water demand, securing the water for fire fighting and other accidents in the project area.
- Installation of disinfection equipment at the existing Mota Bura service reservoir and the Poetete service reservoir as well as the water quality analysis set provided for Ermera will facilitate control and monitoring of the system and contribute to the service of safe water and stable water supply.
- Installation/Replacement of water distribution pipes will eliminate the illegal/inappropriate connections by the residents which will lead to the increase of accountable water ratio along with the reduction of water losses in addition to the improvement of water service conditions

in the poor water service areas and the non-service areas. As a result, it is expected that the water service coverage ratio will increase from 17 % to 35 % approximately.

(3) Same

- Rehabilitation works at the Merbati and the Darelau water intakes will enable availability of adequate raw water to the system. The installation of raw water mains will ensure efficient conveyance of raw water to the service reservoir in each system.
- Construction of Merbati and Horalua service reservoirs will bring increase of the storage capacity up to 8 hours in terms of the retention time to cope with the fluctuation of water demand, securing the water for fire fighting and other accidents in the project area.
- Installation of disinfection equipment at Kotalala water intake, Merbati service reservoir and Horalua service reservoir along with the water quality analysis set provided for WSS-Same will facilitate control and monitoring of the system and contribute to the service of safe water and stable water supply.
- Installation/Replacement of water distribution pipes will eliminate the illegal/inappropriate connections by the residents which will result in increase of accountable water ratio along with the reduction of water losses. Therefore, the improvement of water service conditions in the poor water service areas and the non-service areas will be led. As a result, it is expected that the water service coverage ratio will increase from 27 % to 47 %, approximately.

(4) Ainaro

- Replacement of the damaged closed raw water conduit and lost covers in several sections of the pipeline will enable to prevent entering pollutants such as soil, sands, excrements of animals to the pipe.
- Rehabilitation work of the Nugupo water treatment plant through the renovation of existing slow sand filters and the sedimentation basin and construction of new slow sand filters will enable to cope with water treatment even in the high turbidity period. Construction of clear water basin in the WTP site used for the service reservoir will bring increase of the storage capacity up to 8 hours in terms of retention time to cope with the fluctuation of water demand, securing the water for fire fighting and other accidents in the project area.
- Installation of disinfection equipment and water quality analysis set at the Nugupo WTP will facilitate control and monitoring of the system and contribute to the service of safe water and stable water supply.
- Installation/Replacement of water distribution pipes will eliminate the illegal/inappropriate connections by the residents which will bring increase of accountable water ratio along with the reduction of water losses, thereby leading the improvement of water service conditions in the poor water service areas and the non-service areas. As a result, it is expected that the water service coverage ratio will increase from 66 % to 73 %, approximately.

(5) Maubisse

- The Project will rehabilitate and restore the Bucan water intake, Raikuak Ulun water intake and Erulu water intake to enable sufficient withdrawal of raw water. Furthermore, the

installation of raw water mains will enable to have stable water conveyance to the respective service reservoir.

- Expansion of Leputo service reservoir will bring increase of the storage capacity up to 6 hours in terms of retention time to cope with the fluctuation of water demand, securing the water for fire fighting and other accidents in the project area.
- Installation of disinfection equipment at Pousada, Leputo and Erulu reservoir and provision of water quality test set will facilitate control and monitoring of the system and contribute to the service of safe water and stable water supply.
- Installation/Replacement of water distribution pipes will eliminate the illegal/inappropriate connections by the residents which will increase accountable water ratio along with the reduction of water losses. Therefore, the improvement of water service conditions in the poor water service areas and the non-service areas will be brought. As a result, it is expected that the water service coverage ratio will increase from 32 % to 47 %, approximately.

3-1-2 Indirect Effect of the Project

The water supply rehabilitation project in Dili and the four (4) district towns will bring about the service of sufficient amount of water through the direct connections and/or the public taps that are available all the time at convenient distance. As a result, the project will contribute to decrease the working time of drawing water for female and/or children and to materialize the sanitary and convenient living environment for the residents as the beneficiaries. The supply and use of safe water will control the outbreak of water-born diseases and improve the public health in the region simultaneously. On the other hand, for the side of WSS, it is expected that the collection of water charges due to the upgrading of water service will enable the income to be spent for the operation and maintenance costs and will be of some help to the healthy financial management of WSS.

3-2 Recommendations

The effect of the project for appearance and /or continuation shall be establishment of an appropriate maintenance for the Timor-Leste side. Therefore, it is recommended that the following measures be taken.

(1) Currently, water charge has not been collected. It will be secured to pay the personnel, operation, maintenance and rehabilitation costs and also required toward the establishment of independent water works management. There are many kind of tasks required in connection with the introduction of water charging system, such as the tasks of preparation of customer log book, issuance of water bills and receipts, collection of water charge, water charge accounting, water meter calibration, etc.

(2) WSS is financed by the funds from TFET(Trust Fund for East Timor) and CFET(Consolidated Fund of East Timor). The fund from TFET has been completed in the middle of 2003. On the other hand, the fund from CFET has been established 75% from donor organization. Therefore, the collection of water charging system shall be established as soon as possible and it is necessary that best for the establishment.

(3) The number of operation and maintenance staff and human resources are insufficient, especially, the technicians of mechanics, electricians and water quality staff are not deployed at each water treatment plant. It shall be beneficial to have human resource development through the dispatch of experts from donor countries including Japan, the training in Japan, and the practical training at the existing plants.

Appendix-1

Member List of the Study Team

Appendix-1 : Member List of the Study Team

Appendix-1-1: First Field Work (Field Survey in Timor Leste)

1.	Mr. Kohei SATO	Team Leader	First Project Management Division, Grant Aid Management Department, JICA
2.	Mr. Osamu NAKAGOME	Chief Consultant/ Water Supply Engineer 1	Tokyo Engineering Consultants Co., Ltd.
3.	Mr. Masaharu TAKASUGI	Water Supply Engineer 2	Tokyo Engineering Consultants Co., Ltd.
4.	Mr. Katsutoshi IWASAKI	Facilities Planner 1	Tokyo Engineering Consultants Co., Ltd.
5.	Mr. Yarai SATO	Facilities Planner 2	Pacific Consultants International
6.	Mr. Shimao HIDAKA	Equipment Planner	Pacific Consultants International
7.	Mr. Takashima HIDEAKI	Operational Program Specialist	Tokyo Engineering Consultants Co., Ltd.
8.	Mr. Yukio OKUTSU	Procurement and Execution Program Specialist/Cost - Estimator	Tokyo Engineering Consultants Co., Ltd.

Appendix-1-2 Second Field Work (Presentation to the Timor-Leste Government)

1.	Mr. Toshiaki TANAKA	Team Leader	Resident Representative of JICA Timor-Leste
2.	Mr. Osamu NAKAGOME	Chief Consultant/ Water Supply Engineer-1	Tokyo Engineering Consultants Co., Ltd.
3.	Mr. Masaharu TAKASUGI	Water Supply Engineer-2	Tokyo Engineering Consultants Co., Ltd.
4.	Mr. Katsutoshi IWASAKI	Facilities Planner- 1	Tokyo Engineering Consultants Co., Ltd.

Appendix-2

Study Schedule

Appendix-2 : Study Schedule

Appendix-2-1: First Field Work (Field Survey in Timor Leste)

Day	Date	JICA Officers	Consultants
1	Mar. 22 (Sat)	Leave Japan by JL720 (Narita 16:50 –Bali 22:50)	
2	Mar. 23 (Sun)	Arrive Timor-Leste by MZ8480 (Bali 09:40—Dili 12:20)	
3	Mar. 24 (Mon)	➢ Courtesy call to EOJ and JICA ➢ Courtesy call to with Ministry of Transport, Communication and Public Works ➢ Meeting with Water and Sanitation Services(WSS)	
4	Mar. 25 (Tue)	Meeting with Ministry of Transport, Communication and Public Works	
5	Mar. 26 Wed)	Site survey	
6	Mar. 27 (Thu)	Signing of M/D	
7	Mar. 28 (Fri)	➢ Report to EOJ ➢ Report to JICA Leave Timor-Leste	➢ Report to EOJ ➢ Report to JICA
8	Mar. 29 (Sat)	Arrival at Japan	Site survey, Collection of data & Information
9	Mar. 30 (Sun)		Site survey, Collection of data & Information
10	Mar.31 (Mon)		Site survey, Collection of data & Information
11	April 1 (Tue)		Site survey, Collection of data & Information
12	April 2 (Wed)		Site survey, Collection of data & Information
13	April 3 (Thu)		Site survey, Collection of data & Information
14	April 4 (Fri)		Site survey, Collection of data & Information
15	April 5 (Sat)		Site survey, Collection of data & Information
16	April 6 (Sun)		Site survey, Collection of data & Information
17	April 7 (Mon)		Survey Team 2nd Group Arrive Timor-Leste
18	April 8 (Tue)		Site survey, Collection of data & Information
19	April 9 (Wed)		Site survey, Collection of data & Information
20	April 10 (Thu)		Site survey, Collection of data & Information
21	April 11 (Fri)		Site survey, Collection of data & Information
22	April 12 (Sat)		Site survey, Collection of data & Information
23	April 13 (Sun)		Site survey, Collection of data & Information
24	April 14 (Mon)		Site survey, Collection of data & Information
25	April 15 (Tue)		Site survey, Collection of data & Information
26	April 16 (Wed)		Site survey, Collection of data & Information
27	April 17 (Thu)		Site survey, Collection of data & Information

