



Attachment-1 Record of Discussion




**RECORD OF DISCUSSIONS**  
**ON**  
**THE PROJECT FOR IMPROVEMENT OF NON-REVENUE WATER**  
**REDUCTION CAPACITY FOR**  
**SOLOMON ISLANDS WATER AUTHORITY**  
**IN**  
**SOLOMON ISLANDS**  
**AGREED UPON BETWEEN**  
**SOLOMON ISLANDS WATER AUTHORITY**  
**AND**  
**JAPAN INTERNATIONAL COOPERATION AGENCY**

Honiara, 27<sup>th</sup> July 2012

  
Mr. Yoshinobu Takishita  
Resident Representative  
JICA Solomon Islands Office

  
Mr. Rence Sore  
Permanent Secretary  
Ministry of Mines, Energy and Rural  
Electrification

  
Mr. Richard Austin  
General Manager  
Solomon Islands Water Authority

Based on the minutes of meetings on the Detailed Planning Survey on the project for improvement on Non-Revenue Water reduction capacity for the Solomon Islands Water Authority in Solomon Islands (hereinafter referred to as "the Project") signed on 16 March 2012 between the Solomon Islands Water Authority (hereinafter referred to as "SIWA") and the Japan International Cooperation Agency (hereinafter referred to as "JICA"), JICA held a series of discussions with SIWA and relevant organizations to develop a detailed plan of the Project.

Both parties agreed the details of the Project and the main points discussed as described in the Appendix 1 and the Appendix 2 respectively.

Both parties also agreed that SIWA, the counterpart to JICA, will be responsible for the implementation of the Project in cooperation with JICA, coordinate with other relevant organizations and ensure that the self-reliant operation of the Project is sustained during and after the implementation period in order to contribute toward social and economic development of Solomon Islands.

The Project will be implemented within the framework of the Agreement on Technical Cooperation signed on 10 September 2008 (hereinafter referred to as "the Agreement") and the Notes Verbales exchanged between the Government of Japan (hereinafter referred to as "GOJ") on 31 May 2011 and the Government of Solomon Islands (hereinafter referred to as "GOSI") on 2 June 2011.

Appendix 1: Project Description  
Appendix 2: Main Points Discussed







## PROJECT DESCRIPTION

## I. BACKGROUND

In Solomon Islands, urban water is supplied by SIWA. However, there are a lot of issues to be solved in infrastructure, finance and human resources. Honiara's water supply coverage is 73% in 2006 and water is not supplied stably because of unstable water resources (spring water and groundwater) and deficient facilities. Also high Non-Revenue Water rate deteriorates the supply of water and financial situation. In this situation the government of Solomon Islands requested a development study in order to implement follow-up project for the water supply facilities damaged during the civil unrest and formulate a facility improvement plan for the water supply and sewerage systems for Honiara, Auki, Noro and Tulagi in 2003. Based on the request, JICA conducted the study for rehabilitation and improvement of SIWA's water supply and sewerage systems from 2005 to 2006. The study included an urgent rehabilitation plan for Honiara and urgent restoration plan for Auki or Tulagi, a facility improvement plan for the water supply and sewerage systems of Honiara, Noro, Auki and Tulagi for the target year 2010 and action plan for supporting capacity development of SIWA to strengthen its management. Currently based on the plan and action plan, a grant aid of the Project for Improvement of Water Supply System in Honiara and Auki in Solomon Islands is implemented and is supposed to prepare water resources facilities and construct transmission and distribution facilities. E/N was concluded in 2009. Since implementation had been delayed because of land problems, construction started in January 2012.

Implementation of the grant aid enables stable and safe water supply to the residents in the target area. However, non-revenue water (NRW) reduction is indispensable for sustainable operation and maintenance. Experienced staff is in short in SIWA. Then a short term expert on NRW reduction measures was dispatched from January 2010 to March 2010. Also NRW reduction project was requested to Japan targeting enhancement of NRW reduction capacity of SIWA staff.

Regarding management issue of SIWA, Pacific Region Infrastructure Facility (PRIF) supported to formulate SIWA Short Term Recovery Strategy and Action Plan (RAP) in May 2011. The primary objective of the RAP is to improve service levels and increase revenue of SIWA. AusAID concluded a MOU with SIWA for implementation of RAP in October 2011. The Project aims at supporting SIWA to achieve RAP, in collaboration with other development partners.

## II. OUTLINE OF THE PROJECT

Details of the Project are described in the Logical Framework (Project Design Matrix: PDM) (Annex I) and the tentative Plan of Operation (Annex II).

## 1. Implementation Structure

The Project organization chart is given in the Annex III. The roles and assignments of relevant organizations are as follows:

- (1) SIWA
    - (a) Project Director  
General Manager will be responsible for overall administration and implementation of the Project.
    - (b) Project Manager  
Operations & Technical Manager will be responsible for management of the Project.
  - (2) JICA Experts  
The JICA experts will give necessary technical guidance, advice and recommendations to SIWA on any matters pertaining to the implementation of the Project.
  - (3) Joint Coordinating Committee  
Joint Coordinating Committee (hereinafter referred to as "JCC") will be established in order to facilitate inter-organizational coordination. JCC will be held at least once a year and whenever deems it necessary. JCC will approve an annual work plan, review overall progress, conduct monitoring and evaluation of the Project, and exchange opinions on major issues that arise during the implementation of the Project. A list of proposed members of JCC is shown in the Annex IV.
2. Project Site(s) and Beneficiaries  
Project Site: Honiara  
Direct Beneficiaries: Staff of SIWA  
Indirect Beneficiaries: Residents of Honiara City
  3. Duration  
From October 2012 to October 2015 (for 3 years)
  4. Reports  
SIWA and JICA experts will jointly prepare the following reports in English.
    - (1) Progress Report on semiannual basis until the project completion
    - (2) Project Completion Report at the time of project completion
  5. Environmental and Social Considerations
    - (1) SIWA agreed to abide by the 'JICA Guidelines for Environmental and Social Considerations' in order to ensure that appropriate considerations will be made for the environmental and social impacts of the Project.

## III. UNDERTAKINGS OF SIWA AND GOSI

1. SIWA and GOSI will take necessary measures to:

- (1) ensure that the technologies and knowledge acquired by the Solomon Islands nationals as a result of Japanese technical cooperation contributes to the economic and social development of the Solomon Islands, and that the knowledge and experience acquired by the personnel of Solomon Islands from technical training as well as the equipment provided by JICA will be utilized effectively in the implementation of the Project; and
- (2) grant privileges, exemptions and benefits to the JICA experts referred to in Annex I and their families, which are no less favorable than those granted to experts and members of the missions and their families of third countries or international organizations performing similar missions in the Solomon Islands.

Other privileges, exemptions and benefits will be provided in accordance with the Agreement on Technical Cooperation signed on 10 September 2008 between the GOJ and the GOSI.

**IV. EVALUATION**

JICA and the SIWA will jointly conduct the following evaluations and reviews:

- Terminal evaluation during the last six (6) months of the cooperation term.

JICA will conduct the following evaluation and survey to mainly verify sustainability and impact of the Project and draw lessons. The SIWA is required to provide necessary support for them.

- Ex-post evaluation three (3) years after the project completion, in principle; and
- Follow-up surveys on necessity basis.

**V. PROMOTION OF PUBLIC SUPPORT**

For the purpose of promoting support for the Project, SIWA will take appropriate measures to make the Project widely known to the people of Solomon Islands.

**VI. MUTUAL CONSULTATION**

JICA and SIWA will consult each other whenever any major issues arise in the course of Project implementation.

**VII. AMENDMENTS**

The record of discussions may be amended by mutual agreement between JICA and SIWA.

The mutual agreement shall be written and signed by the authorized persons of both parties, who may be different from the signatories of the record of

discussions.

- Annex I Logical Framework (Project Design Matrix: PDM)
- Annex II Tentative Plan of Operations
- Annex III Organizational Structure of the Project
- Annex IV List of Proposed Members of Joint Coordinating Committee

*Yca*

*Yca*

1. Solomon Islands members  
General Manager (Project Director), SIWA as chairperson of JCC  
Operation & Technical Manager (Project Manager), SIWA  
Finance and Administration Manager  
Service Delivery & Communications Manager  
Representative of SIWA Board  
Representative of MMERE  
Others invited by the chair person
2. Japanese members  
Experts of the Project  
Representatives of JICA Solomon Islands Office  
JICA mission and others dispatched by JICA
3. Other Development Partner  
Representatives of AusAID

Notes:

Official(s) of the Embassy of Japan may attend the JCC meeting as observer(s).

MAIN POINTS DISCUSSED

**1. Duration and Schedule of the Project**

The duration of the Project would be 3 years from the date when the JICA team of experts arrives.

The Annual Plan of Operation is to be drafted by both the Solomon Islands and Japanese sides according to the Plan of Operation and is to be submitted to the Joint Coordinating Committee. The activities are subject to change within the scope of the R/D, if necessity arises, in the course of the Project implementation.

**2. Budgetary Arrangement by SIWA**

Both sides agreed that budgetary arrangement by SIWA is the key to the successful implementation of the Project, especially for the timely implementation of pilot projects for NRW reduction.

**3. SIWA's Role in the Project**

The Japanese side explained and SIWA understood the principle of JICA's technical cooperation project that SIWA should play a major role with a strong sense of ownership in achieving the Project objectives while the role of JICA's experts would remain supportive.

**4. Pilot Project Areas**

Both sides agreed that pilot project areas would be selected after commencement of the Project and would cover approximately 1,000 connections including the pilot project areas of approximately 400 connections, which were recommended by the JICA expert in March 2010.

**5. Establishing Non-Revenue Water Management Team and Non-Revenue Water Action Team**

The Non-Revenue Water Management Team (hereinafter referred to as the "Management Team") will be established in order to prepare "Non-Revenue Water Reduction Annual Plan" and to manage the activities of Non-Revenue Water Action Team (hereinafter referred to as the "Action Team"). The Action Team will be established in order to implement the activities concerning "Output2".

The tentative members of both teams are shown in Appendix III.

**6. Criteria for Joint Evaluation**

Both sides agreed that the following five (5) criteria will be used for the joint evaluation of the Project in accordance with the JICA guidelines:

(i) Relevance, (ii) Effectiveness, (iii) Efficiency, (iv) Impact, and (v) Sustainability

**7. Undertaking of Solomon Islands Side**

**Annex I: Project Design Matrix (PDM):**

Project Title: Project for Improvement of Non-Revenue Water Reduction Capacity for Solomon Islands Water Authority (SIWA) in Solomon Islands  
 Target Areas: Honiara City Target Group: SIWA staff Project Period: October, 2012 – October, 2015 (Three (3) Years)

Version No. 1

Narrative Summary	Objectively Verifiable Indicators	Means of Verification	Important Assumptions
<b>Overall Goal</b> SIWA's service levels are improved and SIWA's revenue is increased.	1. Water supply hours become longer. 2. The NRW ratio in Honiara City is reduced to 00% by 2018. 3. Ratio of current expense to current income becomes more than 100% by 2018.	1. SIWA Annual Report 2. SIWA Annual Report 3. SIWA Annual Report	
<b>Project Purpose</b> Non-revenue water (NRW) ratio in Honiara City is reduced.	1. The NRW ratio is reduced to 00% in each pilot area and the NRW ratio in Honiara City is reduced to 00%.	1. Project Report	Budgetary and human resources necessary for stable water supply are continuously allocated by SIWA.
<b>Outputs</b> 1. The planning process for NRW reduction is systemized.  2. The implementation procedure of NRW reduction is established through the pilot projects.  3. Billing process management is improved.	1-1. Annual budget for NRW reduction is secured in the pilot project areas. 1-2. The strategic implementation (rolling-out) plan for NRW reduction is approved by the executive board of SIWA.  2-1. A manual for NRW reduction measures is revised. 2-2. The number of pipe repairs is increased in the pilot project areas. 2-3. The number of authorizations and disconnections of illegal connections is increased in the pilot project areas. 2-4. The number of new service connections and replacement of malfunctioning customer meters is increased in the pilot project areas.  3-1. Standard of procedure (SOP) and training materials are formulated.	1-1. Annual budget plan 1-2. Strategic implementation (rolling-out) plan for NRW reduction  2-1. Project Report 2-2. Project Report 2-3. Project Report  2-4. Project Report  3-1. Project Report	The SIWA staff capacitated by the Project continues working for their respective positions.

