

PRELIMINARY STUDY
ON
THE PROJECT FOR
IMPROVEMENT OF WATER SUPPLY SYSTEM
IN
HONIARA AND PROVINCIAL CENTERS
IN THE SOLOMON ISLANDS

QUESTIONNAIRE

JULY 2007

JAPAN INTERNATIONAL COOPERATION AGENCY (JICA)

CONTENTS

Preface

1. General Information	1
2. Confirmation on the Requested Components	3
3. Current Condition of Water Supply Service	7
4. Current Condition of the Existing Water Supply Facilities	9
5. Current Operation, Maintenance and Management	10
6. Water Supply Improvement Project.....	19
7. Environmental and social considerations	20
8. Laws, Design Criteria, etc	20
9. Others	20

Preface

This questionnaire aims to clarify the current condition of water supply services in Honiara, Auki and Noro cities as a basis for considering Japanese assistance. If you find any questions which might not be relevant to the area or the country, please suggest a more appropriate alternative question or revision and provide answers. It is not necessary to follow the form presented here as long as the content is dealt with. Any material already prepared which accurately covers any of the questions may be submitted in its original form.

A digital file of this questionnaire is attached. You may write answers into the file and return it to the Team with a hard copy. The Team is open to any questions you may have.

1. General Information

National Economic Recovery, Reform and Development Plan (2003- 2006)

1) Has the above plan been revised since 2006?

Yes. The new Government came in and developed a new plan called the Grand Coalition for Change Government Policy Framework Document. This plan was then later translated into an action plan framework. In those new plans, not much has been clearly said on the water sector.

2) What is the relationship between your request project and this Plan?

Our request was premised on the Government's plan of 2003 to 2006 in relation to Water Resources and Water Supplies, where the Government wants to see, "Improving urban water supply and sewerage disposal systems and the capacity of SIWA to deliver" and "reforming and capacity building of the Water Resources Division and SIWA".

1.2 Development of the Solomon Islands Urban Water & Sewerage Infrastructure Project Design Study

1) What is the relationship between your request project and this Study?

- *AUSAID conducted the design study;*
- *AUSAID could not implement the findings of the study due to a shift in their aid policy for Solomon Islands heavily towards improving law and order, governance of Government machinery, and education and health;*
- *The JICA development study obtained data from the design study.*

1.3 Basic statistics for the target areas (Honiara, Auki and Noro Cities)

1) Population growth rate

- *Honiara City @*
- *Auki City @ 4.1 percent*
- *Noro City @ 18.1 percent*

2) Health data including waterborne disease

Although not site specific, some data in general for health is shown in Table 2.1 and 2.2 below.

Table 2.1: Some new cases of diseases in Solomon Islands for year 2006

<i>Diseases</i>	<i>Age group</i>			<i>Total</i>
	<i><1</i>	<i>1- 4</i>	<i>>5+</i>	
<i>Fever</i>	16832	44276	85692	146800
<i>Skin disease</i>	2358	10818	34284	47460
<i>Watery diarrhoea</i>	2904	6640	7530	17074
<i>Bloody diarrhoea</i>	317	1050	1584	2951
<i>Red eye</i>	1818	4872	16210	22900
	<i>< 1</i>	<i>1 - 10</i>	<i>>11+</i>	
<i>Malaria</i>	11244	61599	95485	168328
<i>Total</i>	35473	129255	240785	405513

Table 2.2: The Total New Diarrhoea and ARI Cases for Solomon Islands since 2002 - 2005

Type of disease	Year			
	2002	2003	2004	2005
Diarrhoea	10815	13556	14565	22700
ARI	28457	17693	22147	33367
Hepatitis B	10086	11305	11891	13069

ARI - Acute Respiratory Infection

1.4 Infrastructure condition for the target areas and the surrounding areas
In order to examine the procurement of construction and water supply materials, explain in detail about the condition of the following infrastructure.

1) Main roads (appropriate route for transportation of equipment or materials in case of importing them from other countries)

- For Honiara, the sites of the project are accessible by some sealed and mostly unsealed roads of reasonably good conditions.
- For Auki, some roads are sealed while the others are mostly unsealed.
- Imported project materials and equipment will be unloaded in Honiara where they will be shipped again to Auki for off loading.

2) Railway

Not available anywhere in Solomon Islands.

3) Waterway

Not available. However, goods are ferried between Honiara and Auki or from island to island by sea using small cargo and passenger ships. Regular shipping services are available for ships travelling between Honiara and Auki.