28	April 18 (Fri)		Site survey, Collection of data & Information
29	April 19 (Sat)		Site survey, Collection of data & Information
30	April 20 (Sun)		Site survey, Collection of data & Information
31	April 21 (Mon)		Site survey, Collection of data & Information
32	April 22 (Tue)		Site survey, Collection of data & Information
33	April 23 (Wed)		Site survey, Collection of data & Information
34	April 24 (Thu)		Site survey, Collection of data & Information
35	April 25 (Fri)		Site survey, Collection of data & Information
36	April 26 (Sat)		Site survey, Collection of data & Information
37	April 27 (Sun)		Site survey, Collection of data & Information
38	April 28(Mon)		Signing of Technical Notes(T/N)
39	April 29 (Tue)		Site survey, Collection of data & Information
40	April 30 (Wed)		Site survey, Collection of data & Information
41	May 1 (Thu)		Site survey, Collection of data & Information
42	May 2 (Fri)		Report to EOJ and JICA
43	May 3 (Sat)		Site survey, Collection of data & Information
44	May 4 (Sun)		Leave Timor-Leste by MZ8490 (Dili 12:30 – 14:05Bali)
45	May 5 (Mon)		Arrive Japan by JL 716 (Bali 22:10:May4 – 9:10 Narita)

Appendix-2-2: Second Field Work (Presentation to the Timor-Leste Government)

No.	Date			JICA Office and Consultant	Notes
1		26	Sat	Leave Japan (Narita 11:05-Denpasar 20:25	Consultant Staff
2		27	Sun	Leave Bali (Denpasar 09:15-Dili12:05)	Ditto
3		28	Mon	10:00: Courtesy Call to JICA Timor-Leste Office 16:00: Courtesy Call to MPF 17:00: Courtesy Call to MTCPW	
4	Jul	29	Tue	09:00: Presentation/Discussion of BD Concept Report at WSS 14:00: Courtesy Call to EOJ	
5		30	Wed	11:00: Presentation/Discussion of BD Concept Report at WSS	
6		31	Thu	10:00: Presentation/Discussion of BD Concept Report at WSS 13:30: Preparation/Discussion of M/D at JICA Timo-Leste Office	
7		1	Fri	10:00: Field Survey with WSS Staff 14:30: Explanation/Discussion of M/D at WSS	
8		2	Sat	Team Meeting	
9		3	Sun	Ditto	
10		4	Mon	12:00: Signing of M/D at the Minister's Office (MTCPW) 14:00: Visiting 4 WTP sites with JICA Timor-Leste Office Staff	
11	Aug	5	Tue	Related Surveys on Basic Design	
12		6	Wed	Related Surveys on Basic Design, Preparation of Field Survey Report	
13		7	Thu	10:00: Submission of Field Survey Report(2 sets) and Reporting	
14		8	Fri	13:00-13:50: Leave Dili~ Arrive Denpasar, by MZ 8490 22:10: Leave Denpasar, by JL 716	Consultant Staff
15		9	Sat	09:10: Arrive Narita	Ditto

Appendix-3

List of Parties Concerned in the Recipient Country

Appendix-3 : List of Parties Concerned in the Recipient Country

Ministry of Transport, Communication and Public Works (MTCPW)

Mr. Ovidio de Jesus Amaral	Minister
Mr. Egidio de Jesus	Secretary of State for Power and Water
Mr. Joao Alves	Secretary of State for Public Works
Mr. Jose V. Martins Fontes	Architect, Public Works Department (PWD)
Mr. Damien Mate	UN Mission of Support in East Timor, PWD

Water and Sanitation Service Department (WSS)

Mr. Joao Pereira Jeronimo	Director
Dr. V. Haraprasad	UN Advisor, Water and Sanitation Service
Mr. Jose P Mestre	Chief of Urban Sanitation
Mr. Gregorio de Araujo	Chief of Urban Water Supply
Mr. Rui de Sousa	Principal Engineering Operation and Maintenance
Mr. Juaquin Ximenes	Manager of Dili Water Supply Operation & Maintenance
Mr. Cerso A Pereira	Manager of District Water Supply Operation & Maintenance
Mr. Eduardo Ximenes	Support Service
Mr. Gustaro da Cruze	Senior Finance Officer
Mr. Francisco Xavier Pereira	Manager of Development & Rehabilitation
Mr. Mario Abel Sequira	Manager of Planning & Design
Mr. Bentido Samento	Bemos WTP Operator
Mr. Quintino D Santos	Lahane WTP Operator
Mr. Julio A Alves	Benemauk WTP Operator

Ministry of Finance and Planning (MFP)

Ms. Aicha Bassarewan	Vice-Minister
Mr. Euseblo e. Jeronimo	Director
Mr. Gastão Francisco de Sousa	Director, Planning and Project Assessment Unit, MPF
Mr. Jose F. Abilio	Deputy Director
Ms. Maria de Jesus Sarureufo	Senior Treasury Accountant
Ms. Emilia Pires	UNIMSET Advisor
Mr. Francis M. Sskandi	Legal Advisor
Ms. Fabiola Noranha Melo	Planning & External Assistance Management Division
Mr. Covin Matthews	Budget Office

Ministry of Development and Environment

Mr. Vicente da Costa Pinto	Director of Mining Energy & Mineral Resources Dept.
Mr. Amandio	Director of Mining Energy & Mineral Resources Dept.
Mr. Barid Manna	UN Advisor

Electricity Development Timor Leste

Mr. Virgilio Guterres	Director
Mr. Helio Renato Xemenes	Project Manager (Comoro Power Station)

Project Management Unit East Timor Water & Sanitation Rehabilitation Project Phase 2

Mr. Alvaro S. Abrantes	Project Manager
Mr. Malcolm Ehrlich	Chief Technical Adviser

Community Water Supply and Sanitation Program (CWSSP)

Mr. Alan Smith	Team Leader

Community Empowerment Project (CEP)

Ms. Rosa Amaral Vong	Project Director CEP

Asian Development Bank (ADB)

Mr. Zacarias da Costa	Inter-Agency Coordinator
Mr. Jessie B. Arnuco	Project Administration Officer

The World Bank (WB)

Mr. Ronald Isaacson	Deputy Chief of Mission, World Bank Mission

Embassy of Japan (EOJ)

Mr. Hideo Fukushima	Charged' Affairs
Mr. Akinori Wada	Councilor
Mr. Toshimichi Koga	Second Secretary

JICA Timor-Leste Office (JICA)

Mr. Katsuo Shoji	Former Resident Representative
Mr. Toshiaki Tanaka	Resident Representative
Mr. Katsuhiko Ohara	Assistant Resident Representative
Mr. Masayoshi Takehara	Assistant Resident Representative

Appendix-4

Minutes of Discussions

Minutes of Discussions
on
The Basic Design Study
on
The Project for Improvement of Water Supply in Dili and Rural Districts
in
The Democratic Republic of Timor-Leste

In response to the request from the Government of the Democratic Republic of Timor-Leste (hereinafter referred to as 'Timor-Leste'), the Government of Japan decided to conduct a Basic Design Study on the Project for Improvement of Water Supply in Dili and Rural Districts (hereinafter referred to as "the Project"), and entrusted the study to Japan International Cooperation Agency (hereinafter referred to as 'JICA').

JICA sent to Timor-Leste the Basic Design Study Team (hereinafter referred to as 'the Team'), which was headed by Mr. Kohei Sato, staff, First Project Management Division, Grant Aid Management Department, JICA, and was scheduled to stay in the country from March 24th to 28th, 2003.

The Team held a series of discussions with the concerned officials of the Government of Timor-Leste and conducted a field survey in the study area.

In the course of discussions and field survey, both parties confirmed the main items described on the attached sheets. The Team will proceed to further work and prepare the Basic Design Study Report.

Dili, March 27th, 2003

Mr. Kohei Sato
Leader
Basic Design Study Team
Japan International Cooperation Agency
Japan

Mr. Ovidio de Jesus Amaral
Minister
Ministry for Transport, Communications and Public Works
Timor-Leste

Ms. Aicha Bassarewan
Vice-Minister
Ministry of Planning and Finance
Timor-Leste

Mr. Egidio de Jesus
Secretary of State
Secretary of State for Power and Water
Ministry for Transport, Communications and Public Works
Timor-Leste

ATTACHMENT

1. Objective of the Project

The objective of the Project is to improve the water supply services in Dili, Ermera, Same, Ainaro and Manbisse in order to make safe and stable water supply for the residents.

2. Responsible and Implementing Organization

Ministry for Transport, Communications and Public Works, Water and Sanitation Services Department

3. Study area

The study area of the Project is as shown in Annex-1.

4. Items requested by the Government of Timor-Leste

After discussions with the Team, the items described in Annex-2 were finally requested by Timor-Leste side. JICA will assess the appropriateness of the request and will report the findings to the Government of Japan.

5. Japan's Grant Aid Programme

Timor-Leste side was briefed on the system and characteristics of Japan's Grant Aid Programme as described in Annex-3. It was emphasized by the Japanese side that necessary measures, as described in Annex-4 are required for smooth implementation of the Project provided that the Grant Aid Programme is extended.

6. Necessary measures to be taken by the Timor-Leste side

Timor-Leste side understood the need for providing the services and extending the tax exemptions referred to in Annex 4 and will take the necessary measures to appropriate the required funds for the works and services and extend the tax exemptions in accordance with such agreements as will be concluded between the Government of Timor-Leste and the Government of Japan.

7. Further Schedule of the Study

7-1. The consultant members of the Team will proceed with further studies in Timor-Leste until May 4th, 2003.

7-2. Based on the Minutes of Discussion, the Technical Note and technical examination of study results, JICA will prepare the draft of Basic Design Study Report in English and dispatch a mission in order to explain its contents in (or around) July 2003.