(1) Cost to be borne by SIWA  
 Both sides confirmed that the following will be borne by SIWA to ensure effective implementation of the Project:  
 a. Salaries, remuneration, and other allowances for the counterpart personnel;  
 b. Expenses for utilities such as electricity, water supply, gas, fuel, telephone, for the Project office;  
 c. Expenses for customs clearance charges, storage and domestic transportation of the equipment to be provided by the Japanese side;  
 d. Expenses for maintenance of facilities and equipment to be provided by the Japanese side; and other contingency expenses related to the Project.

(2) Tax Exemption  
 SIWA undertakes to obtain any allowable exemptions from import tax, customs duties and GST to be imposed on the equipment to be provided by JICA.

(3) Allocation of Personnel  
 SIWA agreed to assign a suitable number of capable counterpart personnel.

(4) Office space and facilities  
 SIWA agreed to provide furnished and air-conditioned office space with one telephone line and others necessary for the implementation of the Project.

(5) Providing necessary information  
 SIWA agreed to provide necessary information for implementing the Project.

(6) Installation of meters and valves  
 SIWA agreed to install the following items:  
 a. Replacement of all malfunctioning customer meters and defect service pipes in the pilot areas;  
 b. Flow meters in the pilot areas;  
 c. Gate valves in the pilot areas; and  
 d. Bulk meters for water sources where not yet installed.

(7) Repairing Cost of Pipes  
 SIWA agreed to bear the cost for repairing pipes in the pilot areas.

*Yes*

*[Signature]*

*[Signature]*

*Yes*

Annex II: Tentative Plan of Operations (PO)

Year	Y2012												Y2013												Y2014												Y2015												
	Month	1	2	3	4	5	6	7	8	9	10	11	12	1	2	3	4	5	6	7	8	9	10	11	12	1	2	3	4	5	6	7	8	9	10	11	12	1	2	3	4	5	6	7	8	9	10	11	12
Joint Coordinating Committee (JCC) Meetings																																																	
Terminal Evaluation																																																	
<b>OUTPUT 1. The planning process for NRW reduction is systematized.</b>																																																	
1-1 Establish the NRW Management Team in SIWA.																																																	
1-2 Review the current NRW reduction activities done by SIWA.																																																	
1-3 Conduct hydraulic analysis of distribution network and water balance audit.																																																	
1-4 Select pilot project areas.																																																	
1-5 Formulate an annual operational plan on NRW reduction at the pilot project areas.																																																	
1-6 Monitor the progress of NRW reduction activities in the pilot project areas.																																																	
1-7 Analyze cost and benefit of NRW reduction measures.																																																	
1-8 Prepare the strategic implementation (rolling-out) plan for NRW reduction in whole Honiara City.																																																	
<b>OUTPUT 2. The implementation procedure of NRW reduction is established through the pilot projects.</b>																																																	
2-1 Establish the NRW Action Team in SIWA.																																																	
2-2 Check the flow meters and replace the malfunctioning meters with new ones at all the water sources.																																																	
2-3 Conduct training on NRW reduction for the NRW Action Team.																																																	
2-4 Update the water distribution network drawings by using GIS at the pilot project areas.																																																	
2-5 Install necessary valves & flow meters and to measure the NRW ratio before the pilot projects.																																																	
2-6 Identify the causes of NRW (water leakage, illegal connection, meter-related losses) in the pilot project areas through the OJT.																																																	
2-7 Implement NRW reduction measures in the pilot project areas and measure the NRW ratio after the pilot projects.																																																	
2-8 Prepare reports of the pilot project results including the costs and benefits.																																																	
2-9 Update the manuals on pipe installation, leakage detection, etc.																																																	
2-10 Convene the workshops to share the experiences, outcomes, etc. of the pilot projects.																																																	
<b>OUTPUT 3. Billing process management is improved.</b>																																																	
3-1 Formulate the work schedule and staff assignment plan for meter readers.																																																	
3-2 Conduct training on meter-reading and reporting methods for anomalies and illegal connections for meter readers.																																																	
3-3 Promote PR activities on water conservation and tariff for the customers.																																																	
3-4 Monitor the meter reading activities and bill deliveries.																																																	
3-5 Report the monitoring results, such as anomalies and illegal connections, to the responsible sections.																																																	

Notes: The start of the Project, schedules described in this chart, and so on are subject to modifications through further examinations and discussions in future.

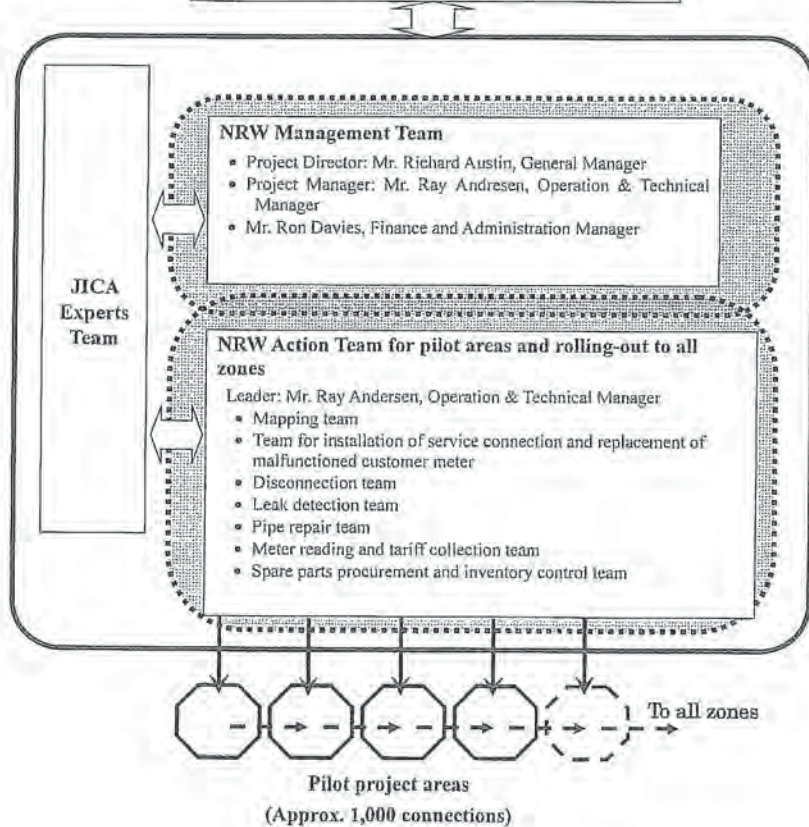
- To complete project activities within the solid line.
- ▨ To continuously conduct project activities during the dashed line.
- △ To prepare plans and reports, convene workshops, etc.

Activities	Inputs	Pre-condition
1-1 Establish the NRW Management Team in SIWA. 1-2 Review the current NRW reduction activities done by SIWA. 1-3 Conduct hydraulic analysis of distribution network and water balance audit. 1-4 Select pilot project areas. 1-5 Formulate an annual operational plan on NRW reduction at the pilot project areas. 1-6 Monitor the progress of NRW reduction activities in the pilot project areas. 1-7 Analyze cost and benefit of NRW reduction measures. 1-8 Prepare the strategic implementation (rolling-out) plan for NRW reduction in whole Honiara City.	<b>Japanese side</b>  1. Experts • Chief Advisor/ Water Supply Planning and Management • NRW Reduction Management • Leakage Detection Technology • GIS • Customer Services/PR • Others as necessary  2. Training of counterpart personnel in Japan and/or the Third Countries  3. Provision of machinery and equipment • Leakage detection equipment • Water flow meters • Customer meters • Valves • Handheld data-input device • GPS portable terminals • Office equipment • Others as necessary  4. Local expenses for the project activities • Teaching materials for training and workshops • Others	Natural disasters do not give a profound effect to the project activities.  <b>Pre-condition</b>  1. Personnel • Project Director • Project Manager • Counterpart personnel  2. Provision of the project offices and facilities necessary for the project implementation  3. Expenses for implementing pilot projects in Honiara City, such as repair costs for distribution pipes, installation costs for valves and meters, etc.  4. Administrative and operational expenses • Electricity, water, communication, etc. • Local traveling costs and daily subsistence allowance (DSA) for counterpart personnel • Others as necessary
2-1 Establish the NRW Action Team in SIWA. 2-2 Check the flow meters and replace the malfunctioning meters with new ones at all the water sources. 2-3 Conduct training on NRW reduction for the NRW Action Team. 2-4 Update the water distribution network drawings by using GIS at the pilot project areas. 2-5 Install necessary valves & flow meters and to measure the NRW ratio before the pilot projects. 2-6 Identify the causes of NRW (water leakage, illegal connection, meter-related losses) in the pilot project areas through the OJT. 2-7 Implement NRW reduction measures in the pilot project areas and measure the NRW ratio after the pilot projects. 2-8 Prepare reports of the pilot project results including the costs and benefits. 2-9 Update the manuals on pipe installation, leakage detection, etc. 2-10 Convene the workshops to share the experiences, outcomes, etc. of the pilot projects.		
3-1 Formulate the work schedule and staff assignment plan for meter readers. 3-2 Conduct training on meter-reading and reporting methods for anomalies and illegal connections for meter readers. 3-3 Promote PR activities on water conservation and tariff for the customers. 3-4 Monitor the meter reading activities and bill deliveries. 3-5 Report the monitoring results, such as anomalies and illegal connections, to the responsible sections.		



Annex III

Joint Coordinating Committee (JCC)	
Chairman: Project Director	
[Solomon Islands Side]	[Japanese Side]
Project Manager	JICA Experts
Finance and Administration Manager	JICA Solomon Islands Office
Service Delivery & Communications Manager	JICA mission and others dispatched by JICA
Representative of SIWA	Embassy of Japan (Observer)
Board	[Other Development Partner]
Representative of MMERE	AusAID staff(s)



Organizational Structure of the Project

*Y. J. W.*

*[Handwritten signatures]*



Attachment-2 Minutes of Meetings for Amendment  
of the Record of Discussions




MINUTES OF MEETINGS  
 BETWEEN  
 JAPAN INTERNATIONAL COOPERATION AGENCY  
 AND  
 SOLOMON ISLANDS WATER AUTHORITY  
 FOR  
 AMENDMENT OF THE RECORD OF DISCUSSIONS  
 ON  
 THE PROJECT FOR IMPROVEMENT  
 OF NON-REVENUE WATER REDUCTION CAPACITY  
 FOR SOLOMON ISLANDS WATER AUTHORITY

The Japan International Cooperation Agency (hereinafter referred to as "JICA") and Solomon Islands Water Authority (hereinafter referred to as "SW") hereby agree that the Record of Discussions on the project for improvement of Non-Revenue Water reduction capacity (hereinafter referred to as "the Project") signed in 27<sup>th</sup> July, 2012 will be amended as described in the attached sheets. This amendment will become effective as of 30<sup>th</sup> October, 2015.

Honiara, 30<sup>th</sup> October, 2015

  
 Mr. Kyoji Mizutani  
 Resident Representative  
 JICA Solomon Islands Office

  
 Mr. Jeffery Deve  
 Permanent Secretary  
 Ministry of Mines, Energy, and Rural  
 Electrification

  
 Mr. Ian Gooden  
 General Manager  
 Solomon Islands Water Authority

ATTACHMENT

1. Duration (P.43.)

Before	Amended Version
From October 2012 to October 2015 (for 3 years)	From October 2012 to June 2016 (for 3 years and 9 month)
Reason: According to the Terminal Evaluation, sustainability of the project is concerned mainly from the viewpoint of organizational aspects and technical aspects. To ensure the sustainability, in addition to the planned activities, SW and the Terminal Evaluation Team agreed to tackle on DMA-based monitoring and maintenance of improved NRW ratio. JICA Expert Team will assist capacity development in monitoring and maintenance of improved NRW ratio from the viewpoint of preventive maintenance. The capacity development is targeting "Task Force" of SW, which is newly developed team in charge of NRW management.	

2. Indicator for Overall Goal

Before	Amended Version
Indicator 1: The NRW ratio in honiara City is reduced to 20% by 2018. Indicator 2: Ratio of operational revenue-to-expenditure is sustained at greater than 100%.	Indicator 1: NRW reduction activities are carried on by Task Force composed of relevant Departments or Units. Indicator 2: Deleted.
Reason: As for Indicator 1, it is unfeasible due to several incidents that were hardly expected at the beginning of the project. For example, SW started its policy to disconnect arrear customers very strictly and thoroughly after 2013, and it negatively affect NRW ratio (*1). As for Indicator 2, achievement of this indicator is affected not only by the outcome of Project, but also by other factors. For example, SW's water tariff has been almost doubled since the beginning of the Project, and it positively affects the ratio of operational revenue-to-expenditure. Instead, SW and the Terminal Evaluation Team agreed that continuation of the NRW reduction activities contributes to increase SW's revenue and to improve SW's service such as increase in distributed water and improvement in accuracy of meter reading and billing. Thus, both sides agreed to adopt a new indicator for the Overall Goal.	



