Town	***No. & Facility:***	***Year of Construction***	***Financed by:***
Viqueque	02 - Transmission Main	1997-98, initially 1950s	

Existing Condition:

Diameter: GSP 6-inch GSP
Length: 10 km
Function: Transmit spring water to the town
Accessories:
Break pressure tank: 2
Pipe bridge: 3

Photograph:

(Date:)

Evaluation:

Some sections of transmission main on slopes are vulnerable to damage especially those located on slopes.
The existing pipe bridges are not properly designed and constructed

Rehabilitation Plan:

1) Basic Consideration:

Pipe realignment is necessary including the reconstruction of pipe bridges
Routine maintenance to include pipe route patrol must be enhanced

2) Civil Work:

Construction of pipe bridges x 3 sets: 2 x 40 m (steel beam with abutment) + 1 x 20 m(abutment)

3) Piping work:

Pipe realignment of approximately 2 km x 150mm

4) Mechanical work: none

5) Electrical work: none

6) Miscellaneous: none

Estimated cost:	***Construction schedule:***	***Priority:***
US$252,930		B-1

Town	***No. & Facility:***	***Year of Construction***	***Financed by:***
Viqueque	03 - Break Pressure Tank No.1		

Existing Condition:

Structure: Concrete
Shape: Rectangular
Dimension: L 3m x W 2.5m x H 2m (approximately)
Volume: 15 m^3
Function: Pressure stabilization
Source of Water: Loihunu spring
Ground level (amsl):
Accessories:
- Ventilation
- Manhole
- Outlet valve

Photograph:

(Date: October 2000)

Evaluation:

- In operation
- Requires adequate protection

Rehabilitation Plan:

1) Basic Calculation

2) Civil Work:
- Construction of security fence

3) Piping work: none

4) Mechanical work: none

5) Electrical work: none

6) Miscellaneous: none

Estimated cost:	***Construction schedule:***	***Priority:***
US$1,800		B-2

Town	***No. & Facility:***	***Year of Construction***	***Financed by:***
Viqueque	04 - Existing Reservoir		

Existing Condition:

Facility: Service reservoir
Structure: Concrete
Shape: Rectangular, 4 basins
Dimension:
Capacity:
Function: Storage
Source of Water: Loihunu spring (Builua)
Ground level (amsl):
Accessories:

Photograph:

(Date:)

Evaluation:

Not in operation due to damaged pipes

Rehabilitation Plan:

1) Basic Consideration:

To activate this reservoir requires repair and rehabilitation including the pipelines
Requires appropriate security fence to maintain water quality and minimize the risk of contamination
Chlorination of the water supply is necessary

2) Civil Work:

Construction of security fence
Installation of water level gauge
Repair of the concrete wall

3) Piping work:

Repair of 75mm x 500 m
Installation of flow meter and control valves

4) Mechanical work: none

5) Electrical work: none

6) Miscellaneous:

Installation of chlorine dosing device

Estimated cost:	***Construction schedule:***	***Priority:***
US$18,251		B-2

Town	***No. & Facility:***	***Year of Construction***	***Financed by:***
Viqueque	05 - Proposed Reservoir		

Existing Condition:

Photograph:

Evaluation:

A new reservoir will be necessary for the new town to store water required to meet the fluctuations in water demand

Rehabilitation Plan:

1) Basic Calculation

Required storage capacity = Max day demand for new town * 8 hrs storage

Where: Max day demand = 1774 * 40% (assumed to be 40% of total)

Required storage capacity = 1774 * 0.40 * 8/24 = 250 m^3

2) Civil Work:

Construction of the new reservoir with the following specifications.

Shape & dimension: 2 reinforced concrete basins, 10m x 8m x 2.5m

Appurtenances: flow controller, flow meter, ventilation, drains and overflow

Construction of security fence.

3) Piping work:

Pipe realignment 100mm x 500m

4) Mechanical work: none

5) Electrical work: none

6) Miscellaneous:

Installation of chlorination equipment

Estimated cost:	***Construction schedule:***	***Priority:***
US$45,253		B-2

Town	***No. & Facility:***	***Year of Construction***	***Financed by:***
Viqueque	06 - Proposed Distribution Main		

Existing Condition:	***Photograph:***

Evaluation:

The proposed distribution main will be constructed to replace the existing GSP 2-inch & 3-inch, which will be insufficient with increase in water demand for the year 2003.

Rehabilitation Plan:

1) Basic Consideration:

For effective distribution of water the distribution network must be adequate.