7-3. In case the contents of the report are accepted in principle by the Government of Timor-Leste, JICA will complete the final report and send it to the Timor-Leste side by August 2003.

8. Other relevant issues

8-1. Number of districts and components

Both sides agreed that the four requested districts and one requested sub-district, and components for the implementation of the Projects may not be fully covered by the Project.

8-2. Priority order for the five requested districts

The Timor-Leste side agreed to put priority order for the five requested districts to the Team by the end of April 2003.

8-3. Service connections

The Timor-Leste side agreed that service connection is out of the scope of this Study (this Study covers up to distribution pipes as shown in Annex-2). The service connections (saddle, service pipe and water meter) are fully responsible work of the Timor-Leste side.

8-4. Submission of the Questionnaire

The Timor-Leste side shall submit the Questionnaire-1 and 2 to the Team by April 10th, 2003.

8-5. Water charge system

Water charge system is now planning to be introduced, Timor-Leste side agreed to report the detail plans (schedule, water tariff, collecting system and so on) for Dili, Ermera, Same, Ainaro and Maubisse to the Team by April 22nd, 2003.

8-6. Proposion of the possible sites

Timor-Leste side shall propose the possible sites for water treatment plants, water intake structures and water reservoirs to the Team for topographic survey and soil investigation by April 5th, 2003 at the latest.

8-7. Land for the Project

The Timor-Leste side agreed to provide the Japanese side by early July 2003, a certification from the Ministry of Justice (Land and Property Office) that the Government owns the sites for the water supply facilities.

8-8. Level and reclaim the sites

Timor-Leste side shall allocate budgetary appropriation to clear, level and reclaim the sites for water treatment plants, water intake structures and water reservoirs prior to

commencement of work on condition that Grant Aid is extended.

8-9. Enough and necessary counterpart

The Timor-Leste side agreed to provide enough and necessary counterparts to the Team during the study period. The details of the necessity will be finalized by the end of March, 2003 among the related organizations.

8-10. Operation and maintenance

Timor-Leste side shall allocate budgetary appropriation and assign the necessary staff for proper and effective operation and maintenance for the water supply facilities covered by the Project through Water and Sanitation Services Department.

8-11. Safety of Japanese personnel

The Timor-Leste side fully understood the importance of assurance of safety of Japanese personnel concerned with the Project during the implementation of the Project.

8-12. Necessary Undertakings

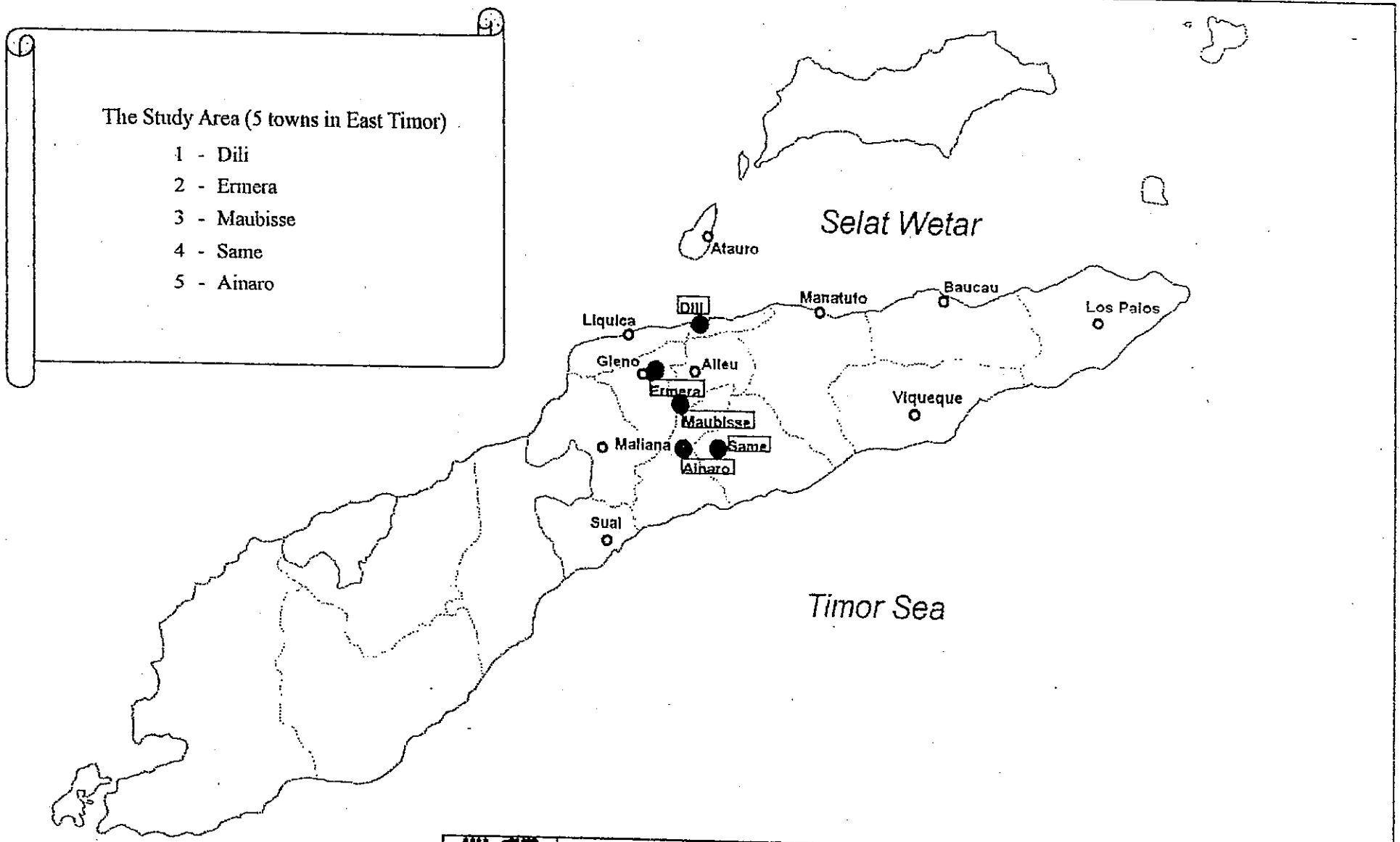
Japanese side strongly emphasized that the necessary undertakings, described in Annex-4, are standard mandatory requirements by the Japanese Government for the smooth implementation of the Project by the Timor-Leste side, without which the Project cannot proceed.

1) Explanation from the Timor-Leste side

The Timor-Leste side explained that certain commitments in Annex-4, such as item 7(4), will require budgetary appropriation which will be requested in the context of the bi-annual budget review. Items 9(2), 10 and 11 of Annex-4, are currently the subject of negotiation between the Government of Japan and the Government of Timor-Leste, in the context of the Cooperation Agreement between the two countries, since such exemptions require the approval of the Council of Ministers and legislative action by Parliament.

2) Agreed points by both sides

Both parties agreed on the other items in Annex-4, and further agreed to exert effort to get mutual consent of the every item by early July 2003.



JICA

The Basic Design Study on The Project for Improvement of Water Supply in Dilli and Rural Districts in The Democrqatic Republic of Timor-Leste

ANNEX-1 STUDY AREA (DILI and 4 Districts)

Annex-2 The Requested Component

Basically, the followings are the target facilities for this Study.

(1) Dili
- Water Treatment Plant (existing)
- Existing Distribution Network (Zone 1, 5,6,7 and 8)

(2) Ermera
- Intake
- Raw Water Transmission Main
- Water Treatment Plant (plan)
- Service Reservoir
- Existing Distribution Network

(3) Same
- Intake
- Raw Water Transmission Main
- Service Reservoir
- Existing Distribution Network

(4) Ainaro
- Intake
- Raw Water Transmission Main
- Water Treatment Plant (existing)
- Service Reservoir
- Existing Distribution Network

(5) Maubisse
- Intake
- Raw Water Transmission Main
- Service Reservoir
- Existing Distribution Network

Annex-3 The Japan's Grant Aid Scheme

The Grant Aid Program provides a recipient country with non-reimbursable funds to procure the facilities, equipment and services (engineering services and transportation of the products, etc.) for economic and social development of the country under principles in accordance with the relevant laws and regulations of Japan. Grant Aid is not supplied through the donation of materials as such.

(1) Grant Aid Procedure

1) Japan's Grant Aid Program is executed through the following procedures.

Application (Request made by a recipient country)
Study (Basic Design Study conducted by JICA)
Appraisal & Approval
(Appraisal by the Government of Japan and Approval by Cabinet)
Determination of Implementation
(The Notes exchanged between the Governments of Japan and the recipient country)

2) Firstly, the application or request for a Grant Aid project submitted by a recipient country is examined by the Government of Japan (Ministry of Foreign Affairs) to determine whether or not it is eligible for Grant Aid. If the request is deemed appropriate, the Government of Japan assigns JICA to conduct a study on the request. If necessary, JICA send a Preliminary Study Mission to the recipient country to confirm the contents of the request.

Secondly, JICA conducts the study (Basic Design Study), using Japanese consulting firms.

Thirdly, the Government of Japan appraises the project to see whether or not it is suitable for Japan's Grant Aid Programme, based on the Basic Design Study report prepared by JICA, and the results are then submitted to the Cabinet for approval.

Fourthly, the project, once approved by the Cabinet, becomes official with the Exchange of Notes signed by the Governments of Japan and the recipient country.

Finally, for the implementation of the project, JICA assists the recipient country in such matters as preparing tenders, contracts and so on.