\*1: According to the International Water Association's definition for NRW, distributed water for the arrears customers is not counted as NRW.

3. Indicator for Output 1

Before	Amended Version
Indicator 1-2: The strategic implementation (rolling-out) plan for NRW reduction is approved by management of SW.	Indicator 1-2: The strategic implementation (rolling-out) plan for NRW reduction is approved and revised as when it is necessary by management of SW.
Reason: As mentioned in the reason for 1., JICA Expert Team will assist additional capacity development. What is learnt through the capacity development in monitoring and maintenance of improved NRW ratio will be reflected on the strategic implementation (rolling-out) plan.	

4. Indicator for Output 2

Before	Amended Version
Indicator 2-1: A Manual for NRW reduction measures is prepared.	Indicator 2-1: Manuals for NRW reduction measures are prepared and revised as when is necessary, including workflow of DMA-based monitoring and maintenance for improved NRW ratio.
Reason: As mentioned in the reason for 1., JICA Expert Team will assist additional capacity development. The Project will prepare workflow for the maintenance and monitoring for improved NRW ratio, and it will be integrated into the developed manuals.	

5. Output 3

Before	Amended Version
NRW reduction is implemented in accordance with the procedure in pilot areas and/or LCZs.	NRW reduction is implemented in accordance with the procedure in pilot areas and/or LCZs in the selected DMAs,

KM

	and then improved NRW ratio is monitored and maintained.
Reason: As mentioned in the reason for 1., JICA Expert Team will assist additional capacity development. Especially for Output 3, OJT based technical assistance will be provided to SW, in order to monitor and maintain improved NRW ratio after SW carried out initial NRW reduction activities.	

6. Indicator for Output 3

Before	Amended Version
Indicator 3-2: N/A	Indicator 3-2: (newly added) Data and records of DMA-based NRW monitoring and maintenance for improved NRW ratio are accumulated to sustain improved NRW ratio in the selected DMA.
Reason: As mentioned in the reason for 1., JICA Expert Team will assist additional capacity development. Indicator 3-2 is added to evaluate the results of additional capacity development in monitoring and maintenance of improved NRW ratio.	

7. Activities

Before	Amended Version
Activity 1-9: N/A Activity 2-4: N/A Activity 2-5: N/A Activity 3-11: N/A	<b>Activity 1-9:</b> (newly added) Feedback the results of DMA-based NRW reduction activities, including monitoring and maintenance for improved NRW ratio, to strategic implementation (rolling-out) plan, and then provide assistance in review of the plan as when is necessary. <b>Activity 2-4:</b> (newly added) Provide assistance in the preparation of workflow for DMA-based monitoring and maintenance for improved NRW ratio, based on action criteria such as

KM

	<p>NRW ratio and DMA's features.</p> <p><b>Activity 2-5:</b> (newly added)          Feedback the results of DMA-based NRW reduction activities, including monitoring and maintenance for improved NRW ratio, to manuals, and then provide assistance in review of the manuals as when is necessary.</p> <p><b>Activity 3-11:</b> (newly added)          Provide technical assistance in DMA-based monitoring and maintenance for improved NRW ratio after initial NRW reduction activities.</p>
<p>Reason: As mentioned in the reason for 1., JICA Expert Team will assist additional capacity development. All the activities listed above shows the contents of capacity development in monitoring and maintenance of improved NRW ratio.</p>	

- Annex 1 : Record of Discussions (signed on 27<sup>th</sup> July, 2012)
- Annex 2 : Current Project Design Matrix (PDM<sub>3</sub>) and Project Outline (PO<sub>3</sub>)
- Annex 3 : Revised Project Design Matrix (PDM<sub>4</sub>) and Project Outline (PO<sub>4</sub>)

**RECORD OF DISCUSSIONS**

**ON**

**THE PROJECT FOR IMPROVEMENT OF NON-REVENUE WATER  
REDUCTION CAPACITY FOR  
SOLOMON ISLANDS WATER AUTHORITY**

**IN**

**SOLOMON ISLANDS**

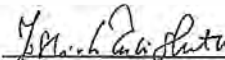
**AGREED UPON BETWEEN**


**SOLOMON ISLANDS WATER AUTHORITY**

**AND**

**JAPAN INTERNATIONAL COOPERATION AGENCY**

Honiara, 27<sup>th</sup> July 2012

  
 Mr. Yoshinobu Takishita  
 Resident Representative  
 JICA Solomon Islands Office

  
 Mr. Rence Sore  
 Permanent Secretary  
 Ministry of Mines, Energy and Rural  
 Electrification

  
 Mr. Richard Austin  
 General Manager  
 Solomon Islands Water Authority

KM  

Based on the minutes of meetings on the Detailed Planning Survey on the project for improvement on Non-Revenue Water reduction capacity for the Solomon Islands Water Authority in Solomon Islands (hereinafter referred to as "the Project") signed on 16 March 2012 between the Solomon Islands Water Authority (hereinafter referred to as "SIWA") and the Japan International Cooperation Agency (hereinafter referred to as "JICA"), JICA held a series of discussions with SIWA and relevant organizations to develop a detailed plan of the Project.

Both parties agreed the details of the Project and the main points discussed as described in the Appendix 1 and the Appendix 2 respectively.

Both parties also agreed that SIWA, the counterpart to JICA, will be responsible for the implementation of the Project in cooperation with JICA, coordinate with other relevant organizations and ensure that the self-reliant operation of the Project is sustained during and after the implementation period in order to contribute toward social and economic development of Solomon Islands.

The Project will be implemented within the framework of the Agreement on Technical Cooperation signed on 10 September 2008 (hereinafter referred to as "the Agreement") and the Notes Verbales exchanged between the Government of Japan (hereinafter referred to as "GOJ") on 31 May 2011 and the Government of Solomon Islands (hereinafter referred to as "GOSI") on 2 June 2011.

Appendix 1: Project Description  
Appendix 2: Main Points Discussed

## PROJECT DESCRIPTION

### I. BACKGROUND

In Solomon Islands, urban water is supplied by SIWA. However, there are a lot of issues to be solved in infrastructure, finance and human resources. Honiara's water supply coverage is 73% in 2006 and water is not supplied stably because of unstable water resources (spring water and groundwater) and deficient facilities. Also high Non-Revenue Water rate deteriorates the supply of water and financial situation. In this situation the government of Solomon Islands requested a development study in order to implement follow-up project for the water supply facilities damaged during the civil unrest and formulate a facility improvement plan for the water supply and sewerage systems for Honiara, Auki, Noro and Tulagi in 2003. Based on the request, JICA conducted the study for rehabilitation and improvement of SIWA's water supply and sewerage systems from 2005 to 2006. The study included an urgent rehabilitation plan for Honiara and urgent restoration plan for Auki or Tulagi, a facility improvement plan for the water supply and sewerage systems of Honiara, Noro, Auki and Tulagi for the target year 2010 and action plan for supporting capacity development of SIWA to strengthen its management. Currently based on the plan and action plan, a grant aid of the Project for Improvement of Water Supply System in Honiara and Auki in Solomon Islands is implemented and is supposed to prepare water resources facilities and construct transmission and distribution facilities. E/N was concluded in 2009. Since implementation had been delayed because of land problems, construction started in January 2012.

Implementation of the grant aid enables stable and safe water supply to the residents in the target area. However, non-revenue water (NRW) reduction is indispensable for sustainable operation and maintenance. Experienced staff is in short in SIWA. Then a short term expert on NRW reduction measures was dispatched from January 2010 to March 2010. Also NRW reduction project was requested to Japan targeting enhancement of NRW reduction capacity of SIWA staff.

Regarding management issue of SIWA, Pacific Region Infrastructure Facility (PRIF) supported to formulate SIWA Short Term Recovery Strategy and Action Plan (RAP) in May 2011. The primary objective of the RAP is to improve service levels and increase revenue of SIWA. AusAID concluded a MOU with SIWA for implementation of RAP in October 2011. The Project aims at supporting SIWA to achieve RAP, in collaboration with other development partners.

### II. OUTLINE OF THE PROJECT

Details of the Project are described in the Logical Framework (Project Design Matrix: PDM) (Annex I) and the tentative Plan of Operation (Annex II).

2

3



### 1. Implementation Structure

The Project organization chart is given in the Annex III. The roles and assignments of relevant organizations are as follows:

#### (1) SIWA

##### (a) Project Director

General Manager will be responsible for overall administration and implementation of the Project.

##### (b) Project Manager

Operations & Technical Manager will be responsible for management of the Project.

#### (2) JICA Experts

The JICA experts will give necessary technical guidance, advice and recommendations to SIWA on any matters pertaining to the implementation of the Project.

#### (3) Joint Coordinating Committee

Joint Coordinating Committee (hereinafter referred to as "JCC") will be established in order to facilitate inter-organizational coordination. JCC will be held at least once a year and whenever deems it necessary. JCC will approve an annual work plan, review overall progress, conduct monitoring and evaluation of the Project, and exchange opinions on major issues that arise during the implementation of the Project. A list of proposed members of JCC is shown in the Annex IV.

### 2. Project Site(s) and Beneficiaries

Project Site: Honiara

Direct Beneficiaries: Staff of SIWA

Indirect Beneficiaries: Residents of Honiara City

### 3. Duration

From October 2012 to October 2015 (for 3 years)

### 4. Reports

SIWA and JICA experts will jointly prepare the following reports in English.

(1) Progress Report on semiannual basis until the project completion

(2) Project Completion Report at the time of project completion

### 5. Environmental and Social Considerations

(1) SIWA agreed to abide by the 'JICA Guidelines for Environmental and Social Considerations' in order to ensure that appropriate considerations will be made for the environmental and social impacts of the Project.

### III. UNDERTAKINGS OF SIWA AND GOSI

1. SIWA and GOSI will take necessary measures to:

(1) ensure that the technologies and knowledge acquired by the Solomon Islands nationals as a result of Japanese technical cooperation contributes to the economic and social development of the Solomon Islands, and that the knowledge and experience acquired by the personnel of Solomon Islands from technical training as well as the equipment provided by JICA will be utilized effectively in the implementation of the Project; and

(2) grant privileges, exemptions and benefits to the JICA experts referred to in Annex I and their families, which are no less favorable than those granted to experts and members of the missions and their families of third countries or international organizations performing similar missions in the Solomon Islands.

Other privileges, exemptions and benefits will be provided in accordance with the Agreement on Technical Cooperation signed on 10 September 2008 between the GOJ and the GOSI.

### IV. EVALUATION

JICA and the SIWA will jointly conduct the following evaluations and reviews:

- Terminal evaluation during the last six (6) months of the cooperation term.

JICA will conduct the following evaluation and survey to mainly verify sustainability and impact of the Project and draw lessons. The SIWA is required to provide necessary support for them.

- Ex-post evaluation three (3) years after the project completion, in principle; and  
- Follow-up surveys on necessity basis.

### V. PROMOTION OF PUBLIC SUPPORT

For the purpose of promoting support for the Project, SIWA will take appropriate measures to make the Project widely known to the people of Solomon Islands.

### VI. MUTUAL CONSULTATION

JICA and SIWA will consult each other whenever any major issues arise in the course of Project implementation.

### VII. AMENDMENTS

The record of discussions may be amended by mutual agreement between JICA and SIWA.

The mutual agreement shall be written and signed by the authorized persons of both parties, who may be different from the signatories of the record of

discussions.

- Annex I Logical Framework (Project Design Matrix: PDM)
- Annex II Tentative Plan of Operations
- Annex III Organizational Structure of the Project
- Annex IV List of Proposed Members of Joint Coordinating Committee

Annex IV List of Proposed Members of Joint Coordinating Committee

1. Solomon Islands members  
General Manager (Project Director), SIWA as chairperson of JCC  
Operation & Technical Manager (Project Manager), SIWA  
Finance and Administration Manager  
Service Delivery & Communications Manager  
Representative of SIWA Board  
Representative of MMERE  
Others invited by the chair person
2. Japanese members  
Experts of the Project  
Representatives of JICA Solomon Islands Office  
JICA mission and others dispatched by JICA
3. Other Development Partner  
Representatives of AusAID

Notes:

Official(s) of the Embassy of Japan may attend the JCC meeting as observer(s).