4) Airport

Only one international airport for the Solomon Islands and it is located in the capital Honiara. Auki has a domestic airport. Small parcels can be sent to Auki from Honiara via air. For large and heavy items, no service is available by air, except for helicopter service.

5) Electric power

2. Confirmation on the Requested Components

The components and the costs of the project requested by the Solomon side are shown in Table 2-1 and Table 2-2.

Table 2-1 Requested Components and Costs

No.	The requested project			The project proposed in the Mid-Term Facility Improvement Plan		
	Component	Description	Amount (US\$)	Component	Description	Amount (US\$)
A. Honiara						
1	Water Source Development (1) Borehole drilling work (2) Procurement of submersible bore pump (3) Water conveyance pipeline (4) Borefield collector tank (5) High voltage transmission line (6) Power transformer	- 13 bores, 100m deep x 200mm casing - 17 units, 800m ³ /day x 50m head - 150mm PVC x 5km - 4 tanks (3 x 100m ³ , 1 x 150m ³) - 5km - 4 units, 200kVA	2,203,000	Water Source Development (1) Borehole drilling work (2) Procurement of submersible bore pump (3) Water conveyance pipeline (4) Borefield collector tank (5) High voltage transmission line (6) Power transformer	- 16 bores, 100m deep x 200mm casing - 20 units, 800m ³ /day x 45m head - 150mm PVC x 6.2km - 4 tanks (1 x 150m ³) - 6.2km - 4 units, 200kVA	2,262,418
2	Water Treatment Facility (1) Disinfection plant (2) Intermediate water treatment facility	- 7 places, 2,900 to 4,400m ³ /day - 3 places, 2,000 to 4,300m ³ /day	1,458,000	Water Treatment Facility (1) Disinfection plant (2) Intermediate water treatment facility	- 7 places, 2,400 to 4,400m ³ /day - 3 places, 2,000 to 4,300m ³ /day	1,285,882
3	Pumping Station (1) Tasahe borefield (2) Titinge borefield (3) Skyline borefield (4) Naha/Vura borefield	- 3 units, 1,200m ³ /day x 80m head - 3 units, 1,600m ³ /day x 60m head - 3 units, 1,200m ³ /day x 60m head - 3 units, 1,200m ³ /day x 50m head	470,000	Pumping Station (1) Tasahe borefield (2) Titinge borefield (3) Skyline borefield (4) Borderline New borefield	- 3 units, 1,600m ³ /day x 80m head - 3 units, 1,600m ³ /day x 80m head - 3 units, 1,600m ³ /day x 60m head - 3 units, 1,600m ³ /day x 40m head	435,829
4	Water Distribution Reservoir (1) Upper Tasahe reservoir (2) Titinge reservoir (3) Skyline reservoir (4) Lower West Kolaa reservoir (5) Panatina reservoir	- 2,500m ³ (addition to the existing) - 1,600m ³ (replacing the existing) - 900m ³ (addition to the existing) - 1,400m ³ (replacing the existing) - 1,800m ³ (addition to the existing)	1,029,000	Water Distribution Reservoir (1) Upper Tasahe reservoir (2) Titinge reservoir (3) Skyline reservoir (4) Lower West Kolaa reservoir (5) Panatina reservoir	- 1,600m ³ (addition to the existing) - 1,400m ³ (replacing the existing) - 1,550m ³ (addition to the existing) - 455m ³ (replacing the existing) - 2,000m ³ (addition to the existing)	699,775

2.1 Honiara City

Refer minutes of discussion dated 9th August 2007 between JICA Preliminary Study Team and SIWA for the revised requested components.

- 1) Detailed components, quantity, specification, cost breakdown and cost basis of each requested item (Item A.1-5).

Refer minutes of discussion dated 9th August 2007 between JICA Preliminary Study Team and SIWA for the revised requested components.

- 2) In order to clarify the basis of pipe diameters, detailed information (plan, longitudinal section, etc.) about the requested conveyance and transmission pipelines (Item A.1 (3))

- *SIWA commonly uses uPVC and mPVC pipes as well as other types of pipes such as the galvanised Iron, Polyethylene (PE), stainless steel (borehole risers) and cast iron pipes.*
- *the standards we used for our PVC pipes to conform to as follows:*
- *uPVC pipes – AS/NZS1477, Series 1, Rubber Ring Joints (RRJ), PN12;*
- *mPVC pipes – AS/NZS 4765, Series 1, RRJ, PN12.*

- 3) Detailed information about the types of intermediate water treatment facilities (Item A.2)

- *inline water filtering system capable of removing turbidity and other physical parameters.*
- *the JICA Development Study Report has more technical information on this type of treatment facilities available in the market.*
- *must be self-cleaning with little maintenance required.*
- *further information, refer discussion between Preliminary Study Team and SIWA.*

- 4) When will the land be acquired for constructing the above requested water supply facilities (Item A.1-5)?