(2) Basic Design Study

1) Contents of the Study

The aim of the Basic Design Study (hereinafter referred to as "the Study"), conducted by JICA on a requested project (hereinafter referred to as "the Project"), is to provide a basic document necessary for the appraisal of the Project by the Government of Japan. The contents of the Study are as follows:

a) confirmation of the background, objectives and benefits of the Project and also institutional capacity of agencies concerned of the recipient country necessary for the Project's implementation;
b) evaluation of the appropriateness of the Project to be implemented under the Grant Aid Scheme from the technical, social and economic points of view;
c) confirmation of items agreed on by both parties concerning the basic concept of the Project;
d) preparation of a basic design of the Project; and
e) estimation of costs of the Project.

The contents of the original request are not necessarily approved in their initial form as the

contents of the Grant Aid project. The Basic Design of the Project is confirmed considering the guidelines of Japan's Grant Aid Scheme.

The Government of Japan requests the Government of the recipient country to take whatever measures are necessary to ensure its self-reliance in the implementation of the Project. Such measures must be guaranteed even through they may fall outside of the jurisdiction of the organization in the recipient country actually implementing the Project. Therefore, the implementation of the Project is confirmed by all relevant organizations of the recipient country through the Minutes of Discussions.

2) Selection of Consultants
For the smooth implementation of the Study, JICA uses a consulting firm selected through its own procedure (competitive proposal). The selected firm participates in the Study and prepares for a report based upon the terms of reference set by JICA.

At the beginning of implementation after the Exchange of Notes, for the services of the Detailed Design and Construction Supervision of the Project, JICA recommends the same consulting firm which participated in the Study to the recipient country in order to maintain the technical consistency.

(3) Japan's Grant Aid Scheme

1) Exchange of Notes (E/N)
Japan's Grant Aid is extended in accordance with the Notes exchanged by the two Governments concerned, in which the objectives of the project, period of execution, conditions and amount of the Grant Aid, etc., are confirmed.

2) "The period of the Grant" means the one fiscal year which the Cabinet approves the project for. Within the fiscal year, all procedure such as exchanging of the Notes, concluding contracts with consulting firms and contractors and final payment to them must be completed.

However, in case of delays in delivery, installation or construction due to unforeseen factors such as weather, the period of the Grant Aid can be further extended for a maximum of one fiscal year at most by mutual agreement between the two Governments.

3) Under the Grant, in principle, Japanese products and services including transport or those of the recipient country are to be purchased.
When the two Governments deem it necessary, the Grant Aid may be used for the purchase of the products or services of a third country.

However, the prime contractors, namely consulting, contracting and procurement firms, are limited to "Japanese nationals". (The term "Japanese nationals" means persons of Japanese nationality or Japanese corporations controlled by persons of Japanese nationality.)

4) Necessity of "Verification"
The Government of the recipient country or its designated authority will conclude contracts denominated in Japanese yen with Japanese nationals. Those contracts shall be verified by the Government of Japan. This "Verification" is deemed necessary to secure accountability to Japanese taxpayers.

5) Undertakings required to the Government of the recipient country
a) to secure land necessary for the sites of the Project and to clear, level and reclaim the land prior to commencement of the construction;

b) to provide facilities for distribution of electricity, water supply and drainage and other incidental facilities in and around the sites;
c) to ensure all expenses and prompt execution for unloading and customs clearance at ports of disembarkation in the recipient country and internal transportation therein of the products purchased under the Grant Aid;
d) to exempt Japanese nationals from customs duties, internal taxes and other fiscal levies which may be imposed in the recipient country with respect to the supply of the products and services under the verified contracts;
e) to accord Japanese nationals whose services may be required in connection with the supply of the products and services under the verified contracts such as facilities as may be necessary for their entry into the recipient country and stay therein for the performance of their work;

6) "Proper Use"
The recipient country is required to operate and maintain the facilities constructed and equipment purchased under the Grant Aid properly and effectively and to assign the necessary staff for operation and maintenance as well as to bear all the expenses other than those covered by the Grant Aid.

7) "Re-export"
The products purchased under the Grant Aid shall not be re-exported from the recipient country.

8) Banking Arrangement (B/A)
a) The Government of the recipient country or its designated authority should open an account in the name of the Government of the recipient country in a bank in Japan (hereinafter referred to as "the Bank"). The Government of Japan will execute the Grant Aid by making payments in Japanese yen to cover the obligations incurred by the Government of the recipient country or its designated authority under the verified contracts.
b) The payments will be made when payment requests are presented by the Bank to the Government of Japan under an Authorization to Pay (A/P) issued by the Government of recipient country or its designated authority.

9) Authorization to Pay (A/P)
The Government of the recipient country should bear an advising commission of an Authorization to Pay and payment commissions to the Bank.

Annex-4 Necessary Undertakings to be Taken by Each Government

No	Items	To be covered by Grant Aid	To be covered by Recipient side
1	To secure land		●
2	To clear, level and reclaim the site when needed		●
3	To construct gates and fences in and around the site		●
4	To construct the parking lot	●	
5.	To construct roads		
	1) Within the site	●	
	2) Outside the site		●
6	To construct the building	●	
7	To provide facilities for the distribution of electricity, water supply, drainage and other incidental facilities		
	1) Electricity		
	a. The distributing line to the watt hour meter provided by East Timor		●
	b. The wiring between buildings by the Grant and the watt hour meter	●	
	c. The main circuit breaker and transformer	●	
	2) Water Supply		
	a. The connection of city water or well water to cistern tank provided by the Grant		●
	b. The cistern tank and water supply system within the site	●	
	3) Drainage		
	a. The city drainage main (for storm, sewer and others) to the site		●
	b. The drainage system (for toilet sewer, ordinary waste, storm drainage and others) within the site	●	
	4) Furniture and Equipment		
	a. General furniture		●
	b. Project equipment	●	
8	To bear the following fees to a bank of Japan for the banking services based upon the B/A		
	1) Advising fee of A/P		●
	2) Payment fee		●
9	To ensure prompt unloading and customs clearance at the port of disembarkation in recipient country		
	1) Marine(Air) transportation of the products from Japan to the recipient country	●	
	2) Tax exemption and customs clearance of the products at the port of disembarkation		●
	3) Internal transportation from the port of disembarkation to the project site	(●)	(●)

10	To accord Japanese nationals whose services may be required in connection with the supply of the products and the services under the verified contact such facilities as may be necessary for their entry into the recipient country and stay therein for the performance of their work		●
11	To exempt Japanese nationals from customs duties, internal taxes and other fiscal levies which may be imposed in the recipient country with respect to the supply of the products and services under the verified contracts		●
12	To maintain and use properly and effectively the facilities constructed and equipment provided under the Grant		●
13	To bear all the expenses, other than those to be borne by the Grant, necessary for construction of the facilities as well as for transportation and installation of the equipment		●

Technical Notes

Technical Notes
on
The Basic Design Study
on
The Project for Improvement of Water Supply in Dili and Rural Districts in The Democratic Republic of Timor-Leste

Based on the Minutes of Discussions singed on March 27, 2003 between the Basic Design Study Team (hereinafter referred to as 'the Team') of Japan International Cooperation Agency (hereinafter referred to as 'JICA') and the Government of the Democratic Republic of Timor-Leste (hereinafter referred to as 'Timor-Leste'), the consultant members of the Team conducted intensive site surveys, field investigations of the study area, and a series of consultations and discussions with the national counterparts.

As a result of the discussions and the surveys, both parties confirmed the target facilities of the Study as described on the attached sheets. The Team will proceed to further work and prepare Basic Design Study Report in Japan.

Dili, April 28, 2003

Mr. Osamu Nakagome
Chief Consultant
Basic Design Study Team
Japan International Cooperation Agency
Japan

Mr. Ovidio de Jesus Amaral
Minister
Ministry for Transport, Communications and Public Works
Timor-Leste

Mr. Egidio de Jesus
Secretary of State
Secretary of State for Power and Water
Ministry of Transport, Communications and Public Works
Timor-Leste

Target Facilities

The following facilities will be considered in this Study.

(1) Dili

- Rehabilitation of three existing Water Treatment Plants
  - Bemos
  - Lahane
  - Benamauk
- Rehabilitation and improvement of existing Distribution Network (Zone 1, 5,6,7 and 8). Our main target will be Portuguese period pipes.

(2) Ermera

- New Intake
  - Haturegas Raitara Stream
- New Raw Water Main
  - From New Intake to the proposed Water Treatment Plant site
- New Water Treatment Plant
  - Near the Church Environs
- New Service Reservoir
  - Near the Church Environs (at the proposed Water Treatment Plant site)
- Rehabilitation of existing Service Reservoirs
  - Mota Bura
  - Poetete
- Rehabilitation of Existing Distribution Network

(3) Same

- Rehabilitation of existing Intakes
  - Merbati
  - Darelau
- New Raw Water Mains
  - Darelau Intake to Hularua Service Reservoir
  - Kotalala Intake to Posto Elevated Tank
- Rehabilitation of existing Service Reservoirs
  - Merbati
  - Hularua
  - Posto Elevated Tank
- Rehabilitation and Improvement of Existing Distribution Network

(4) Ainaro

- Rehabilitation of existing Intake
  - Sarai River
- Rehabilitation of Raw Water Main
  - From Sarai Intake to Nugupo Water Treatment Plant