*Ypcn*

5



*Ypcn*

7



Appendix 2

MAIN POINTS DISCUSSED

**1. Duration and Schedule of the Project**

The duration of the Project would be 3 years from the date when the JICA team of experts arrives.

The Annual Plan of Operation is to be drafted by both the Solomon Islands and Japanese sides according to the Plan of Operation and is to be submitted to the Joint Coordinating Committee. The activities are subject to change within the scope of the R/D, if necessity arises, in the course of the Project implementation.

**2. Budgetary Arrangement by SIWA**

Both sides agreed that budgetary arrangement by SIWA is the key to the successful implementation of the Project, especially for the timely implementation of pilot projects for NRW reduction.

**3. SIWA's Role in the Project**

The Japanese side explained and SIWA understood the principle of JICA's technical cooperation project that SIWA should play a major role with a strong sense of ownership in achieving the Project objectives while the role of JICA's experts would remain supportive.

**4. Pilot Project Areas**

Both sides agreed that pilot project areas would be selected after commencement of the Project and would cover approximately 1,000 connections including the pilot project areas of approximately 400 connections, which were recommended by the JICA expert in March 2010.

**5. Establishing Non-Revenue Water Management Team and Non-Revenue Water Action Team**

The Non-Revenue Water Management Team (hereinafter referred to as the "Management Team") will be established in order to prepare "Non-Revenue Water Reduction Annual Plan" and to manage the activities of Non-Revenue Water Action Team (hereinafter referred to as the "Action Team"). The Action Team will be established in order to implement the activities concerning "Output2".

The tentative members of both teams are shown in Appendix III.

**6. Criteria for Joint Evaluation**

Both sides agreed that the following five (5) criteria will be used for the joint evaluation of the Project in accordance with the JICA guidelines:

(i) Relevance, (ii) Effectiveness, (iii) Efficiency, (iv) Impact, and (v) Sustainability

**7. Undertaking of Solomon Islands Side**

**(1) Cost to be borne by SIWA**

Both sides confirmed that the following will be borne by SIWA to ensure effective implementation of the Project:

- a. Salaries, remuneration, and other allowances for the counterpart personnel;
- b. Expenses for utilities such as electricity, water supply, gas, fuel, telephone, for the Project office;
- c. Expenses for customs clearance charges, storage and domestic transportation of the equipment to be provided by the Japanese side;
- d. Expenses for maintenance of facilities and equipment to be provided by the Japanese side; and other contingency expenses related to the Project.

**(2) Tax Exemption**

SIWA undertakes to obtain any allowable exemptions from import tax, customs duties and GST to be imposed on the equipment to be provided by JICA.

**(3) Allocation of Personnel**

SIWA agreed to assign a suitable number of capable counterpart personnel.

**(4) Office space and facilities**

SIWA agreed to provide furnished and air-conditioned office space with one telephone line and others necessary for the implementation of the Project.

**(5) Providing necessary information**

SIWA agreed to provide necessary information for implementing the Project.

**(6) Installation of meters and valves**

SIWA agreed to install the following items:

- a. Replacement of all malfunctioning customer meters and defect service pipes in the pilot areas;
- b. Flow meters in the pilot areas;
- c. Gate valves in the pilot areas; and
- d. Bulk meters for water sources where not yet installed

**(7) Repairing Cost of Pipes**

SIWA agreed to bear the cost for repairing pipes in the pilot areas.

*Ma*

8

*Ma*

9

Activities	Inputs	Solomon Islands' side	Notes
1-1 Establish the NRW Management Team in SIWA. 1-2 Review the current NRW reduction activities done by SIWA. 1-3 Conduct hydraulic analysis of distribution network and water balance audit. 1-4 Select pilot project areas. 1-5 Formulate an annual operational plan on NRW reduction at the pilot project areas. 1-6 Monitor the progress of NRW reduction activities in the pilot project areas. 1-7 Analyze cost and benefit of NRW reduction measures. 1-8 Prepare the strategic implementation (rolling-out) plan for NRW reduction in whole Honiara City.	<b>Japanese side</b>  1. Experts • Chief Advisor/ Water Supply Planning and Management • NRW Reduction Management • Leakage Detection Technology • GIS • Customer Services/PR • Others as necessary  2. Training of counterpart personnel in Japan and/or the Third Countries  3. Provision of machinery and equipment • Leakage detection equipment • Water flow meters • Customer meters • Valves • Handheld data-input device • GPS portable terminals • Office equipment • Others as necessary  4. Local expenses for the project activities • Teaching materials for training and workshops • Others	<b>Solomon Islands' side</b>  1. Personnel • Project Director • Project Manager • Counterpart personnel  2. Provision of the project offices and facilities necessary for the project implementation  3. Expenses for implementing pilot projects in Honiara City, such as repair costs for distribution pipes, installation costs for valves and meters, etc.  4. Administrative and operational expenses • Electricity, water, communication, etc. • Local traveling costs and daily subsistence allowance (DSA) for counterpart personnel • Others as necessary	Natural disasters do not give a profound effect to the project activities.  <b>Pre-condition</b>
2-1 Establish the NRW Action Team in SIWA. 2-2 Check the flow meters and replace the malfunctioning meters with new ones at all the water sources. 2-3 Conduct training on NRW reduction for the NRW Action Team. 2-4 Update the water distribution network drawings by using GIS at the pilot project areas. 2-5 Install necessary valves & flow meters and to measure the NRW ratio before the pilot projects. 2-6 Identify the causes of NRW (water leakage, illegal connection, meter-related losses) in the pilot project areas through the OJT. 2-7 Implement NRW reduction measures in the pilot project areas and measure the NRW ratio after the pilot projects. 2-8 Prepare reports of the pilot project results including the costs and benefits. 2-9 Update the manuals on pipe installation, leakage detection, etc. 2-10 Convene the workshops to share the experiences, outcomes, etc. of the pilot projects.			
3-1 Formulate the work schedule and staff assignment plan for meter readers. 3-2 Conduct training on meter-reading and reporting methods for anomalies and illegal connections for meter readers. 3-3 Promote PR activities on water conservation and tariff for the customers. 3-4 Monitor the meter reading activities and bill deliveries. 3-5 Report the monitoring results, such as anomalies and illegal connections, to the responsible sections.			

### Annex I: Project Design Matrix (PDM<sub>1</sub>):

Project Title: Project for Improvement of Non-Revenue Water Reduction Capacity for Solomon Islands Water Authority (SIWA) in Solomon Islands  
 Target Areas: Honiara City Target Group: SIWA staff Project Period: October, 2012 – October, 2015 (Three (3) Years)

Version No. 1

Narrative Summary	Objectively Verifiable Indicators	Means of Verification	Important Assumptions
<b>Overall Goal</b> SIWA's service levels are improved and SIWA's revenue is increased.	1. Water supply hours become longer. 2. The NRW ratio in Honiara City is reduced to 00% by 2018. 3. Ratio of current expense to current income becomes more than 100% by 2018.	1. SIWA Annual Report 2. SIWA Annual Report 3. SIWA Annual Report	
<b>Project Purpose</b> Non-revenue water (NRW) ratio in Honiara City is reduced.	1. The NRW ratio is reduced to 00% in each pilot area and the NRW ratio in Honiara City is reduced to 00%.	1. Project Report	Budgetary and human resources necessary for stable water supply are continuously allocated by SIWA.
<b>Outputs</b> 1. The planning process for NRW reduction is systemized.  2. The implementation procedure of NRW reduction is established through the pilot projects.  3. Billing process management is improved.	1-1. Annual budget for NRW reduction is secured in the pilot project areas. 1-2. The strategic implementation (rolling-out) plan for NRW reduction is approved by the executive board of SIWA.  2-1. A manual for NRW reduction measures is revised. 2-2. The number of pipe repairs is increased in the pilot project areas. 2-3. The number of authorizations and disconnections of illegal connections is increased in the pilot project areas. 2-4. The number of new service connections and replacement of malfunctioning customer meters is increased in the pilot project areas.  3-1. Standard of procedure (SOP) and training materials are formulated.	1-1. Annual budget plan 1-2. Strategic implementation (rolling-out) plan for NRW reduction  2-1. Project Report 2-2. Project Report 2-3. Project Report  2-4. Project Report  3-1. Project Report	The SIWA staff capacitated by the Project continues working for their respective positions.



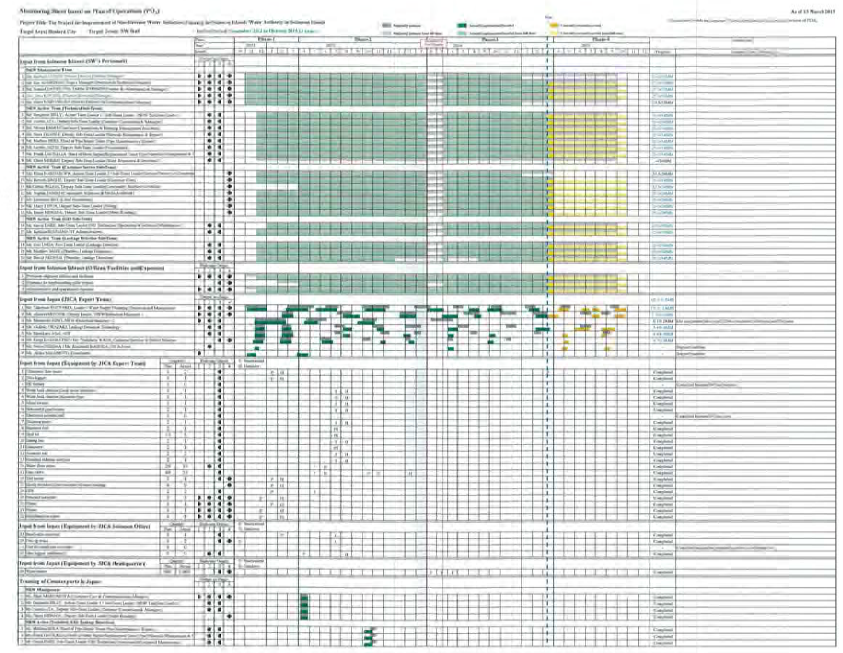
**Project Design Matrix (PDM)**

**Project Title:** The Project for Improvement of Non-Revenue Water Reduction Capacity for Solomon Islands Water Authority in Solomon Islands  
**Target Area:** Honiara City  
**Target Group:** SW Staff