2) Civil Work: none

3) Piping work:

Installation of 100mm x 1.0 km and 75mm x 2.0 km
Installation of gate valves 100mm x 3 sets; 75mm x 2 sets; 50mm x 2 sets
Installation of air release valves and blow-off

4) Mechanical work: none

5) Electrical work: none

6) Miscellaneous: none

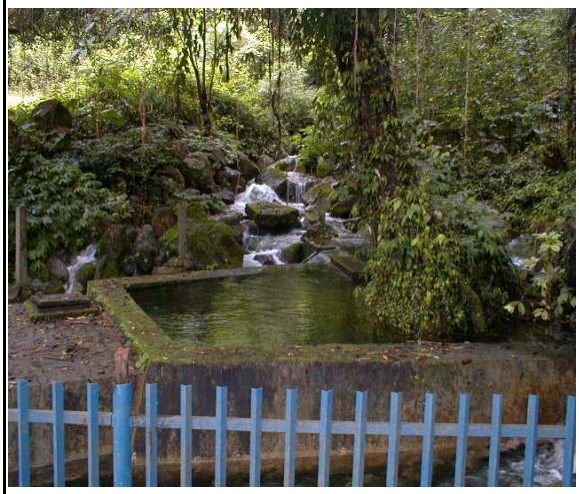
Estimated cost:	***Construction schedule:***	***Priority:***
US$61,516		B-1

Town	***No. & Facility:***	***Year of Construction***	***Financed by:***
Same	01 - Darelau Intake		

Existing Condition:

Facility: Intake weir, collecting chamber (concrete)
Dimension:
Observed flow rate: 20L/sec - 30 L/sec
Function: Raw water intake
Source of Water: Darelau spring
Ground level (amsl):
Accessories:
Intake pipes: GSP 3-inch

Photograph:



(Date: April 2000)

Evaluation:

In operation
Lacks routine maintenance
Not securely protected nor covered

Rehabilitation Plan:

1) Basic Calculation

2) Civil Work:
Installation of appropriate cover

3) Piping work:
Installation of flow meter and control valve

4) Mechanical work: none

5) Electrical work: none

6) Miscellaneous: none

Estimated cost:	***Construction schedule:***	***Priority:***
US$2,834		B-2

Town	***No. & Facility:***	***Year of Construction***	***Financed by:***
Same	02 - Darelau Transmission Main		

Existing Condition:

Facility: Transmission main
Diameter: GSP 3-inch
Length: GSP 3-inch
Function: To convey water from Darelau to Hularua reservoir
Accessories:

Photograph:

(Date:)

Evaluation:

Numerous leaks were seen along the pipeline
The pipeline is vulnerable to damage
Pipeline is not properly installed

Rehabilitation Plan:

1) Basic Consideration:

Requires repair and routine maintenance

2) Civil Work: none

3) Piping work:

Pipe realignment/relocation GSP 75mm x 120 m
Installation of air release valves, blow-off x 3 sets
Installation of pipe bridges at 2 locations GSP 3-inch x 30 m

4) Mechanical work: none

5) Electrical work: none

6) Miscellaneous: none

Estimated cost:	***Construction schedule:***	***Priority:***
US$5,724		B-1

Town	***No. & Facility:***	***Year of Construction***	***Financed by:***
Same	03 - Posto Reservoir		

Existing Condition:

Facility: Elevated s ervice reservoir
Structure: Reinforced concrete
Shape: Rectangular
Dimension: 5m x 5m x 2.0m (approximately)
Capacity: 50 m^3
Function: Storage
Source of Water: Kotalala Spring
Ground level (amsl):
Accessories:
Inlet: GSP 3-inch

Photograph:

(Date:)

Evaluation:

Not in use due to damage caused by the violence

Rehabilitation Plan:

1) Basic Calculation

Required storage capacity: 1554m3 x 15% x 8hrs/24hrs = 50 m^3
Storage capacity of existing = 50 m^3
No need to expand.