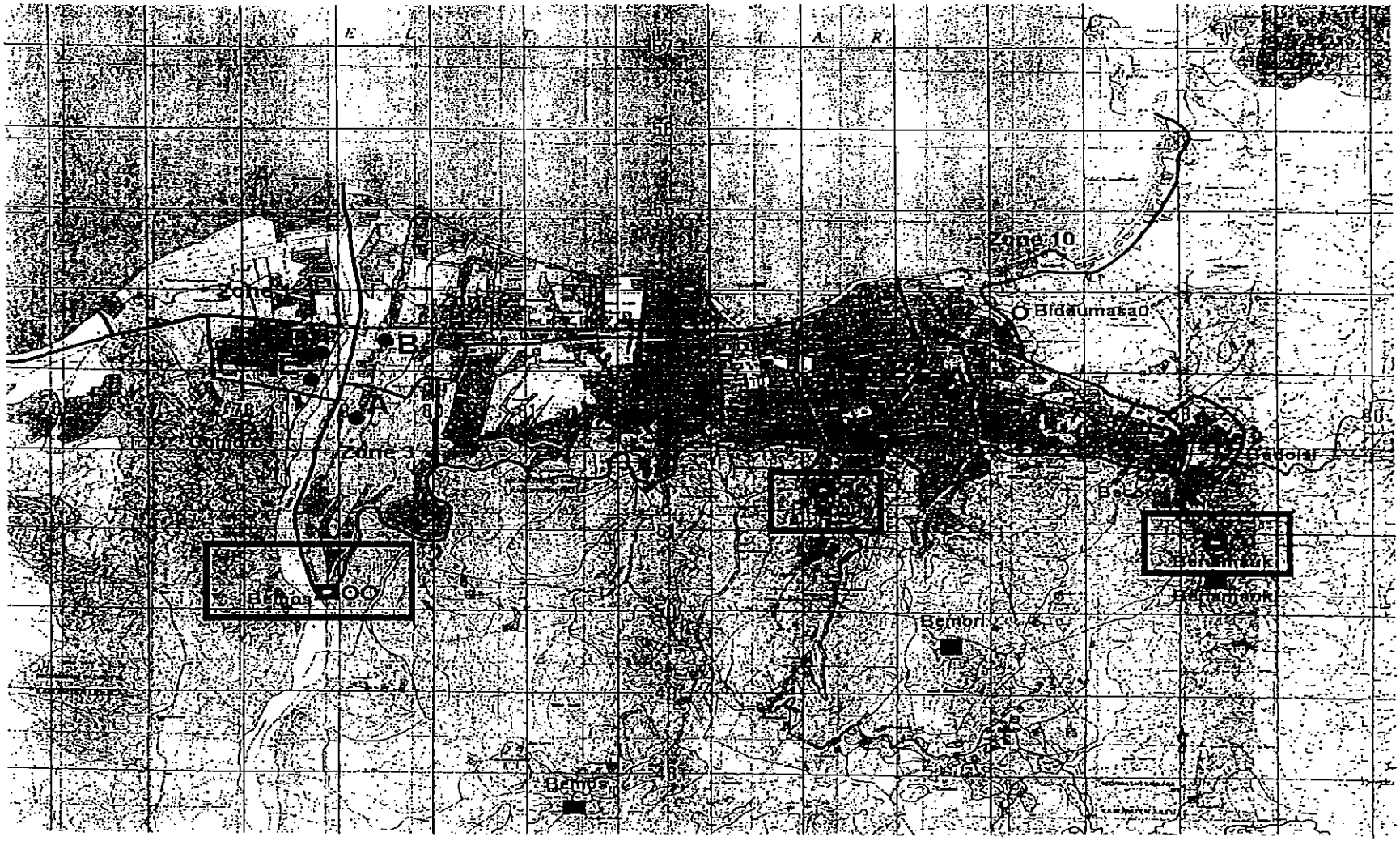
- Rehabilitation and Improvement of existing Water Treatment Plant
  Nugupo
- Rehabilitation of existing Service Reservoir
  Kamilaran No.1
- New Transmission Line from Nugupo WTP to Kamilaran No.1 Service Reservoir
- Rehabilitation and Improvement of existing Distribution Network

(5) Maubisse

- Rehabilitation of existing Intakes
  Bucana
  Raikuak Ulun
  Erulu
- New Raw Water Mains
  From Bucana Intake to Pousada Service Reservoir
  From Raikuak Ulun Intake to Leputo Service Reservoir
  From Erulu Intake to Erulu Service Reservoir
- Rehabilitation of existing Service Reservoir
  Pousada
  Leputo
  Erulu
- Rehabilitation of existing Distribution Network, if the necessity is confirmed

Note:

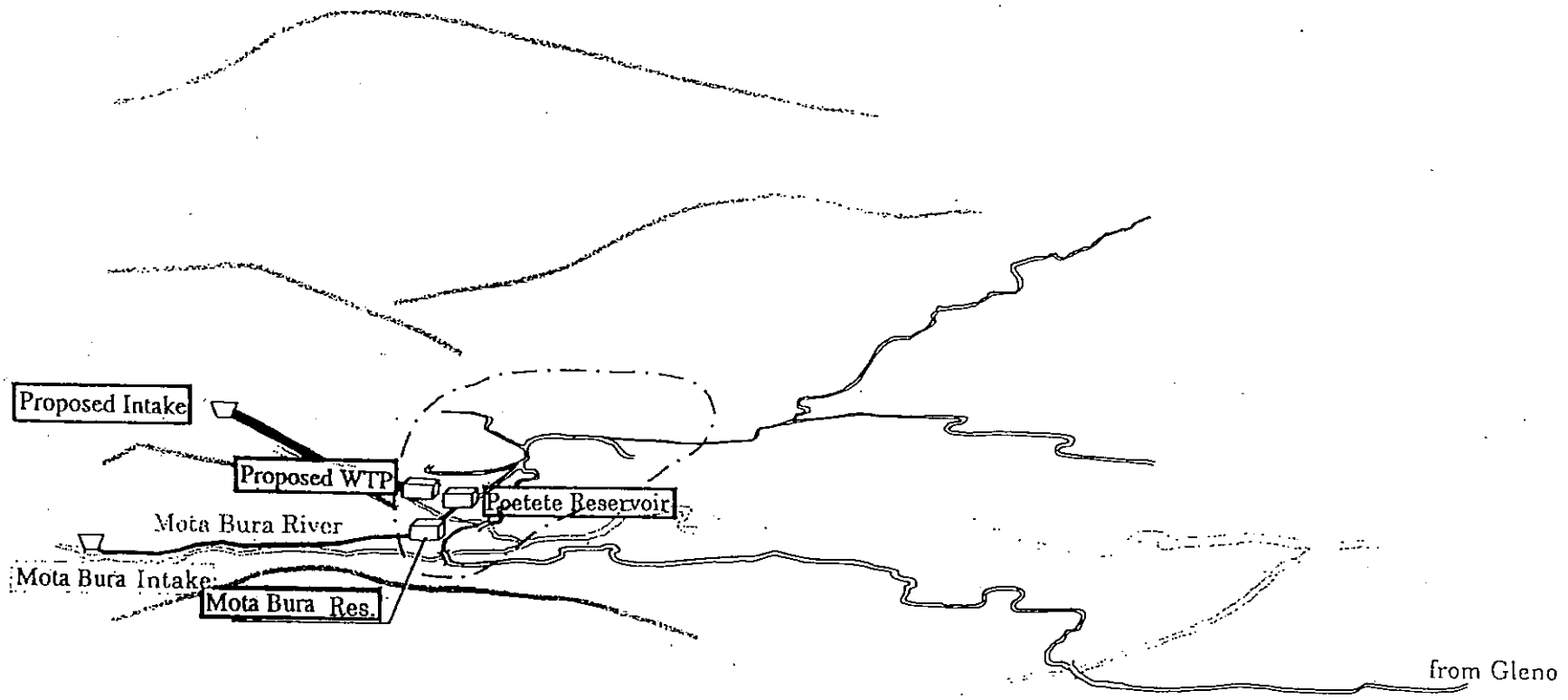
1) The scopes of distribution main rehabilitation and improvement will be decided in Japan after analyzing the field data. Since network maps were hardly available for most of the cities, it is difficult to decide the scopes at this stage.
2) The sites of above-mentioned facilities are shown in accompanying Annex 1.