**Version:** 14  
**Date:** 19 March 2015

Overall Goal	Narrative Summary	Objectively Verifiable Indicators	Means of Verification	Assumptions
<b>Overall Goal</b>	SW Level of revenue improved and SW's revenue increased	1. The NRW rate in Honiara City is reduced to 20% by 2015 2. Rates of operational maintenance expenditure is reduced to 50% by 2015	1. SW Annual Operations Report 2. SW Annual Performance Report 3. SW Annual Revenue Report	
<b>Project Purpose</b>	SW is enabled to achieve its target of reducing the NRW rate in Honiara City to 20% by 2015	1. The NRW rate is reduced by 50% points in each pilot project area and LCCs 2. Regarding the pilot project areas and LCCs, the NRW rate before the implementation of NRW reduction measures are less than 50%, 50-70% and 70-90% respectively, and the reduction of each area and LCC is in line with the objectives of the NRW reduction measures	1. Project Reports	
<b>Outputs</b>	1. Planning process of SW in NRW reduction is systematized 2. The procedure for NRW reduction is systematized through the pilot areas and LCCs 3. NRW reduction is implemented in accordance with the procedure in pilot areas and LCCs 4. Water meter reading and billing process management are improved	1.1. Annual budget for NRW reduction is secured in the pilot project areas and LCCs 1.2. The strategic implementation plan for the NRW reduction is approved by management of SW 2.1. A manual for NRW reduction measures is prepared 2.2. The number of sub-projects and disconnections of illegal connections is increased in the pilot project areas and LCCs 2.3. The number of new services, connections and replacement of malfunctioning customer meters is increased in the pilot project areas and LCCs 3.1. The number of pipe repairs is increased in the pilot project areas and LCCs 4.1. Standard operating procedure (SOP) and training materials are developed	1.1. Annual Budget Plan 1.2. Meeting Implementation (Implementation plan for NRW reduction) 2.1. Project Report 2.2. Project Report 2.3. Project Report 3.1. Project Report 4.1. Project Report	1.1. SW staff are trained and equipped for NRW reduction 1.2. SW staff are trained and equipped for NRW reduction 1.3. SW staff are trained and equipped for NRW reduction 1.4. SW staff are trained and equipped for NRW reduction 1.5. SW staff are trained and equipped for NRW reduction 1.6. SW staff are trained and equipped for NRW reduction 1.7. SW staff are trained and equipped for NRW reduction 1.8. SW staff are trained and equipped for NRW reduction 1.9. SW staff are trained and equipped for NRW reduction 1.10. SW staff are trained and equipped for NRW reduction 1.11. SW staff are trained and equipped for NRW reduction 1.12. SW staff are trained and equipped for NRW reduction 1.13. SW staff are trained and equipped for NRW reduction 1.14. SW staff are trained and equipped for NRW reduction 1.15. SW staff are trained and equipped for NRW reduction 1.16. SW staff are trained and equipped for NRW reduction 1.17. SW staff are trained and equipped for NRW reduction 1.18. SW staff are trained and equipped for NRW reduction 1.19. SW staff are trained and equipped for NRW reduction 1.20. SW staff are trained and equipped for NRW reduction 1.21. SW staff are trained and equipped for NRW reduction 1.22. SW staff are trained and equipped for NRW reduction 1.23. SW staff are trained and equipped for NRW reduction 1.24. SW staff are trained and equipped for NRW reduction 1.25. SW staff are trained and equipped for NRW reduction 1.26. SW staff are trained and equipped for NRW reduction 1.27. SW staff are trained and equipped for NRW reduction 1.28. SW staff are trained and equipped for NRW reduction 1.29. SW staff are trained and equipped for NRW reduction 1.30. SW staff are trained and equipped for NRW reduction 1.31. SW staff are trained and equipped for NRW reduction 1.32. SW staff are trained and equipped for NRW reduction 1.33. SW staff are trained and equipped for NRW reduction 1.34. SW staff are trained and equipped for NRW reduction 1.35. SW staff are trained and equipped for NRW reduction 1.36. SW staff are trained and equipped for NRW reduction 1.37. SW staff are trained and equipped for NRW reduction 1.38. SW staff are trained and equipped for NRW reduction 1.39. SW staff are trained and equipped for NRW reduction 1.40. SW staff are trained and equipped for NRW reduction 1.41. SW staff are trained and equipped for NRW reduction 1.42. SW staff are trained and equipped for NRW reduction 1.43. SW staff are trained and equipped for NRW reduction 1.44. SW staff are trained and equipped for NRW reduction 1.45. SW staff are trained and equipped for NRW reduction 1.46. SW staff are trained and equipped for NRW reduction 1.47. SW staff are trained and equipped for NRW reduction 1.48. SW staff are trained and equipped for NRW reduction 1.49. SW staff are trained and equipped for NRW reduction 1.50. SW staff are trained and equipped for NRW reduction 1.51. SW staff are trained and equipped for NRW reduction 1.52. SW staff are trained and equipped for NRW reduction 1.53. SW staff are trained and equipped for NRW reduction 1.54. SW staff are trained and equipped for NRW reduction 1.55. SW staff are trained and equipped for NRW reduction 1.56. SW staff are trained and equipped for NRW reduction 1.57. SW staff are trained and equipped for NRW reduction 1.58. SW staff are trained and equipped for NRW reduction 1.59. SW staff are trained and equipped for NRW reduction 1.60. SW staff are trained and equipped for NRW reduction 1.61. SW staff are trained and equipped for NRW reduction 1.62. SW staff are trained and equipped for NRW reduction 1.63. SW staff are trained and equipped for NRW reduction 1.64. SW staff are trained and equipped for NRW reduction 1.65. SW staff are trained and equipped for NRW reduction 1.66. SW staff are trained and equipped for NRW reduction 1.67. SW staff are trained and equipped for NRW reduction 1.68. SW staff are trained and equipped for NRW reduction 1.69. SW staff are trained and equipped for NRW reduction 1.70. SW staff are trained and equipped for NRW reduction 1.71. SW staff are trained and equipped for NRW reduction 1.72. SW staff are trained and equipped for NRW reduction 1.73. SW staff are trained and equipped for NRW reduction 1.74. SW staff are trained and equipped for NRW reduction 1.75. SW staff are trained and equipped for NRW reduction 1.76. SW staff are trained and equipped for NRW reduction 1.77. SW staff are trained and equipped for NRW reduction 1.78. SW staff are trained and equipped for NRW reduction 1.79. SW staff are trained and equipped for NRW reduction 1.80. SW staff are trained and equipped for NRW reduction 1.81. SW staff are trained and equipped for NRW reduction 1.82. SW staff are trained and equipped for NRW reduction 1.83. SW staff are trained and equipped for NRW reduction 1.84. SW staff are trained and equipped for NRW reduction 1.85. SW staff are trained and equipped for NRW reduction 1.86. SW staff are trained and equipped for NRW reduction 1.87. SW staff are trained and equipped for NRW reduction 1.88. SW staff are trained and equipped for NRW reduction 1.89. SW staff are trained and equipped for NRW reduction 1.90. SW staff are trained and equipped for NRW reduction 1.91. SW staff are trained and equipped for NRW reduction 1.92. SW staff are trained and equipped for NRW reduction 1.93. SW staff are trained and equipped for NRW reduction 1.94. SW staff are trained and equipped for NRW reduction 1.95. SW staff are trained and equipped for NRW reduction 1.96. SW staff are trained and equipped for NRW reduction 1.97. SW staff are trained and equipped for NRW reduction 1.98. SW staff are trained and equipped for NRW reduction 1.99. SW staff are trained and equipped for NRW reduction 1.100. SW staff are trained and equipped for NRW reduction
<b>Activities</b>	1. Establish the NRW Management Team in SW 2. Review the current NRW reduction activities by SW 3. Assist in technical and financial identification of systems in the existing network 4. Select pilot project areas and LCCs 5. Prepare an annual budget plan for NRW reduction in the pilot project areas and LCCs 6. Monitor the progress of NRW reduction activities in the pilot project areas and LCCs 7. Analyze the effectiveness of NRW reduction activities 8. Prepare strategic implementation (rolling-out) plan for NRW reduction in the whole Honiara City 9. Establish the NRW Action Team in SW 10. Check activities from technical and financial monitoring activities with revision of all SW water projects 11. Conduct training on NRW reduction for the NRW Action Team 12. Provide assistance in the definition and creation of Discharge DMA's and Area boundaries 13. Provide assistance in the creation of LCCs within the DMAs 14. Update existing water distribution network drawings by using GIS in the pilot project areas and LCCs 15. Install necessary water flow indicator of the pilot project areas and LCCs, install flow meters, and measure the NRW rates before implementation of the pilot project 16. Assist the water utility in the implementation of the pilot project 17. Implement NRW reduction measures such as replacement of water, leakage detection, leakage repair, water meter installation and optimization of water pressure in the pilot project areas and LCCs and measure the NRW rates after implementation of the pilot project 18. Prepare reports of results including cost and benefit 19. Provide technical support for the development of pipe system design, installation and network expansion 20. Conduct the workshops to share the experience, outcome and lessons of the pilot project 21. Prepare capacity development and training using the DMAs and LCCs as the basis for NRW reduction activities 22. Prepare the work schedule and staff assignment plan for water meter reading 23. Conduct training on water meter reading and reporting methods for operators and Dispatchers 24. Prepare SOPs for water meter reading and billing activities 25. Monitor the water meter reading and billing activities 26. Report the monitoring results, such as anomalies and illegal connections, to the respective sections	<b>Solomon Islands Side</b> 1. Personnel - Project Director - Project Manager - NRW Management Team (3 members) - NRW Action Team (10 members) - Technical staff (4 members) - Customer Service Staff (10 members) - IRS Staff (2 members) - Labour (District Staff Team (2 members)) 2. Creation of Discharge DMA's 3. Preparation of the project office and facilities necessary for the project implementation 4. Expenses for implementing pilot projects in Honiara City - Provide the necessary water meter, pipe fittings and other materials - Provide labour to implement the project technology R environment - Provide management support for technical assistance implementation of the pilot project 5. Administration and equipment system - Electricity, water, communication, etc. - Local facilities (cost and fully administrative/financial) (SIA/IC/1) - Transport personnel - Other resources <b>Supporting Side</b> 1. Expert - Leader / Water Security Planning, Operation and Maintenance - Deputy Leader / NRW Reduction Measures (1) - NRW Reduction Measures (2) - Leakage Detection Technology - O&M - Construction & Public Relations - Consultant - Other resource 2. Training of staff (equipment) 3. Training of staff (equipment) 4. Training of staff (equipment) 5. Training of staff (equipment) 6. Training of staff (equipment) 7. Training of staff (equipment) 8. Training of staff (equipment) 9. Training of staff (equipment) 10. Training of staff (equipment) 11. Training of staff (equipment) 12. Training of staff (equipment) 13. Training of staff (equipment) 14. Training of staff (equipment) 15. Training of staff (equipment) 16. Training of staff (equipment) 17. Training of staff (equipment) 18. Training of staff (equipment) 19. Training of staff (equipment) 20. Training of staff (equipment) 21. Training of staff (equipment) 22. Training of staff (equipment) 23. Training of staff (equipment) 24. Training of staff (equipment) 25. Training of staff (equipment) 26. Training of staff (equipment) 27. Training of staff (equipment) 28. Training of staff (equipment) 29. Training of staff (equipment) 30. Training of staff (equipment) 31. Training of staff (equipment) 32. Training of staff (equipment) 33. Training of staff (equipment) 34. Training of staff (equipment) 35. Training of staff (equipment) 36. Training of staff (equipment) 37. Training of staff (equipment) 38. Training of staff (equipment) 39. Training of staff (equipment) 40. Training of staff (equipment) 41. Training of staff (equipment) 42. Training of staff (equipment) 43. Training of staff (equipment) 44. Training of staff (equipment) 45. Training of staff (equipment) 46. Training of staff (equipment) 47. Training of staff (equipment) 48. Training of staff (equipment) 49. Training of staff (equipment) 50. Training of staff (equipment) 51. Training of staff (equipment) 52. Training of staff (equipment) 53. Training of staff (equipment) 54. Training of staff (equipment) 55. Training of staff (equipment) 56. Training of staff (equipment) 57. Training of staff (equipment) 58. Training of staff (equipment) 59. Training of staff (equipment) 60. Training of staff (equipment) 61. Training of staff (equipment) 62. Training of staff (equipment) 63. Training of staff (equipment) 64. Training of staff (equipment) 65. Training of staff (equipment) 66. Training of staff (equipment) 67. Training of staff (equipment) 68. Training of staff (equipment) 69. Training of staff (equipment) 70. Training of staff (equipment) 71. Training of staff (equipment) 72. Training of staff (equipment) 73. Training of staff (equipment) 74. Training of staff (equipment) 75. Training of staff (equipment) 76. Training of staff (equipment) 77. Training of staff (equipment) 78. Training of staff (equipment) 79. Training of staff (equipment) 80. Training of staff (equipment) 81. Training of staff (equipment) 82. Training of staff (equipment) 83. Training of staff (equipment) 84. Training of staff (equipment) 85. Training of staff (equipment) 86. Training of staff (equipment) 87. Training of staff (equipment) 88. Training of staff (equipment) 89. Training of staff (equipment) 90. Training of staff (equipment) 91. Training of staff (equipment) 92. Training of staff (equipment) 93. Training of staff (equipment) 94. Training of staff (equipment) 95. Training of staff (equipment) 96. Training of staff (equipment) 97. Training of staff (equipment) 98. Training of staff (equipment) 99. Training of staff (equipment) 100. Training of staff (equipment)	<b>Assumptions</b> 1. Timeliness of equipment provided (if any) 2. Provision of facilities and equipment (if any) 3. Timeliness of equipment (if any) 4. Timeliness of equipment (if any) 5. Timeliness of equipment (if any) 6. Timeliness of equipment (if any) 7. Timeliness of equipment (if any) 8. Timeliness of equipment (if any) 9. Timeliness of equipment (if any) 10. Timeliness of equipment (if any) 11. Timeliness of equipment (if any) 12. Timeliness of equipment (if any) 13. Timeliness of equipment (if any) 14. Timeliness of equipment (if any) 15. Timeliness of equipment (if any) 16. Timeliness of equipment (if any) 17. Timeliness of equipment (if any) 18. Timeliness of equipment (if any) 19. Timeliness of equipment (if any) 20. Timeliness of equipment (if any) 21. Timeliness of equipment (if any) 22. Timeliness of equipment (if any) 23. Timeliness of equipment (if any) 24. Timeliness of equipment (if any) 25. Timeliness of equipment (if any) 26. Timeliness of equipment (if any) 27. Timeliness of equipment (if any) 28. Timeliness of equipment (if any) 29. Timeliness of equipment (if any) 30. Timeliness of equipment (if any) 31. Timeliness of equipment (if any) 32. Timeliness of equipment (if any) 33. Timeliness of equipment (if any) 34. Timeliness of equipment (if any) 35. Timeliness of equipment (if any) 36. Timeliness of equipment (if any) 37. Timeliness of equipment (if any) 38. Timeliness of equipment (if any) 39. Timeliness of equipment (if any) 40. Timeliness of equipment (if any) 41. Timeliness of equipment (if any) 42. Timeliness of equipment (if any) 43. Timeliness of equipment (if any) 44. Timeliness of equipment (if any) 45. Timeliness of equipment (if any) 46. Timeliness of equipment (if any) 47. Timeliness of equipment (if any) 48. Timeliness of equipment (if any) 49. Timeliness of equipment (if any) 50. Timeliness of equipment (if any) 51. Timeliness of equipment (if any) 52. Timeliness of equipment (if any) 53. Timeliness of equipment (if any) 54. Timeliness of equipment (if any) 55. Timeliness of equipment (if any) 56. Timeliness of equipment (if any) 57. Timeliness of equipment (if any) 58. Timeliness of equipment (if any) 59. Timeliness of equipment (if any) 60. Timeliness of equipment (if any) 61. Timeliness of equipment (if any) 62. Timeliness of equipment (if any) 63. Timeliness of equipment (if any) 64. Timeliness of equipment (if any) 65. Timeliness of equipment (if any) 66. Timeliness of equipment (if any) 67. Timeliness of equipment (if any) 68. Timeliness of equipment (if any) 69. Timeliness of equipment (if any) 70. Timeliness of equipment (if any) 71. Timeliness of equipment (if any) 72. Timeliness of equipment (if any) 73. Timeliness of equipment (if any) 74. Timeliness of equipment (if any) 75. Timeliness of equipment (if any) 76. Timeliness of equipment (if any) 77. Timeliness of equipment (if any) 78. Timeliness of equipment (if any) 79. Timeliness of equipment (if any) 80. Timeliness of equipment (if any) 81. Timeliness of equipment (if any) 82. Timeliness of equipment (if any) 83. Timeliness of equipment (if any) 84. Timeliness of equipment (if any) 85. Timeliness of equipment (if any) 86. Timeliness of equipment (if any) 87. Timeliness of equipment (if any) 88. Timeliness of equipment (if any) 89. Timeliness of equipment (if any) 90. Timeliness of equipment (if any) 91. Timeliness of equipment (if any) 92. Timeliness of equipment (if any) 93. Timeliness of equipment (if any) 94. Timeliness of equipment (if any) 95. Timeliness of equipment (if any) 96. Timeliness of equipment (if any) 97. Timeliness of equipment (if any) 98. Timeliness of equipment (if any) 99. Timeliness of equipment (if any) 100. Timeliness of equipment (if any)	