As soon as the requested project has been confirmed positive to proceed, SIWA will start acquisition process to acquire all the required lands for the facilities well before their actual construction starts.

- 5) What are the procedures for acquiring the land (Item A.1-5)?

Documents with procedures for acquiring the lands for the facilities under the requested project have been issued by SIWA to the Preliminary Design Team. Refer to these documents for information on land acquisition procedures relating to Government and customary lands.

- 6) If you acquire the lands of the intermediate water treatment facilities, are their lands located within the city boundary or in the customary land (Item A.2 (2))?

For the treatment site at the Kongulai Pump Station, it will be on registered customary land and ensured that it will be located within the land easement currently leased by SIWA for its services there.

For other treatment sites, they will be located on the Government Land within the city boundary.

- 7) Budgetary arrangements for land acquisition, etc of the above facilities (Item A.1-5)

SIWA will acquire under its budget all lands that will be required for siting of all facilities under the requested project depending on the confirmation of the project and ensuring that it

acquires the lands well before the construction stage.

- 8) Budgetary arrangements for the cost of about USD\$150,000 for high voltage transmission lines (Item A.1 (5))

SIWA will cater for this in its annual budget depending on the confirmation of the requested project.

2.2 Auki City

Refer minutes of discussion dated 9th August 2007 between JICA Preliminary Study Team and SIWA for the revised requested components.

- 1) Detailed locations of the requested boreholes (Item B.1 (1))

Refer site visits by the JICA Preliminary Study Team and the SIWA for information and further confirmation.

- 2) Detailed components, quantity, specifications, cost breakdown and cost basis (Item B.1)

Refer minutes of discussion dated 9th August 2007 between JICA Preliminary Study Team and SIWA for the revised requested components.

- 3) Detailed drawings of the requested boreholes (Item B.1 (1))

The drawings and construction of the requested boreholes will be similar to those provided by the JICA in the Japanese Government Grant Aid Project for SIWA in 1997. Such borehole construction can be inspected on a site visit.

- 4) Determination basis for the conveyance pipe diameters (Item B.1 (3))

This should be calculated based on the total head and the quantity of water to be delivered to the distribution reservoir to meet the required demand.

- 5) When will the land be acquired for constructing the above requested water supply facilities (Item B.1)?

As soon as the requested project has been confirmed positive to proceed, SIWA will start acquisition process to acquire all the required lands for the facilities well before their actual construction starts.

- 6) Budgetary arrangements for land acquisition, etc of the above facilities (Item B.1)

SIWA will acquire under its budget all lands that will be required for siting of all facilities under the requested project depending on the confirmation of the project and ensuring that it acquires the lands well before the construction stage.

- 7) Current status of the project being implemented by Asian Development Bank (ADB) (Item B.1)

The project is intended to improve the existing infrastructure:

- *at the water source with construction of a new intake structure, which has been completed, for submersible pumps to be used;*
- *with the construction of a new receiving tank and extension of the old booster pump house, which have started and yet to be completed;*
- *with the construction of a new rising main (water conveyance pipe), which is not yet started; and with the construction of a new distribution reservoir, which yet to complete.*

- 8) Detailed information on layout, location, facility specification in the ADB project (Item B.1)

Refer to SIWA Project Proposal and Technical Specification document issued by SIWA to the Preliminary Study Team.

2.3 Noro City

Not considered based on the assessment conducted by the Preliminary Study Team.

- 1) Detailed components, quantity, specification, cost breakdown and cost basis of the possible option (Item 1-7 as shown in Table 2.2)
- 2) Priority of possible options (Item 1-7 as shown in Table 2.2)
- 3) Detailed information about the types of potable filters or treatment facilities (Item 3 as shown in Table 2.2)
- 4) When will the land be acquired for constructing the above possible option (Item 3-6 as shown in Table 2.2)?
- 5) Budgetary arrangements for land acquisition, etc of the above facilities (Item 3-6 as shown in Table 2.2)

3. Current Condition of Water Supply Service

3.1 Honiara City

- 1) Give a specific description of the current spring source situation by zone and season.
- 2) Give a narrative description of the current drinking water supply situation by zone, season and customer type.
- 3) Fill in Table 3.1 regarding the present water supply conditions.