Dili Water Supply System

Annex I

Ermera

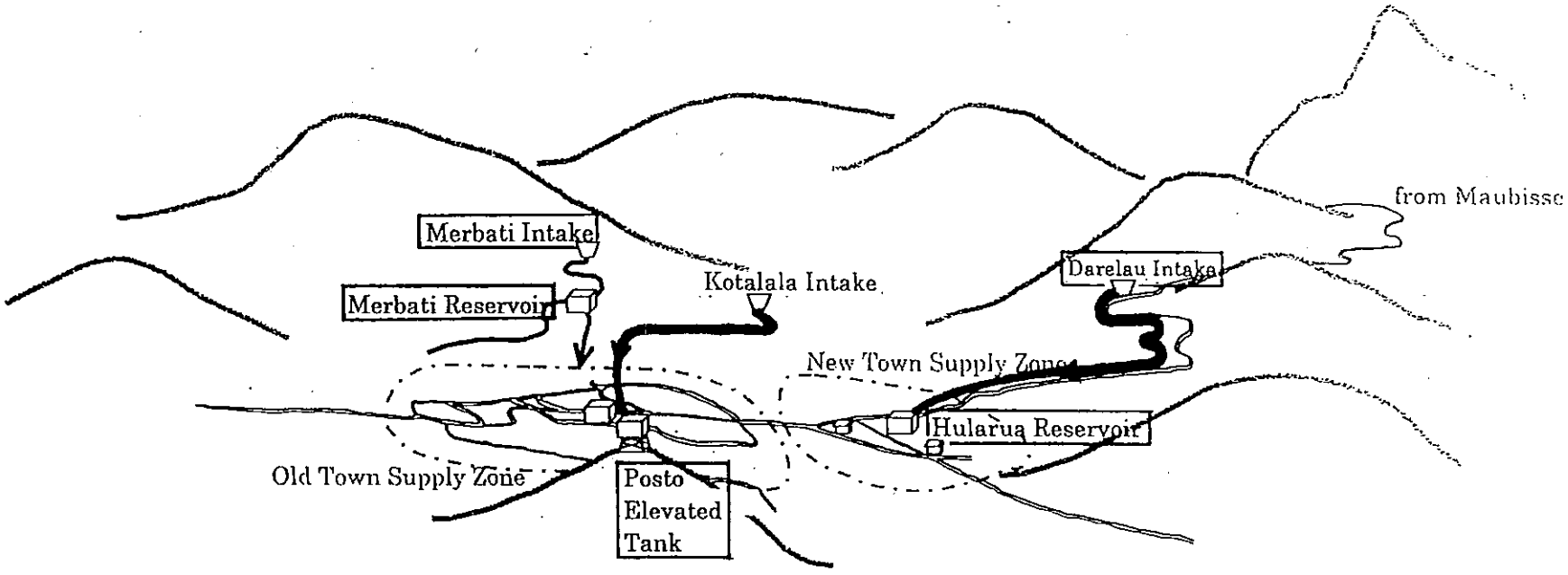


JICA

Annex I

Ermera

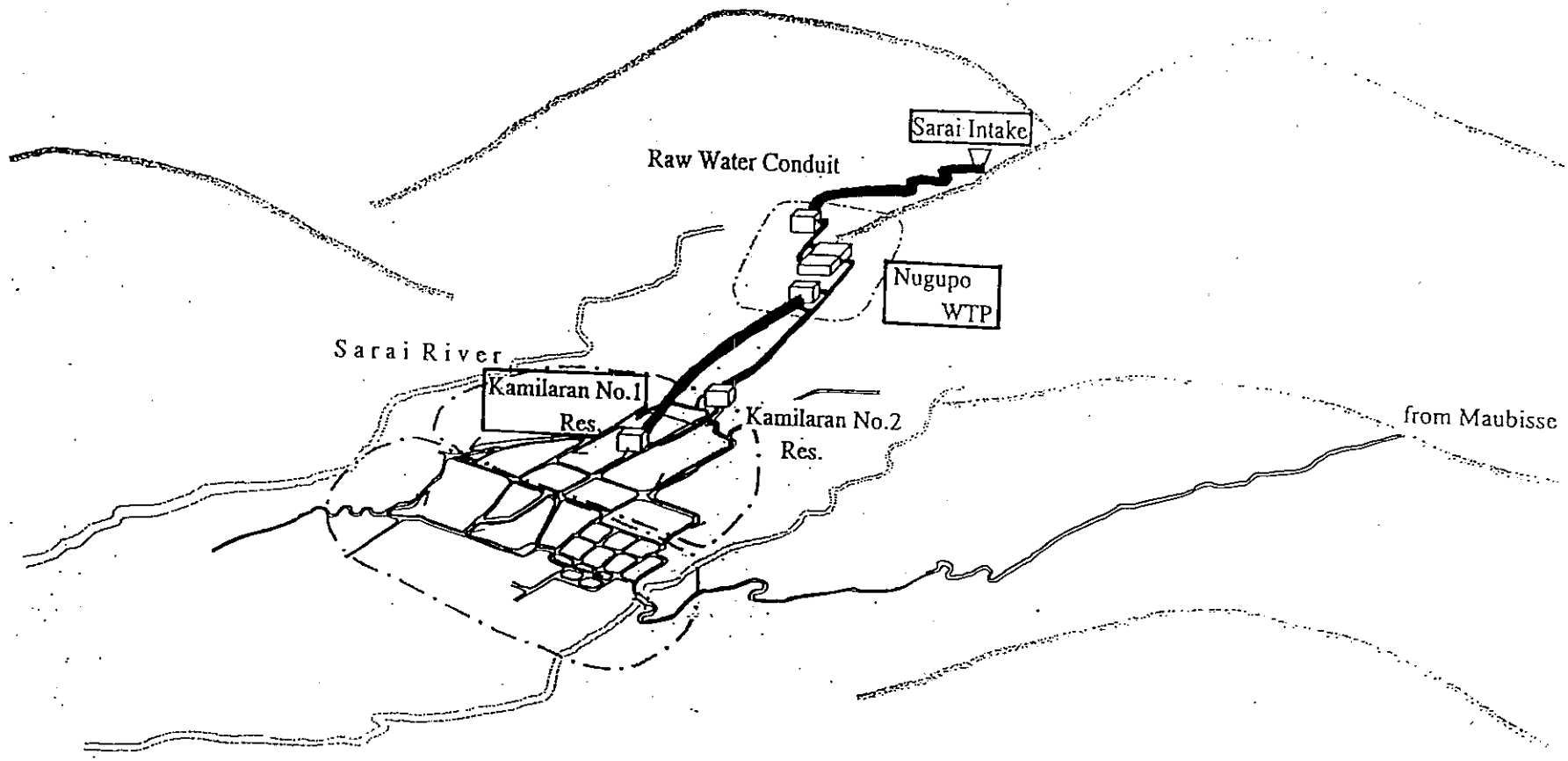
Same



JICA

Annex I

Same

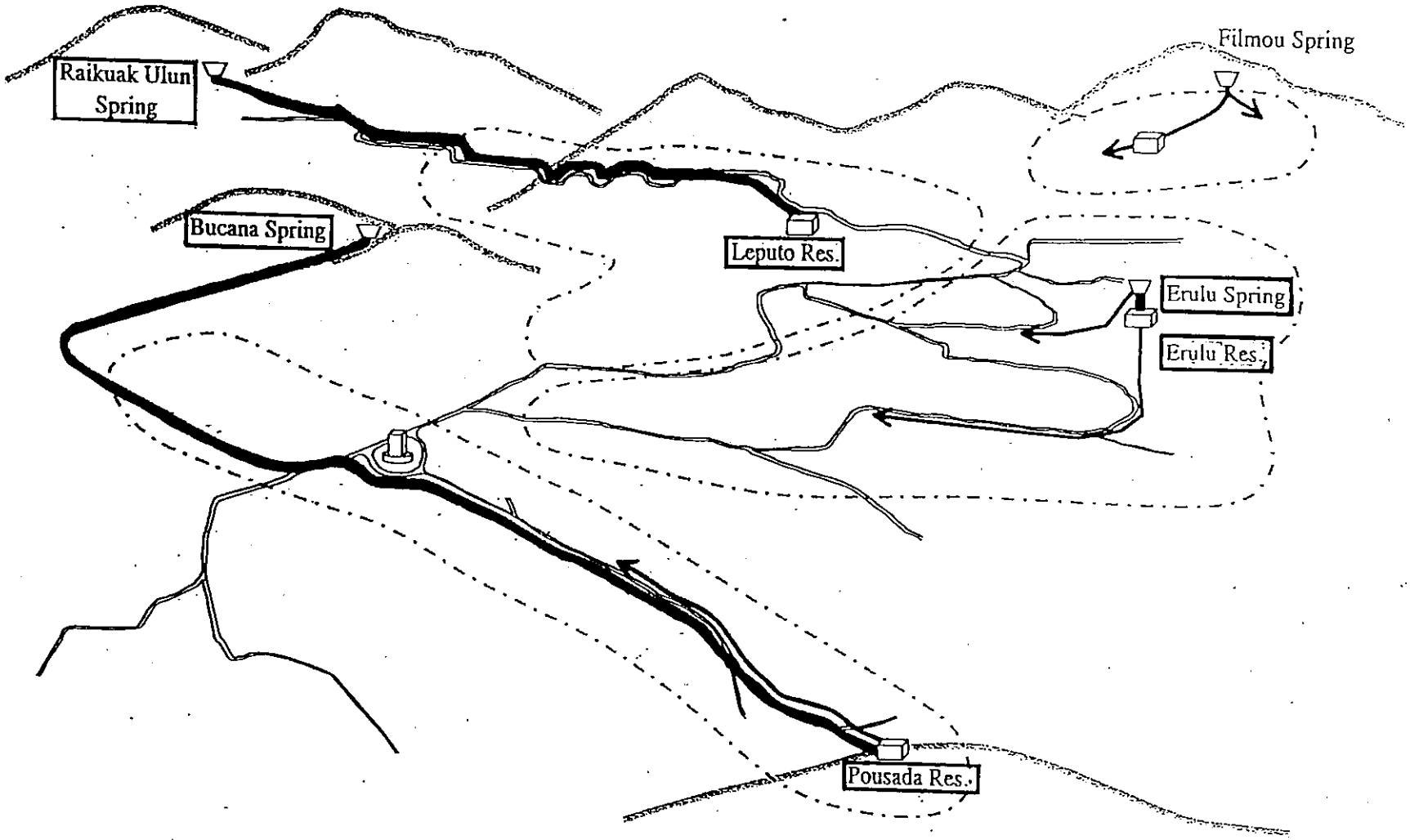


JICA

Annex I

AINARO

Maubisse



JICA

Annex I

MAUBISSE

Letter from the Minister for the

Ministry of Transport, Communication and Public Works

REPÚBLICA DEMOCRÁTICA DE TIMOR – LESTE
MINISTÉRIO DOS TRANSPORTES, COMUNICAÇÕES E OBRAS PÚBLICAS

No : MTCOP/0075/GM/04/03 Dili, 28 March 2003

Mr. Kohei Sato
Leader
Basic Design Study Team
Japan International Cooperation Agency
Japan

Dear Mr. Sato,

With reference to the Minutes of Discussions documented on March 27, 2003, we wish to convey our Technical note and comments on some of the matters discussed therein.