Note: SW Revenue indicates NRW reduction activities not only in Pilot Areas but also in DMAs.  
 \* Indicators are based on SW's Revenue plan (2014-2015) target.  
 \*\* The change figure (year-over) is based on the result of only one pilot project. Therefore, the change figure for change in revenue (SW) based on implementation of pilot project.





Monitoring Sheet based on Plan of Operations (POO)

Project Title: The Project for the Improvement of Sanitation Water Reclamation Facility for Industrial Water Utility Authority in Sidi Barrani

Project Area: Sidi Barrani

Item No.	Item Description	Start	End	Progress	Remarks
1	Site Investigation and Survey	2023-01-01	2023-01-31	100%	
2	Design and Engineering	2023-02-01	2023-03-31	100%	
3	Procurement of Materials and Equipment	2023-04-01	2023-05-31	100%	
4	Construction of Civil Works	2023-06-01	2023-08-31	100%	
5	Installation of Mechanical and Electrical Equipment	2023-09-01	2023-10-31	100%	
6	Testing and Commissioning	2023-11-01	2023-11-30	100%	
7	Handover and Closeout	2023-12-01	2023-12-31	100%	

Handwritten initials and signature: *KU*

Monitoring Sheet based on Plan of Operations (POO)

Project Title: The Project for the Improvement of Sanitation Water Reclamation Facility for Industrial Water Utility Authority in Sidi Barrani

Project Area: Sidi Barrani

Item No.	Item Description	Start	End	Progress	Remarks
1	Site Investigation and Survey	2023-01-01	2023-01-31	100%	
2	Design and Engineering	2023-02-01	2023-03-31	100%	
3	Procurement of Materials and Equipment	2023-04-01	2023-05-31	100%	
4	Construction of Civil Works	2023-06-01	2023-08-31	100%	
5	Installation of Mechanical and Electrical Equipment	2023-09-01	2023-10-31	100%	
6	Testing and Commissioning	2023-11-01	2023-11-30	100%	
7	Handover and Closeout	2023-12-01	2023-12-31	100%	

Handwritten initials and signature: *KU*







Attachment-3 Minutes of Inception Meeting

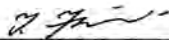


**Minutes of Meeting**  
**on**  
**Inception Report**  
**for**  
**The Project for Improvement of Non-Revenue Water Reduction**  
**Capacity for Solomon Islands Water Authority**  
**in**  
**the Solomon Islands**

Honiara, 8th of November 2012



Mr. Richard Austin  
General Manager  
Solomon Islands Water Authority (SIWA)



Mr. Taketoshi Fujiyama  
Leader JICA Expert Team

Upon the commencement of the Project for Improvement of Non-Revenue Water Reduction Capacity for Solomon Islands Water Authority in the Solomon Islands (hereinafter referred to as "the Project"), the Japan International Cooperation Agency (hereinafter referred to as JICA) expert team (hereinafter referred to as the Team) headed by Mr. Taketoshi Fujiyama, submitted an Inception Report (hereinafter referred to as IC/R) to SIWA, and held discussions on the implementation plan of the Project on the 7th of November 2012. SIWA accepted the IC/R in principle.

The major points of discussion and agreement are summarized as follows:

1. Revision of Project Purpose and Overall Goal

SIWA confirmed that project purpose and overall goal as indicated in PDM<sub>0</sub> had been revised as PDM<sub>1</sub> which was attached with Record of Discussion (R/D) dated on the 27th of July 2012.

PDM<sub>0</sub>:

Project Purpose: - The capacity of SIWA for non-revenue water (NRW) reduction is enhanced.

Overall Goal: - The NRW ratio in Honiara City is reduced.

PDM<sub>1</sub>:

Project Purpose: -Non-Revenue Water (NRW) ratio in Honiara City is reduced.

Overall Goal: - SIWA's service levels are improved and SIWA's revenue is increased.

2. Arrangement of Counterpart

SIWA agreed that SIWA would field the following counterpart staff (hereinafter referred to as CP):

Non-Revenue Water (NRW) Management Team of SIWA:

- Project Director: General Manager
- Project Manager: Operation & Technical Manager
- Finance & Administration Manager (+Assistant Manager)
- Service Delivery & Communication Manager (or Substitute)

NRW Action Team of SIWA

- Team Leader 1 / Operation & Technical Manager
- Team Leader 2 / Service Delivery & Communication Manager
- Mapping Sub-Team
- Service Pipe Connection Sub-Team
- Service Pipe Disconnection Sub-Team
- Leakage Detection Sub-Team
- Pipe Maintenance & Repair Sub-Team
- Water Meter Reading, Billing and Tariff Collection Sub-Team
- Pipe Materials Management and Procurement Sub-Team

3. Provision of Office Space and Furniture for the Project



SIWA agreed that suitable office space and furniture would be provided to the Team by the end of 2012. Prior to that, SIWA will make every effort to provide adequate temporary space for the Team.

4. Procurement of Pipe material for NRW Reduction Measures

SIWA agreed on the procurement of pipe material required for NRW reduction measures.

Annex

List of Participant

[SIWA side]

Mr. Richard AUSTIN

Mr. Ron DAVIES

Mr. Ray ANDRESEN

Ms. Kirsten BARTLETT

Mr. Eric UNGA

General Manager of SIWA

Finance & Administration Manager of SIWA

Operations and Technical Manager of SIWA

Communications / Customer of SIWA

Network Loss / Provincial Manager of SIWA

[Japanese side]

Mr. Yoshiki OMURA

Mr. Ryosuke ISOBE

Mr. Yoshinobu TAKESHITA

Ms. Naoko LAKA

Mr. Taketoshi FUJIYAMA

Ms. Akiko SAKAMOTO

Leader of JICA Team, JICA Headquarter

Cooperation Planning, JICA Headquarter

Resident Representative, JICA Solomon Islands office

Project Formulation Advisor, JICA Solomon Islands office

Leader of JICA Expert Team

Coordinator of JICA Expert Team

Handwritten signature and initials in black ink.

Handwritten signature and initials in black ink.

Attachment-4 Memorandum of Agreement between AusAID,

JICA and Solomon Water





**MEMORANDUM OF AGREEMENT**  
**BETWEEN**  
**AUSTRALIAN AGENCY FOR INTERNATIONAL DEVELOPMENT (AusAID),**  
**JAPAN INTERNATIONAL COOPERATION AGENCY (JICA)**  
**AND**  
**SOLOMON ISLANDS WATER AUTHORITY (SW),**  
**ON**  
**THE SOLOMON WATER DEVELOPMENT PLAN 2013-2015**

1. Preface

This Memorandum of Agreement is to confirm the commitment of the undersigned organisations to cooperate towards the improvement of water supply services in Honiara. This agreement will be effective from the date of signing to 4 November 2015, the completion date of JICA technical cooperation project, "The Project for Improvement of Non-Revenue Water Reduction Capacity for Solomon Islands Water Authority".

2. Background

Funded by AusAID, SW has implemented the Short Term Recovery and Action Plan (RAP) from September 2011 to June 2013 with the aim of improving SW's management and services. The RAP is succeeded by the Solomon Water Development Plan, 2013-2015 ("The Two Year Plan"). AusAID is supporting the Two Year Plan through a direct funding agreement between AusAID and SW that began in May 2013 and by engaging long-term managers and short-term consultants for Solomon Water. The objective of The Two Year Plan is that "Solomon Water provides improved levels of service (in terms of quality, quantity and reliability) to a larger proportion of the population in the existing service areas, based on a sound financial position". In order to achieve this objective, SW has identified the following five areas to be further improved and strengthened:

- (1) levels of service for water supply;
- (2) customer care and communications;
- (3) financial management and administration;
- (4) organisational capacity; and
- (5) strategic planning

JICA has been implementing the grant aid project "Project for the Improvement of Water Supply Systems in Honiara and Auki" since December 2011 to increase the volume of water availability for supply and the storage and transmission capacity of water supply system. In November 2012, JICA commenced a 3 year technical cooperation project "Project for Improvement of Non-Revenue Water Reduction Capacity for Solomon Islands Water Authority". Reducing non-revenue water is one of the major components in The Two Year Plan and it is important that SW not only improve the delivery of services but also increase revenue and reduce operating costs through the reduction of non-revenue water.

3. Agreement

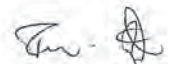
The Parties will work closely together to enable SW to achieve the objective of The Two Year Plan through the following agreements:

- a. AusAID, JICA and SW will maintain regular dialogue on how best resources made available by all Parties are to be utilized to maximize the outcomes of projects implemented by and for SW;
- b. SW will use its best endeavours to coordinate the inputs of the Parties that relate to SW's development in order to maximise the improvements achieved in the performance of SW;
- c. AusAID will be invited to participate in the Joint Coordinating Committee of JICA Project for Improvement of Non-Revenue Water Reduction Capacity for SW;
- d. JICA will be invited to participate in the Steering Group for the Two Year Plan;
- e. SW will inform AusAID and JICA of any material changes in its development strategies and plans in a timely manner; and
- f. Subject to each Party's accountability requirements, the Parties will take measures to protect any confidential information disclosed between the Parties.
- g. The Memorandum of Agreement signed between SW, AusAID, and JICA on September 27<sup>th</sup> 2012 is no longer in force from the date of signing this Memorandum.