2) Civil Work:

Installation of security fence

3) Piping work:

Installation of pipes 75mm x 50m, flow meter, controller and air release valve

4) Mechanical work: none

5) Electrical work: none

6) Miscellaneous:

Installation of chlorine dosage devices (pipe injection type)

Estimated cost:	***Construction schedule:***	***Priority:***
US$8,102		B-1

Town	***No. & Facility:***	***Year of Construction***	***Financed by:***
Same	04 - Hularua Reservoir		

Existing Condition:

Facility: Service reservoir
Structure: Reinforced concrete
Shape: Rectangular
Dimension: 5.0m x 5.0m x 1.2m
Capacity: 30m^3
Function: Storage
Source of Water: Darelau Spring
Ground level (amsl):
Accessories:

Photograph:

(Date:)

Evaluation:

In good working condition

Rehabilitation Plan:

1) Basic Calculation

Required storage capacity: 1554m^3 x 25% x 8hrs/24hrs = 190m^3 > 30m^3
It needs expansion of the reservoir.

2) Civil Work:

Construction of new storage reservoir with volume = 160 m^3 including appurtenances
Construction of fence and staff house.

3) Piping work:

Realignment of inlets and outlets including the installation of flow meter and controller

4) Mechanical work: none

5) Electrical work: none

6) Miscellaneous: none

Estimated cost:	***Construction schedule:***	***Priority:***
US$26,171		B-2

Town	***No. & Facility:***	***Year of Construction***	***Financed by:***
Same	05 - Merbati Reservoir		

Existing Condition:

Facility: Service reservoir
Structure: Reinforced Concrete
Shape: Rectangular
Dimension: 8.4m x 5.7m x 3.4m
Capacity: 150 m^3
Function: Storage
Source of Water: Merbati Spring
Ground level (amsl):
Accessories:

Photograph:

(Date:)

Evaluation:

In good working condition

Rehabilitation Plan:

1) Basic Calculation

Required storage: 1554 m^3 x 45% x 8hrs/24hrs = 230 m^3 > 150 m^3
It needs expansion.
It is assumed that 45% of the total service area is served by this reservoir.

2) Civil Work:

Construction of the service reservoir with volume = 80 m^3
dimension: 5m x 5m x 3.4m
Construction of fence and staff house

3) Piping work:

Installation of pipe connections including overflow, ventilation and drain.

4) Mechanical work: none

5) Electrical work: none

6) Miscellaneous:

Installation of chlorination devices

Estimated cost:	***Construction schedule:***	***Priority:***
US$27,300		B-2

Town	***No. & Facility:***	***Year of Construction***	***Financed by:***
Same	06 - Distribution Main Installation		

Existing Condition:	***Photograph:***
	(Date:)

Evaluation:

Most of the small diameter mains were damaged by the post referendum violence and needs replacement.

Rehabilitation Plan:

1) Basic Consideration

To establish three supply zones in the service area including installation of flow control valves and pipe interconnections.

2) Civil Work: none

3) Piping work:

Installation of distribution main 32mm x 3 km + 25mm x 3.0 km including gate valves (150mm x 2 + 75mm x 10), air release valves and blow-off.

4) Mechanical work: none

5) Electrical work: none

6) Miscellaneous: none

Estimated cost:	***Construction schedule:***	***Priority:***
US$52,428		B-1

Town	***No. & Facility***	***Year of Construction***	***Financed by:***
Ainaro	01 - Raw Water Transmission Channel		

Existing Condition:

Facility: Raw water concrete channel

Technical Description:

Concrete-made conduit consisting of 2 channels x 80 m, one closed conduit is for water supply and the open channel (25 cm wdt. x 25 cm ht.) for irrigation.

Function: to transmit raw water to the WTP

Photograph:

(Date:)

Evaluation:

In operation but several of the spans have broken concrete covers.

Rehabilitation Plan:

1) Basic Consideration:

After rainfall, surface runoff normally enters into the channel through the broken covers resulting to the degradation of water quality.

2) Civil Work:

Installation of new concrete covers at approximately 50 m span (or 50 pcs.) with the following specifications:

Width = 35.0 cm Length = 1.0 m Thickness = 5.0 cm

3) Piping work: none

4) Mechanical work: none

5) Electrical work: none

6) Miscellaneous: none

Estimated cost:	***Construction schedule:***	***Priority:***
US$236		A-2

Town	***No. & Facility:***	***Year of Construction***	***Financed by:***
Ainaro	02 - Nugupo WTP		

Existing Condition:

Function: Treatment of raw water
Ground level (amsl):
Production Capacity: 15L/sec
Process: grit chamber - 13 m x 3 m x 2.4 m
slow sand filter x 2 basins - 7 m x 22 m
Design filtration rate: 4.2m/day
Source of Water: Spring water through the channel
Ground level:
Accessories:
Storage reservoir: made of reinforced concrete, rectangular shaped (W 7m x L 10m x H 3.1m) with a storage capacity 100m3, equipped with chlorine dosage devices

Photograph:

(Date:)

Evaluation:

The WTP is not operational due to lack of routine maintenance. Thick layer of silt and clay had accumulated in the filter media causing operational problems such as blockages. The grit chamber is not properly designed and constructed. Water level remains always low due to the absence of flow control.