3.2 Auki City

- 1) Provide drawings with the existing and future service areas indicated
- 2) Provide drawings with temporarily limited water supply areas indicated
- 3) Give a specific description of the current spring source situation by zone and season.
- 4) Give a narrative description of the current drinking water supply situation by zone, season and customer type.
- 5) Fill in Table 3.2 regarding the present water supply conditions.

3.3 Noro City

- 1) Give detail information about areas contaminated by saline water
- 2) Specify the details of the causes of saline water mentioned in “Water Quality Crisis in Noro and Proposal Seeking Emergency Assistance”.
- 3) Describe specific solutions to the saline water problem
- 4) Provide drawings with the existing and future service areas indicated
- 5) In which parts of existing service areas is water not served for any reason? Provide drawings of this (According to JICA study Report, service rate: 61%)
- 6) Give narrative description of the current drinking water supply situation by zone, season and customer type.

7) Fill in Table 3.3 regarding the present water supply conditions.

Table 3.1 Present Water Supply Conditions in Honiara City

No.	Zone	Water supply service condition			
		Approximate water pressure at customer tap (m)		Water supply frequency and hours in a day	
		Rainy season	Dry season	Rainy season	Dry season
1	A-Zone				
2	B-Zone				
3	C-Zone				
4	D-Zone				
5	E-Zone				

N.B.: If water is delivered by water tankers, advise this with the service population and the amount delivered per person or household.

Table 3.2 Present Water Supply Conditions in Auki City

No.	Zone	Water supply service condition			
		Approximate water pressure at customer tap (m)		Water supply frequency and hours in a day	
		Rainy season	Dry season	Rainy season	Dry season
1					
2					
3					

N.B.: If water is delivered by water tankers, advise this with the service population and the amount delivered per person or household.

Table 3.3 Present Water Supply Conditions in Noro City

No.	Zone	Water supply service condition			
		Approximate water pressure at customer tap (m)		Water supply frequency and hours in a day	
		Rainy season	Dry season	Rainy season	Dry season
1					
2					
3					
N.B.: If water is delivered by water tankers, please mention this with the service population and the amount delivered per person or household.					

4. Current Condition of the Existing Water Supply Facilities

4.1 Honiara City

- 1) Current situation of blockage for Konglai Spring source
 - What is the current situation of the blockage?
 - What is the percentage of intake water volume from the source compared with the normal condition?
- 2) Future possibility of the sinkhole blockage occurrence

4.2 Auki City

- 1) Detailed information about the facilities improved by ADB

4.3 Noro City

Not considered based on the assessment conducted by the Preliminary Study Team.

- 1) Layout drawings of existing water supply systems
- 3) Detailed information about existing water supply facilities

a. Pumping Station for Raw Water

- Average seasonal or monthly yield/ flow of water source
- Year of construction of pumping facility
- Year of rehabilitation or replacement
- Pumping design capacity
- Delivered quantity (daily average)

b. Conveyance and transmission pipelines

- Pipeline length by diameter
- Year of construction
- Leakage ratio and major causes
- Length of distribution pipe installed from 2003 to 2006

c. Service reservoir

- Capacity of service reservoir
- Year of construction
- Any problems

d. Treatment Plant

- Year of Construction
- Actual daily maximum water production
- Pumping capacity, Problems

e. Distribution Network

- Major distribution pipe length by diameter
- Year of construction
- Leakage ratio and major causes
- Length of distribution pipe installed from 2003 to 2006

5. Current Operation, Maintenance and Management

5.1 Operation and Maintenance

- 1) Specifically, give a description of the maintenance problems of Konglai Spring

Answer the following questions about each Honiara, Auki and Noro cities.

- 2) Describe current operation methods of the distribution system aimed at relieving water shortages, for example, water rationing by time or district.

Only water rationing is implemented based on situation and there is no set schedule.

- 3) Describe major operation and maintenance problems at facilities

Operation and Maintenance Plan not adopted and their functions not resourced both in terms of manpower and funding.

- 4) Give a description of the main causes of unaccounted water (Leakage, illegal connections, damaged water meters, etc)
- 5) Provide the list of equipment owned by SIWA for operation and maintenance work such as bulldozers, wheel loaders, vacuum cleaning vehicles, trailers, pick-up trucks, excavators, flow meters, leak detectors, etc.