4. Legal status

This Memorandum of Agreement is neither an international treaty nor legal binding document and does not create legal rights or obligations.

RW 



TU.

TU.



Rochelle White  
Counsellor  
AusAID Honiara

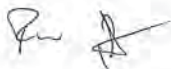


Taiji Usui  
Resident Representative  
JICA Solomon Islands Office



Richard Austin  
General Manager  
Solomon Water

Honiara, 15 August 2013



Attachment-5 Minutes on 1<sup>st</sup> Joint Coordinating Committee

(JCC) Meeting on 24 April 2013

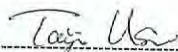


**Amendment of JCC Minutes of the First Joint Coordinating Committee Meeting for the Project for Improvement of Non-Revenue Water Reduction Capacity for SIWA Solomon Islands**

15 August 2013



Mr. Richard Ausin  
Project Director  
Solomon Water



Mr. Taiji Usui  
Resident Representative  
JICA Solomon Islands Office



Mr. Taketoshi Fujiyama  
Leader  
JICA Project Team

This is to state that the Project Team, SW and JICA Solomon Islands Office in Honiara met after the first JCC meeting to discuss the suggested changes in the PDM. The results of discussions were communicated with JICA HQ and the following changes have been agreed by all.

1. Overall Goal Indicators

“Water supply hours become longer” has been deleted as this indicator is affected by several factors outside the scope of NRW activities such as pump improvements under the RAP, the effect of the JICA Grant Aid project, the reliability of electricity supply, the provision of stand-by generator under the Two Year Plan and improvements in operational management in general.”

“The NRW ratio in Honiara City is reduced to 20% by 2018” has been added as it is considered appropriate to refer to the NRW reduction target that is stated in the Two Year Plan.

2. Project Purpose

“NRW ratio in Honiara City is reduced” has been changed to “SW is assisted to achieve its target of reducing the NRW ratio to 30% by 2015”. NRW reduction is one of major components in the TYP and collective work between SW, JICA and AusAID (funding) is required. The project is mean to develop the capacity of SW staff in reducing NRW and doesn't necessarily aim at reducing NRW in Honiara City.

3. Outputs

To show how the project should progress, Output 2 “Implementation procedure of NRW reduction is established through the pilot projects” has been developed into two outputs as follows and accordingly the indicators for Output 2 have been placed under respective outputs:

Output 2 “The procedure for NRW reduction is established through the pilot project areas and/or LCZs” and

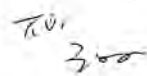
Output 3 “The NRW reduction is implemented in accordance with the procedure in pilot areas and/or LCZs”

4. Activities

In accordance with the amendments described above in Para. - “Outputs”, the activities 2-1 to 2-3 for Output 2 and the activities 3-1 to 3-10 for Output 3 have been numbered accordingly for clarity (see the PDM).

5. Others

See the PDM for minor changes.











Attachment-6 Amendment of Minutes on the 1<sup>st</sup> Joint  
Coordinating Committee (JCC) Meeting on 15 August 2013




MINUTES  
OF  
THE FIRST JOINT COORDINATING COMMITTEE MEETING  
FOR  
THE PROJECT FOR IMPRVEMENT OF NON-REVENUE WATER REDUCTION  
CAPACITY FOR SIWA IN SOLOMON ISLANDS


24 April 2013



Mr. Richard Austin  
Project Director  
Solomon Water



Mr. Yoshinobu Takishita  
Resident Representative  
JICA Solomon Islands Office



Mr. Taketoshi Fujiyama  
Leader  
JICA Project Team

The following were the matters discussed and decisions made in the JCC meeting:

**1. Presentation on the Project Progress and Action Plan**

The JICA Project Team reported the progress of the Project from November 2012 to April 2013 and introduced the Action Plan for the next phase.

**2. Presentation on the Two Year Plan**

Solomon Islands Water Authority (hereinafter referred to as "SW") has prepared the Solomon Water Development Plan 2013-2015 (The "Two Year Plan") in April 2013. The objective of the TYP is to "provide improved levels of service to larger proportion of the population in the existing services areas, based on a sound financial position". Under the TYP, SW will introduce comprehensive pressure management, commence a program of replacement of the small diameter water network to improve hydraulic capacity, improve the connectivity and reliability of the water transmission network, and reduce non-revenue water.

**Revision of the PDM, PO and AP**

As an indicator for the Project Purpose, the Project Team proposed "The NRW ratio is reduced by 30 points in each pilot project areas". Since the Project Team found the ratio of NRW was more than 80 percent in the first pilot area, which was much higher than originally expected, the "percentage point" method of expressing NRW reduction was suggested to reduce by a similar quantity of NRW in all the pilot areas.

JICA Solomon Islands Office questioned the validity of measuring the project achievement only in the pilot areas as the Project Purpose implied to reduce NRW in Honiara. With this, JICA Solomon Islands Office proposed to include the NRW reduction target of 30% by 2015 as stated in the TYP. Similarly, SW proposed to add the target of 20% by 2018 in the indicator of the Overall Goal. This was also to align the project to the TYP.

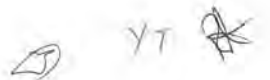
Furthermore, SW proposed to transfer the Project activity from pilot project zones to DMAs as soon as the DMAs are established, so that NRW can be reduced systematically on the basis of permanently established DMAs.

The proposed changes were not endorsed by the JCC meeting due to different views and opinions. Hence the Project Team, SW and JICA Solomon Islands Office agreed to continue discussions after the JCC meeting.

**Draft Memorandum of Agreement (MoA) between JICA, AusAID and Solomon Water**

The draft MoA was shared for information. The purpose of the MoA is to ensure close collaboration between the three parties.

End



**List of Participant**

[Solomon Islands Side]	
Mr Richard Austin	Project Director, Solomon Water
Mr Ray Andressen	Project Manager, Solomon Water
Ms Ethel Frances	Director, Solomon Water Board
Mr Charlie Bepapa	Director, Ministry of Mines, Energy and Rural Electrification
[Japanese Side]	
Mr Taketoshi Fujiyama	Leader / Water Supply Planning, Operation and Management
Mr Masatoshi Seno	NRW Reduction Measures -2
Ms Akiko Sakamoto	Coordinator
Mr Yoshinobu Takishita	Resident Representative, JICA Solomon Islands Office
Ms Naoko Laka	Project Formulation Advisor, JICA Solomon Islands Office
Ms Hironi Obata	Researcher/Advisor, Embassy of Japan in Solomon Islands
[Other Donor]	
Mr Scott McHamara	Senior Development Program Specialist Economic Infrastructure, AusAID
Ms. Mia Rimon	Resident Representative, SPC (South Pacific Counsel)

Annex-1

**Annex I: Project Design Matrix (PDM<sub>1</sub>):**

Project Title: Project for Improvement of Non-Revenue Water Reduction Capacity for Solomon Islands Water Authority (SIWA) in Solomon Islands  
 Target Areas: Honiara City Target Group: SIWA staff Project Period : October, 2012 – October, 2015 (Three (3) Years)

Version No. 

Narrative Summary	Objectively Verifiable Indicators	Means of Verification	Important Assumptions
<b>Overall Goal</b> SIWA's service levels are improved and SIWA's revenue is increased.	<ol style="list-style-type: none"> <li>Water supply hours become longer.</li> <li>The NRW ratio in Honiara City is reduced to 00% by 2018.</li> <li>Ratio of current expense to current income becomes more than 100% by 2018.</li> </ol>	<ol style="list-style-type: none"> <li>SIWA Annual Report</li> <li>SIWA Annual Report</li> <li>SIWA Annual Report</li> </ol>	
<b>Project Purpose</b> Non-revenue water (NRW) ratio in Honiara City is reduced.	<ol style="list-style-type: none"> <li>The NRW ratio is reduced to 00% in each pilot area and the NRW ratio in Honiara City is reduced to 00%.</li> </ol>	<ol style="list-style-type: none"> <li>Project Report</li> </ol>	Budgetary and human resources necessary for stable water supply are continuously allocated by SIWA.
<b>Outputs</b>			The SIWA staff capacitated by the Project continues working for their respective positions.
<ol style="list-style-type: none"> <li>The planning process for NRW reduction is systemized.</li> <li>The implementation procedure of NRW reduction is established through the pilot projects.</li> <li>Billing process management is improved.</li> </ol>	<ol style="list-style-type: none"> <li> <ol style="list-style-type: none"> <li>Annual budget for NRW reduction is secured in the pilot project areas.</li> <li>The strategic implementation (rolling-out) plan for NRW reduction is approved by the executive board of SIWA.</li> </ol> </li> <li> <ol style="list-style-type: none"> <li>A manual for NRW reduction measures is revised.</li> <li>The number of pipe repairs is increased in the pilot project areas.</li> <li>The number of authorizations and disconnections of illegal connections is increased in the pilot project areas.</li> <li>The number of new service connections and replacement of malfunctioning customer meters is increased in the pilot project areas.</li> </ol> </li> <li> <ol style="list-style-type: none"> <li>Standard of procedure (SOP) and training materials are formulated.</li> </ol> </li> </ol>	<ol style="list-style-type: none"> <li> <ol style="list-style-type: none"> <li>Annual budget plan</li> <li>Strategic implementation (rolling-out) plan for NRW reduction</li> </ol> </li> <li> <ol style="list-style-type: none"> <li>Project Report</li> <li>Project Report</li> <li>Project Report</li> </ol> </li> <li> <ol style="list-style-type: none"> <li>Project Report</li> </ol> </li> </ol>	

*Handwritten mark*

Activities	Inputs	
1-1 Establish the NRW Management Team in SIWA. 1-2 Review the current NRW reduction activities done by SIWA. 1-3 Conduct hydraulic analysis of distribution network and water balance audit. 1-4 Select pilot project areas. 1-5 Formulate an annual operational plan on NRW reduction at the pilot project areas. 1-6 Monitor the progress of NRW reduction activities in the pilot project areas. 1-7 Analyze cost and benefit of NRW reduction measures. 1-8 Prepare the strategic implementation (rolling-out) plan for NRW reduction in whole Honiara City.	<b>Japanese side</b> <ol style="list-style-type: none"> <li>Experts               <ul style="list-style-type: none"> <li>Chief Advisor/ Water Supply Planning and Management</li> <li>NRW Reduction Management</li> <li>Leakage Detection Technology</li> <li>GIS</li> <li>Customer Services/PR</li> <li>Others as necessary</li> </ul> </li> <li>Training of counterpart personnel in Japan and/or the Third Countries</li> <li>Provision of machinery and equipment               <ul style="list-style-type: none"> <li>Leakage detection equipment</li> <li>Water flow meters</li> <li>Customer meters</li> <li>Valves</li> <li>Handheld data-input device</li> <li>GPS portable terminals</li> <li>Office equipment</li> <li>Others as necessary</li> </ul> </li> <li>Local expenses for the project activities               <ul style="list-style-type: none"> <li>Teaching materials for training and workshops</li> <li>Others</li> </ul> </li> </ol>	<b>Solomon Islands' side</b> <ol style="list-style-type: none"> <li>Personnel               <ul style="list-style-type: none"> <li>Project Director</li> <li>Project Manager</li> <li>Counterpart personnel</li> </ul> </li> <li>Provision of the project offices and facilities necessary for the project implementation</li> <li>Expenses for implementing pilot projects in Honiara City, such as repair costs for distribution pipes, installation costs for valves and meters, etc.</li> <li>Administrative and operational expenses               <ul style="list-style-type: none"> <li>Electricity, water, communication, etc.</li> <li>Local traveling costs and daily subsistence allowance (DSA) for counterpart personnel</li> <li>Others as necessary</li> </ul> </li> </ol>
2-1 Establish the NRW Action Team in SIWA. 2-2 Check the flow meters and replace the malfunctioning meters with new ones at all the water sources. 2-3 Conduct training on NRW reduction for the NRW Action Team. 2-4 Update the water distribution network drawings by using GIS at the pilot project areas. 2-5 Install necessary valves & flow meters and to measure the NRW ratio before the pilot projects. 2-6 Identify the causes of NRW (water leakage, illegal connection, meter-related losses) in the pilot project areas through the OJT. 2-7 Implement NRW reduction measures in the pilot project areas and measure the NRW ratio after the pilot projects. 2-8 Prepare reports of the pilot project results including the costs and benefits. 2-9 Update the manuals on pipe installation, leakage detection, etc. 2-10 Convene the workshops to share the experiences, outcomes, etc. of the pilot projects.		Natural disasters do not give a profound effect to the project activities.
3-1 Formulate the work schedule and staff assignment plan for meter readers. 3-2 Conduct training on meter-reading and reporting methods for anomalies and illegal connections for meter readers. 3-3 Promote PR activities on water conservation and tariff for the customers. 3-4 Monitor the meter reading activities and bill deliveries. 3-5 Report the monitoring results, such as anomalies and illegal connections, to the responsible sections.		Pre-condition