Rehabilitation Plan:

1) Basic Consideration:

Rehabilitation of the grit chamber including the installation of flow control devices to avoid the entry of floating matters into the SSF.

Routine maintenance of the WTP by regular washing of the filter media.

2) Civil Work:

Rehabilitation of the grit chamber to include the following:

Construction of overflow weir at the grit chamber.

Specification of weir: width = 30 cm, height = 30 cm

Construction of concrete apron for washing sand (10m x 20mx 20cm thickness)

3) Piping work:

Installation of flow control valves such as 150mm butterfly valves

4) Mechanical work: none

5) Electrical work: none

6) Miscellaneous: none

Estimated cost:	***Construction schedule:***	***Priority:***
US$7,814		A-1

Town	***No. & Facility:***	***Year of Construction***	***Financed by:***
Ainaro	03 - Kamilaran 1 Reservoir		

Existing Condition:

Facility: Service reservoir
Structure: Reinforced concrete
Shape: Rectangular
Dimension: 5.5 m x 5.5 m x 2 m
Capacity: 50 m^3
Function: Storage
Source of Water: Untreated water from Irrigation Canal
Ground level:
Accessories:

Photograph:

(Date:)

Evaluation:

In operation but lacks routine maintenance. Sand is deposited in the tank.
Raw water stored in this reservoir is supplied to the consumers without treatment

Rehabilitation Plan:

1) Basic Consideration:

Transmission main that connects this reservoir should be realigned to the WTP so that the raw water will be treated prior to distribution. Regular routine maintenance should be
Storage required: water demand 1025m3/day x 8/24 = 342m3
Existing reservoir: 200m3, therefore, 342 - 200 = 142m3 storage required.

2) Civil Work:

Construction of new service reservoir (8m x 8m x 2.5m) with necessary appurtenances beside the existing
Construction of security fence

3) Piping work:

Pipe realignment of 150mm x 20m including installation of flow meter and control

4) Mechanical work: none

5) Electrical work: none

6) Miscellaneous: none

Estimated cost:	***Construction schedule:***	***Priority:***
US$21,842		A-2

Town	***No. & Facility:***	***Year of Construction***	***Financed by:***
Ainaro	04 - Kamilaran 2 Reservoir		

Existing Condition:

Facility: Service reservoir
Structure: Reinforced concrete
Shape: Rectangular
Dimension: 6.0m x 4.0m x 2.1m
Capacity: $50m^3$
Function: Storage
Source of Water: Nugupo WTP
Ground level (amsl):
Accessories:

Photograph:

(Date:)

Evaluation:

In operation but the staff house was damaged

Rehabilitation Plan:

1) Basic Consideration:

Requires protection such as security fence

2) Civil Work:

Repair of staff house including re-installation of the roofing system (Area = approximately 3m x 6m)
Construction of security fence.

3) Piping work:

Installation of flow control and measuring devices.

4) Mechanical work: none

5) Electrical work: none

6) Miscellaneous: none

Estimated cost:	***Construction schedule:***	***Priority:***
US$9,622		A-2

Town	***No. & Facility:***	***Year of Construction***	***Financed by:***
Ainaro	05 - Distribution Main		

Existing Condition:

Diameter : GSP 6-inch to 1-inch

Function: For water supply distribution to consumers

Accessories:

Gate valves

Photograph:

(Date:)

Evaluation:

In operation but experiences substantial water losses and wastage due to pipe leaks and pipe blockages.

Rehabilitation Plan:

1) Basic Consideration

Rearrangement of distribution mains is required to establish two supply zones in the service a
Repair of the pipe leaks and cleaning/clearing of blockages.
Requires regular flushing of the pipelines.