Para 8-2 : Priority order for the five requested sites
The priority order of the five requested districts will be : 1) Dili 2) Same 3) Ainaro 4) Maubisse 5) Ermera

Para 8-5 : Water Charge System

- A billing system to charge for water supplied in Dili, is under development, and is expected to become operational by end of June 2003.
- The water tariffs for various categories of customers are in an advanced stage of finalization in consultation with the Council of Ministers (copy enclosed).
- After finalization, the tariffs will have to be notified in Newspapers, for comments from the general public for 30 days before they are adopted.
- The billing system for Water supplied in District towns of Ermera, Same, Ainaro, and Maubisse, are expected to be operational by the time the project in these towns is completed.
- Customers in the above district towns are expected to pay the water charges into the District Treasury office, under a separate account for WSS. The moneys thus collected would go into the central pool, and possibly later allocated for WSS budget.

Para 8-7 : Land for the Project

- WSS will make all efforts to provide the Japanese side by early July 2003, a declaration from the Ministry of Justice (Land and Property Office) *that* the government owns the sites for the water supply facilities.

Para 8-10 : Operation and maintenance

- Timor-Leste side will allocate budgetary appropriation *after the study team comes up with an indicative figure for this,* and assign the necessary staff for proper and effective operation and maintenance for the water supply facilities covered by the Project through the WSS department.

Our comments in respect of other matters detailed in Annexes 3 and 4, (with minutes of discussions signed on March 27, 2003) are appended herewith for your kind perusal.

With best wishes,

Sincerely

Amaral

Mr. Ovidio de Jesus Amaral
Minister for Transport, Communications and Public Works

WATER SERVICES DECREE

NOTIFICATION OF WATER SERVICE TARIFFS

Under the powers conferred by **Section 18** of the Water Services Decree and on the recommendation of the Water Supply and Sanitation Service the Minister for Transport, Communications and Public Works issues the following Notification of Water Services Tariffs.

Minister
Transport, Communications and Public Works
Date:

Date of Operation:

This Notification comes into effect on (Date) 2003

Section 1: Definitions

"**Damaged Meter**" means a meter that has been damaged by the deliberate or accidental action of a person.

"**Domestic**" means premises principally used for long-term residential accommodation. (Hotels and boarding houses where a fee is paid for use of the accommodation on a commercial basis are categorized as non-domestic).

"**Faulty meter**" means a meter that has ceased to register the flow of water or is inaccurate but has not been damaged by the deliberate or accidental action of a person.

"**Non-domestic**" means all other premises including government, businesses, institutional premises, foreign missions, humanitarian organizations, hotels, restaurants, boarding houses and public utilities and services.

"**O&M**" means operation and maintenance.

"**Social**" means premises used as churches, mosques, hospitals and schools and a public tap servicing a village or small community.

"**WSS**" means Water Supply and Sanitation Service.

Section 2: Scope of Tariffs

2.1 Water service tariffs apply to the Urban Area of Dili and in relation to:

a) Water services for the supply of water to domestic, social and non-domestic consumers;
b) Connections to the water supply system;
c) Reconnections to the water supply system;
d) Damage to WSS assets;
e) Metered and non-metered premises.

Section 3: Tariffs

3.1 Water service supply tariffs shall be levied on a monthly basis in accordance with the following table:

CUSTOMER TYPE	CONSUMPTION	TARIFF (US$ per 1000 litres per month)
Metered Premises		
Domestic	First 14,000	USD$ 0.20
Domestic	More than 14,000	USD$ 0.40
Social (Public Tap)	All consumption	USD$ 0.10
Social (Church/Mosque/hospital/school.)	All consumption	USD$ 0.40
Non-domestic	All consumption	USD$ 0.60
Non Metered Premises or Damaged Meter		
CUSTOMER TYPE	**CONSUMPTION**	**TARIFF PER MONTH**
Domestic	All consumption	USD$10.00
Social (public tap)	All consumption	USD$75.00
Social Hospital School Church/Mosque	All consumption All consumption All consumption	USD$2.50 per bed USD$1.00 per student USD$ 10.00
Non-domestic	All consumption	USD$100.00
Faulty Meter		
CUSTOMER TYPE	**CONSUMPTION**	**TARIFF PER MONTH**
Domestic	All consumption	USD$2.80
Social (public tap)	All consumption	USD$55
Social Hospital School Church/Mosque	All consumption All consumption All consumption	USD$1.80 per bed USD$0.75 per student USD$7.50
Non-domestic	All consumption	USD$75

3.2 Water service connection tariffs shall be levied in accordance with the following table:

CUSTOMER TYPE	PIPE SIZE	CONNECTION TARIFF USD$
Domestic	DN 15	USD$ 55
Domestic	DN 20 or greater	USD$100
Social	DN 15	USD$ 55
Social	DN 20 or greater	USD$100
Non-domestic	DN 20	USD$ 100

Non-domestic	DN 25 or greater	USD$ 200

3.3 Water service reconnection tariffs for each customer type shall be the same as in clause 3.2.

3.4 Water service connection tariffs specified in clause 3.2 shall be payable in accordance with the following table:

CUSTOMER TYPE	PAYMENT SCHEDULE
Domestic and Social	Option 1: 100% payable upon application for a new connection. Option 2: 50% payable on application for a new connection and 50% payable over the next 6 months in equal installments plus USD$1.00. Option 3: 100% payable in equal installments over 6 months plus USD$5.00 commencing upon application for a new connection
Non-domestic	100% payable upon application for a new connection

3.5 Options 2 and 3 in the payment schedule in clause 3.4 do not apply to the reconnection of disconnected service connections.

3.6 Water service repair tariffs for damage to WSS assets at the consumer's premises shall be levied in accordance with the following table:

CUSTOMER TYPE	PIPE SIZE	REPAIR TARIFF
Domestic	DN 15	Minimum of US$ 160
Domestic	DN 20 or greater	Minimum of US$200
Social	DN 15	Minimum of US$ 160
Social	DN 20 or greater	Minimu of US$200
Non-domestic	All sizes	Minimum of US$ 400

Section 4: Calculation of Tariffs

4.1 Water service tariffs are calculated based on the following factors:

a) An affordable tariff for the first 14,000 litres as lifeline block for domestic consumers;
b) An affordable tariff for villages and small communities which have access to water only through a public tap;
c) A reasonable tariff for consumption beyond the lifeline block to discourage unnecessary usage or wastage of water; and
d) An average tariff required for the current year to recover WSS estimated O&M cost.

4.2 Water service connection and reconnection tariffs are calculated based on the estimated cost to recover the cost of materials, labor and overhead to install individual connections at no profit to WSS;

4.3 Water service repair tariffs are calculated based on the estimated cost to recover cost of materials, labor and overhead to repair damage to WSS assets at the consumer's premises plus a penalty.

Section 5 Comoro B and E

5.1 A person taking water from the overhead tank at the Water Points known as Comoro B and Comoro E shall be liable to the non domestic tariff set out in Clause 3.1 (no threshold shall apply).

Section 6 Previous Notification

6.1 This Notification supersedes all prior Schedules and Notifications relating to water services, including the Schedule attached to the Notification dated 26 July 2000.

Minutes of Discussions
on
The Basic Design Study
on
The Project for Improvement of Water Supply in Dili and Rural Districts
in
The Democratic Republic of Timor-Leste
(Explanation on Draft Final Report)

In March 2003, Japan International Cooperation Agency (hereinafter referred to as 'JICA') dispatched a Basic Design Study Team on the Project for Improvement of Water Supply in Dili and Rural District (hereinafter referred to as "the Project") to the Democratic Republic of Timor-Leste (hereinafter referred to as 'Timor-Leste'), and through discussion, field survey, and technical examination of the results in Japan, JICA prepared a draft final report of the study.

In order to explain and to consult with the Timor-Leste side on the contents of the draft final report, JICA sent to Timor-Leste the Draft Final Report Explanation Team (hereinafter referred to as 'the Team'), which was headed by Mr. Tanaka Toshiaki, Resident Representative, JICA East Timor Office, and was scheduled to stay in the country from July 27th to August 8th, 2003.

As a result of discussion, both parties confirmed the main items described on the attached sheets.

Dili, August 4th, 2003

Mr. Tanaka Toshiaki
Leader
Basic Design Study Team
Japan International Cooperation Agency
Japan

Mr. Ovidio de Jesus Amaral
Minister
Ministry for Transport, Communications and Public Works
Timor-Leste

Ms. Aicha Bassarewan
Vice-Minister
Ministry of Planning and Finance
Timor-Leste

Mr. Egidio de Jesus
Secretary of State
Secretary of State for Power and Water
Ministry for Transport, Communications and Public Works
Timor-Leste

ATTACHMENT

1. Components of the Project

The Timor-Leste side agreed and accepted in principle the components of the draft final report explained by the Team. After discussions with the Team, the Timor-Leste side confirmed the components which will be constructed under the Japanese Grant Aid listed in **Annex-I (Phase 1)**.

Basic Design Study was carried out for five cities' water supply systems and implementation plan was divided into three (3) Phases in the Study,

Phase 1 : Dili Water Supply System Improvement
Phase 2: Same and Ainaro Water Supply Systems Improvement
Phase 3: Ermera and Maubisse Water Supply Systems Improvement

At this stage, Phase 1 will be implemented, however the possibility of implementation for Phase 2 & 3 will be examined considering the finances of Japanese side.

2. **Japan's Grant Aid scheme**

The Timor-Leste side understands the Japan's Grant Aid Scheme and the necessary measures to be taken by the Government of Timor-Leste as explained by the Team and described in Annex-3 and Annex-4 of the Minutes of Discussions signed by both sides on Marh 27th, 2003.