2) Civil Work: none

3) Piping work:

Pipe installation from Reservoir 1 & 2: 150mm x 3.9 km; 75mm x 400 m;
Gate valve installation: 150mm x 6 sets; 100mm x 3 sets; 75mm x 2 sets
Butterfly valve installation: 150mm x 1 set
Works required for isolating supply zones

4) Mechanical work: none

5) Electrical work: none

6) Miscellaneous: none

Estimated cost:	***Construction schedule:***	***Priority:***
US$163,054		A-1

Town	***No. & Facility:***	***Year of Construction***	***Financed by:***
Aileu	01 - Mantane River Infiltration Gallery		

Existing Condition:

Source of Water: Mantane River
Function: Draws water and pumps to Gov't. Housing Reservoir
Major facilities: water collection pipe & 7 chamber, pump pit & booster pumping station
Water collection pipe specification: 2 sets GSP 3-inch x 50 m laid 100 cm below the river bed.
Pump type: Centrifugal pump
Pump capacity: 2 sets of 1m3/min (or 16 L/sec) x 83 m head x 22 kW (1 duty & 1 standby)
Generator: damaged
Accessories:
Pump panel - heavily damaged
Ground level (amsl):

Photograph:

(Date:)

Evaluation:

The infiltration gallery is not properly designed and constructed resulting to low quantity and quality of water.

The pumping facilities are in good condition, however the generator set and other electrical equipment were heavily damaged during the violence.

Rehabilitation Plan:

1) Basic Consideration

Reconstruction of the infiltration gallery to an acceptable standard will improve water production from this source.

2) Civil Work:

Construction of the infiltration gallery with the following specifications:
Pump pit: 2.0m dia x height 5.0m - one basin
Pumping house: 6.0m x 8.0m with two rooms
Construction of the security fence.

3) Piping work:

Diameter and length: 200mm x 200m
Depth: 2.5m below the groundwater level

4) Mechanical work: none

5) Electrical work:

Watt-hour Meter Box x1set
Main Power Switch Panel x1set
Generator Set 100kVA x1set
Fuel Tank 450L x1set
Pump Control Board x1set

6) Miscellaneous: none

Estimated cost:	***Construction schedule:***	***Priority:***
US$82,710		B-1

Town	***No. & Facility:***	***Year of Construction***	***Financed by:***
Aileu	02 - Govt. Housing Reservoir		

Existing Condition:

Future: Service reservoir
Structure: Reinforced concrete
Shape: Rectangular
Dimension: 8.0 m x 8.5 m x 3.5 m
Capacity: 175m^3
Function: Storage
Source of Water: Mantane River Infiltration Gallery
Ground level (amsl):
Accessories:
Chlorine dosing equipment

Photograph:

(Date:)

Evaluation:

Not in use due to non-operation of the infiltration gallery which is the water source.

Rehabilitation Plan:

1) Basic Calculation

2) Civil Work:
Installation of water level gauge.

3) Piping work:
Installation of 150mm flow meter and control valve

4) Mechanical work: none

5) Electrical work: none

6) Miscellaneous: none

Estimated cost:	***Construction schedule:***	***Priority:***
US$6,122		B-2

Town	***No. & Facility:***	***Year of Construction***	***Financed by:***
Aileu	03 - Marele Reservoir 1		

Existing Condition:

Facility: Service reservoir
Structure: Reinforced Concrete
Shape: Rectangular
Dimension:
Capacity: 50m ^{3}
Function: Storage
Source of Water: Naufaizaram Spring
Ground level:
Accessories:

Photograph:

(Date:)

Evaluation:

In use

Rehabilitation Plan:

1) Basic Calculation

2) Civil Work:

Installation of water level gauge.

3) Piping Work:

Installation of 75mm flow meter and control valve

4) Mechanical work: none

5) Electrical work: none

6) Miscellaneous: none

Estimated cost:	***Construction schedule:***	***Priority:***
US$3,451		B-2

Town	***No. & Facility:***	***Year of Construction***	***Financed by:***
Aileu	04 - Proposed Reservoir		

Existing Condition:

Photograph:

Evaluation:

Rehabilitation Plan:

1) Basic Calculation

Total storage requirement in 2003 = 1161 m^3/day x 8/24 = 385 m^3
Existing storage capacity = 300 m^3
Storage = 385 - 275 = 115 m^3

2) Civil Work:

Construction of the service reservoir with the capacity of 115 m^3 including the necessary appurtenances.
Size: 8m x 8.5m x 3.5m at a similar size as the existing reservoir for operational purpose
Construction of the security fence

3) Piping Work:

Pipe interconnection to the existing including the installation of flow meter and control valve

4) Mechanical work: none

5) Electrical work: none

6) Miscellaneous: none

Estimated cost:	***Construction schedule:***	***Priority:***
US$36,461		B-2