3. **Schedule of the Study**

JICA will complete the final report in accordance with the confirmed items and will send it to Timor-Leste around September 2003.

4. **Other relevant issues**

(1) Land Acquisition and Level the sites

The Timor-Leste side shall allocate budgetary appropriation to secure the land and to level the sites for Bemos water treatment plant and Benamauk water treatment plant, prior to commencement of work on condition that Grant Aid is extended.

(2) Proper Use and Maintenance

Timor-Leste side shall allocate budgetary appropriation, collect the water rate, and assign the necessary staff for proper and effective operation and maintenance for the water supply facilities covered by the Project through Water and Sanitation Services Department.

(3) Water Charge System

Water Charge System of Dili is now in final stage of norms. Timor-Leste

side said that water charge system for Dili shall be started definitely by the end of this year (2003).

(4) Privatization Issue

At this stage, Government of Timor-Leste and WSS (Water and Sanitation Service Department) have no plan for privatization of Water Supply system.

(5) No Duplication

WSS has no plan as of now to install the pipelines which are planned in the Basic Design, namely, main pipelines in Zone 1, 5, 6, 7, and 8 (details in the report). WSS will not duplicate the planned pipelines under the Basic Design among other donors.

(6) Necessary Undertakings

Japanese side strongly emphasized that the necessary undertakings, described in Annex-4 in the Minutes of Discussions signed by both side on the March 27th, 2003, are standard mandatory requirements for the smooth implementation of the Project by the Timor-Leste side, without which the Project cannot proceed.

The Timor-Leste side explained that certain commitments in said Annex-4, items 9(2), 10 and 11, are currently the subject of negotiation between the Government of Japan and the Government of Timor-Leste, in the context of the Agreement to be signed by the two parties on Technical Cooperation and the Japan Overseas Cooperation Volunteers.

Both sides agreed on the other items in said Annex-4, and further agreed to exert effort to get mutual consent of the whole items by early September 2003.

Annex-1 The Project Components

(Phase1 : Dili Water Supply System Improvement Project)

1) Bemos Water Treatment Plant

Category of Work	Facilities & Equipment	Remarks
1. Civil Work	Distribution well -1 unit	New
	Mixing Flume -2 units	New
	Wash-water Tank -1 tank	New
2. Architectural Work	Office House (Rehabilitation)-1 house	Rehabilitation
	Generator House (Rehabilitation)-1 house	Rehabilitation
3. Mechanical Work	Water Treatment Unit -4 units	Replacement
	Chemical Dosing Equipment. -1 system	Replacement
	Disinfecting Equipment -1 system	Replacement
4. Electrical Work	Power Distribution System –1 system	Replacement
	Monitoring Equipment -1 system	New
	Standby Generator Unit -1 unit	Replacement

2) Lahane Water Treatment Plant

Category of Work	Facilities & Equipment	Remarks
1. Civil Work	Raw Water Mains -2 pipelines (Bemori and Benamouk lines, about 7.3 km)	New Line
	Receiving Tank-1 tank	Replacement
2. Architectural Work	Office House –1 house	Rehabilitation
3. Mechanical Work	Suspended Solid Contact Clarifier -1 tank	Rehabilitation
	Rapid Sand Filters -3 filters	Rehabilitation
	Chemical Dosing Equipment -1 system	Replacement
	Disinfection Equipment. -1 system	Replacement
4. Electrical Work	Incoming Power Receiving Sys.–1 system	Replacement
	Power Distribution System –1 system	Replacement
	Monitoring Equipment -1 system	New
	Standby Generator -1 unit	Replacement

3) Benamauk Water Treatment Plant

Category of Work	Facilities & Equipment	Remarks
1. Civil Work	Distribution Well –1 unit	New
	Wash-water Elevated Water Tank -1 tank	New
2. Architectural Work	Operation House-1 house	Rehabilitation

	Staff House - 1house	New
3. Mechanical Work	Water Treatment Unit -2 units	Replacement
	Chemical Dosing Equipment -1 system	Replacement
	Disinfection Equipment-1 system	Replacement
4. Electrical Work	Incoming Power Receiving Sys. -1 system	Replacement
	Power Distribution System –1 system	Replacement
	Monitoring Equipment -1 system	New
	Standby Generator Unit -1 unit	Replacement

4) **Water Distribution Network for Zone 1, 5, 6, 7, and 8**

Size (mm)	Length (m) Approx.
φ 80	2,618
φ 100	6,841
φ 150	8,415
φ 200	1,792
Total	19,603

5) **Equipment Supply**

Basic Water Quality Analysis Sets

Jar-Tester

Saddles and Drills

6) **Software Component**

Technical Support for service pipes planning

Technical Support for water quality analysis technique

Appendix-5

Estimated Cost Born by the Recipient Country

Appendix-5 Estimated Cost Born by the Recipient Country

Based on the undertaking works clarified in Section 2-2 in Chapter 2, the cost was estimated for the respective kind of work in each phase as shown in the following tables. The total cost of the responsible work of the recipient country amount to 508,150 US$ consisting of 81,900 US$ in Phase 1, 226,400 in Phase 2 and 199,850 in Phase 3. These costs shall be shouldered by the Timor-Leste Government.

Table-1 Costs of the Recipient Country in Phase-1

City & Towns	Facilities	Item of Work	Quantity/Dimension	Cost	
				US$	M. Yen
1.Dili	1)Bemos WTP	Land acquisition	A=200m^2	20,000	
		Gate & Fence	H=2m L=100m	3,500	
	Subtotal			23,500	
	2)Benamauk WTP	Land acquisition	Staff house 90m^2	8,500	
		High voltage incoming line & drop wiring	20kv L=1.2km	19,200	
		Rehab. of access road	L=1200m	24,000	
		Demolition & removal of existing wall		500	
		Construction of concrete block wall	H=2.0m L=26m	5,200	
	Subtotal			57,400	
	Total			80,900	
2. General	1 city	Cost of water	Water for washing, dilution water and test run	1,000	
Grand Total				**81,900**	**9.9**

Table-2 Costs of the Recipient Country in Phase-2

City & Towns	Facilities	Item of Work	Quantity/Dimension	Cost	
				US$	M. Yen
1.Same	1)Merbati Water Intake	Land acquisition	A=50m^2	1,500	
		Land rent	Temporary road A=800m^2 (200x4)	9,600	
		Compensation	Crops A=400m^2	1,200	
		Gate & Fence	H=2m L=80m	2,800	
	2)Merbati Service Reservoir	Land acquisition	A=400m^2	12,000	
		Gate & Fence	H=2m L=100m	3,500	
	Subtotal			30,600	
	3)Darelau Water Intake	Gate & Fence	H=2m, L=20m	700	
	4)Darelau Raw Water Mains	Compensation	Crops A=300m^2	900	
	5)Hularua Service Reservoir	Land acquisition	A=100m^2	3,000	
		Gate & Fence	H=2m L=40m	1,400	
	Subtotal			6,000	
	6)Kotalala Raw Water Mains	Compensation	Crops A=1200m^2 (400x3)	3,600	
	Subtotal			3,600	
	Total			40,200	
2.Ainaro	1)Sarai Water Intake	Land acquisition	A=50m^2	1,500	
		Land rent	Temporary road A=3900m^2 (780x5)	31,200	
		Compensation	Crops A=1000m^2	3,000	
		Gate & Fence	H=2m L=30m	1,050	
	2)Nugupo WTP	Land acquisition	2500m^2	75,000	
		High voltage incoming line & drop wiring	20kv L=3.0km	48,000	
		Gate & Fence	H=2m L=270m	9,450	
		Rehab. of access road	L=800m	16,000	
	Total			185,200	
3.Genaral	3 cities	Cost of water	Water for washing, dilution water and test run	1,000	
Grand Total				**226,400**	**27.2**

Table-3 Cost of the Recipient Country in Phase-33

City & Towns	Facilities	Item of Work	Quantity/Dimension	Cost	
				US$	M. Yen
1.Ermera	1) Haturegas Raitara Water Intake	Land acquisition	A=110m^2	3,300	
	2) Raw Water Mains	Land rent	Temporary road A=1800m^2 (360x5)	14,400	
		Compensation	Crops A=750m^2 (150x5)	2,250	
	3) New WTP	Land acquisition	A=1600m^2	48,000	
		Low voltage incoming line & drop wiring	200v L=250m	3,000	
		Gate & Fence	H=2m L=140m	4,900	
		Repair of access road	L=300m	6,000	
	Total			81,850	
2.Maubisse	1) Bukana Water Intake	Land acquisition	A=50m^2	1,500	
		Compensation	Crops A=50m^2	150	
	2) Bukana Raw Water Mains	Compensation	Crops A=1800m^2 (600x3)	5,400	
	Subtotal			7,050	
	3)Raikuak Ulun Water Intake	Land acquisition	A=250m^2	7,500	
		Compensation	Crops A=100m^2	300	
		Rehabilitation of access road	L=3000m	60,000	
	4)Raikuak Ulun Raw Water mains	Compensation	Crops A=2700m^2 (900x3)	8,100	
		Land rent	Temporary road A=2800m^2 (700x4)	22,400	
		Compensation	A=2000m^2	6,000	
	5) Leputo Service Reservoir	Land acquisition	A=50m^2	1,500	
		Gate & Fence	H=2m L=40m	1,400	
	Subtotal			107,200	
	6) Erulu Water Intake	Land acquisition	A=60m^2	1,800	
	7) Erulu Raw Water Mains	Compensation	Crops A=450m^2 (150x3)	1,350	
	Subtotal			3,150	
	Total			117,400	
3.General	2 cities	Cost of water	Water for washing, dilution water and test run	600	
Grand Total				**199,850**	**24.1**