Annex II: Tentative Plan of Operations (PO)

	Year 2012												Year 2013												Year 2014												Year 2015												
	Month	1	2	3	4	5	6	7	8	9	10	11	12	1	2	3	4	5	6	7	8	9	10	11	12	1	2	3	4	5	6	7	8	9	10	11	12	1	2	3	4	5	6	7	8	9	10	11	12
Joint Coordinating Committee (JCC) Meetings																																																	
Terminal Evaluation																																																	
<b>OUTPUT 1. The planning process for NRW reduction is systemized.</b>																																																	
1-1 Establish the NRW Management Team in SIWA.																																																	
1-2 Review the current NRW reduction activities done by SIWA.																																																	
1-3 Conduct hydraulic analysis of distribution network and water balance audit																																																	
1-4 Select pilot project areas																																																	
1-5 Formulate an annual operational plan on NRW reduction at the pilot project areas																																																	
1-6 Monitor the progress of NRW reduction activities in the pilot project areas																																																	
1-7 Analyze cost and benefit of NRW reduction measures																																																	
1-8 Prepare the strategic implementation (rolling-out) plan for NRW reduction in whole Honiara City.																																																	
<b>OUTPUT 2. The implementation procedure of NRW reduction is established through the pilot projects.</b>																																																	
2-1 Establish the NRW Action Team in SIWA.																																																	
2-2 Check the flow meters and replace the malfunctioning meters with new ones at all the water sources.																																																	
2-3 Conduct training on NRW reduction for the NRW Action Team																																																	
2-4 Update the water distribution network drawings by using GIS at the pilot project areas.																																																	
2-5 Install necessary valves & flow meters and to measure the NRW ratio before the pilot projects																																																	
2-6 Identify the causes of NRW (water leakage, illegal connection, meter-related losses) in the pilot project areas through the OJT.																																																	
2-7 Implement NRW reduction measures in the pilot project areas and to measure the NRW ratio after the pilot projects																																																	
2-8 Prepare reports of the pilot project results including the costs and benefits.																																																	
2-9 Update the manuals on pipe installation, leakage detection, etc.																																																	
2-10 Convene the workshops to share the experiences, outcomes, etc. of the pilot projects.																																																	
<b>OUTPUT 3. Billing process management is improved.</b>																																																	
3-1 Formulate the work schedule and staff assignment plan for meter readers																																																	
3-2 Conduct training on meter-reading and reporting methods for anomalies and illegal connections for meter readers																																																	
3-3 Promote PR activities on water conservation and tariff for the customers																																																	
3-4 Monitor the meter reading activities and bill deliveries																																																	
3-5 Report the monitoring results, such as anomalies and illegal connections, to the responsible sections																																																	

Note: The start of the Project, schedules described in this chart, and so on are subject to modifications through further examinations and discussions in future.

- To complete project activities within the solid line
- ▣ To continuously conduct project activities during the dotted line
- △ To prepare plans and reports, convene workshops, etc.



Attachment-7 Minutes on the 2<sup>nd</sup> Joint Coordinating Committee

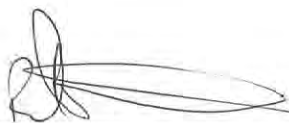
(JCC) Meeting on 27 November 2013





**Minutes of Meeting**  
**on**  
**The 2nd JCC**  
**for**  
**The Project for Improvement of Non-Revenue Water Reduction Capacity**  
**for SIWA in Solomon Islands**

27 November 2013



Mr. Richard Austin  
Project Director



Mr. Taketoshi Fujiyama  
Leader, JICA Expert Team

Witness:



Mr. Yoshiaki Omura  
Senior Advisor, Water Supply Development  
JICA

In the course of Phase-2 of The Project for Improvement of Non-Revenue Water Reduction Capacity for SIWA in Solomon Islands (hereinafter referred to as "the Project"), the second meeting of Joint Coordinating Committee (hereinafter referred to as "JCC") was held on the 27 November 2013.

Mr. Richard Austin, General Manager of Solomon Water, chaired the JCC and introduced the current status of water supply services of Solomon Water, and emphasized the importance of NRW reduction activities for Solomon Water. He summarized the outcome of the Pacific Water and Waste Association benchmarking for 2012 and compared Solomon Water's performance in non-revenue water and related measures with medium-sized water operators in the Pacific region.

The following were presented by Solomon Water's NRW Action Team in the JCC.

**1. The Second Project Progress Report**

A NRW Action Team Member summarized the second project progress report including the pilot projects during the period from April to October 2013. The second project progress report was confirmed and accepted in the JCC meeting.

**2. Revision of PDM**

Amendment of the 1<sup>st</sup> JCC minutes was agreed and signed by SW, JICA Solomon Islands and the Project Team on 15 August 2013 for revision of the first Project Design Matrix (PDM<sub>1</sub>). The NRW Action Team Member explained the revisions made to PDM<sub>1</sub>. The JCC Members accepted the PDM<sub>2</sub>.

**3. Creation of District Metered Areas (DMAs)**

The NRW Action Team Member presented the need for the creation of DMAs which are to be funded through Australian Aid; the planned activities in DMAs and the expected outputs and timelines for procurement and installation. It was also explained that the creation of DMAs is complementary in nature to the NRW reduction activities. The creation of DMA's was accepted by the JCC meeting.

**4. Comments**

Ms. Rochelle White, Counsellor for Australian Aid, enquired about the success of the recently opened Customer Care Centre and how it was responding to the customer-related issues raised by the NRW reduction activities. Ms. Ellen Inzhia, Service Delivery and Communications Manager for Solomon Water, responded saying that the NRW activity and the disconnections program for debt recovery were adding a significant workload for the staff at the Centre. There were still problems of communications and record-keeping of customer contacts but that these were being addressed within the current limitations of the IT systems and in particular the existing billing systems.

Ms. Ethel Frances, a director of Solomon Water, acknowledged all the presentations on progress of the NRW Reduction Project. She also requested Solomon Water to formulate a Risk Management Plan and make a budget for the future based upon it. The Chairman agreed that Solomon Water would consider this suggestion.

Ms. Naoko Laka, Project Formulation Advisor, JICA Solomon Islands commented that it is an irony

  
 9

that the financial benefit of reducing NRW over 3 years in the pilot zones is equivalent to the government's debt of SBD 5 Million and that the level of Government debt was counter to the support required by Solomon Water. She also made an observation that the upgrading of the settlements initiated by the UN Habitat will be another challenge for Solomon Water as the people in those settlements will be entitled to and desire a water supply. Mr. Austin stated the importance of involving the utilities in any proposals for the improvement of these settlements and that it may be necessary to consider forms of financial support to enable the inhabitants to afford the service.

Handouts:

- Project Progress Report 2 (Main Report)
- Project Progress Report 2 (Annex)
- Progress -2 of the Pilot Project (for Presentation)
- PDM2 (for Presentation)
- District Metered Area (DMA)

End

#### List of Participant

<b>[Solomon Water Board Member]</b>	
Ms. Ethel Frances	Director, Solomon Water Board
<b>Australian AID</b>	
Ms. Rochelle White	Counsellor, Australian Aid
Mr. Eric Lui	Senior Program Manager, Australian Aid
<b>Embassy of Japan</b>	
Ms. Hitomi Obata	Researcher/Advisor, Embassy of Japan in Solomon Islands
<b>JICA Headquarters</b>	
Mr. Yoshiki Omura	Senior Advisor, Water Supply Development, JICA Headquarter
Mr. Ryosuke Isobe	Water Resources and Disaster Management Group, Global Environment Department, JICA headquarter
<b>JICA Solomon Islands</b>	
Ms. Naoko Laka	Project Formulation Advisor, JICA Solomon Islands Office
<b>[Solomon Water]</b>	
Mr. Richard Austin	Project Director, Solomon Water
Mr. Ray Andresen	Project Manager, Solomon Water
Ms. Ellen Inahia	Service Delivery and Communications Manager, Solomon Water
Mr. Benjamin Billy	NRW Taskforce Leader, Solomon Water
Mr. Mathias Bera	Head of Pipe Repair Team, Solomon Water
Mr. Frank Daukalia	Head of Meter Repair/Replacement Team, Solomon Water
Mr. Austin Ata	Deputy Sub-Team Leader (Customer Connections), Solomon Water
<b>[JICA Expert Team]</b>	
Mr. Taketoshi Fujiyama	Leader / Water Supply Planning, Operation and Management
Mr. Akihiko Okazaki	Leakage Detection Technology
Mr. Yoshiharu Wada	Customer Services & Public Relations

(2) 4

(2) 4





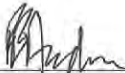
Attachment-8 Minutes on the 3<sup>rd</sup> Joint Coordinating Committee

(JCC) Meeting on 19 March 2015



**MINUTES OF MEETING  
ON  
THE THIRD JOINT COORDINATING COMMITTEE  
FOR  
THE PROJECT FOR IMPROVEMENT OF  
NON-REVENUE WATER REDUCTION CAPACITY  
FOR SIWA IN SOLOMON ISLANDS**

19<sup>th</sup> March 2015

  
Mr. Ray Andresen  
Project Director  
Solomon Water

  
Mr. Taketoshi Fujiyama  
Leader, JICA Expert Team

  
for Mr. Taiji Usui  
Resident Representative  
JICA Solomon Islands Office

At the end of Phase-3 of the Project for Improvement of Non-Revenue Water Reduction Capacity for SIWA in Solomon Islands (hereinafter referred to as "the Project"), the third meeting of Joint Coordinating Committee (hereinafter referred to as "JCC") was held on 19 March 2015.

Mr. Ray Andresen, as the Chairperson of the JCC as well as Acting General Manager of Solomon Water (Project Director), welcomed and introduced the participants (see the Annex-1), then gave presentations over to the Project Team.

**1. Presentations**

The followings were presented by the Japan International Cooperation Agency (JICA) Expert Team and the Non-Revenue Water (NRW) Action Team in the meeting.

- Brief explanation of the Project (Presenter: Mr. A. Miyoshi)
- Project progress of the completed 15 pilot projects and ongoing District Metered Areas (DMA), issues and challenges (Presenters: Mr. M. Bera and Mr. B. Billy)
- Update of procurement of flow meters, valves, fittings and chambers (Presenter: Mrs. M. Kazini)
- Revision of Project Design Matrix (PDM) (Presenter: Mr. A. Miyoshi)

The JCC members confirmed these presentations and accepted the revisions made to the second PDM<sub>2</sub>. See the Annex-2 for the third PDM (PDM<sub>3</sub>).

Regarding the procurement to be done by Solomon Water under the Two-year Plan, for the performance of mutual agreement on the Project, Mr. Akinori Miyoshi, Deputy Leader of the JICA Expert Team requested a commitment of the procurement and its schedule from Solomon Water. In response to it, Mrs. Ethel Frances, Director of Solomon Water Board suggested bringing it up for discussion in the Board meeting in the following week. The JCC members accepted the suggestion.

**2. Comments and Contributions**

First of all, Mrs. Ethel Frances, Solomon Water Board said Solomon Water acknowledges the Project Team for successful completion of pilot projects in spite of the challenges faced, and depends more on JICA and Department of Foreign Affairs and Trade of Australian Government (DFAT) to help financing the activities in the Project.

In the discussion, question and answer, the participants gave comments and contributions to the Project, particularly issues and challenges for procurement, illegal connections and DMA Management. See the Annex-3 for details.

At the end of the meeting, Mrs. Tima Kofana on behalf of Mr. Ray Andresen expressed Solomon Water's thanks to JICA, DFAT and all parties concerned, and then closed the meeting.



**Handouts:**

- Agenda
- Project Implementation Structure
- Definition of Terms
- PDM<sub>2</sub> and proposed PDM<sub>3</sub>
- Resume (Current Achievement, Progress and Issues)
- Presentation Materials

**Annex:**

- Annex-1 List of Participants
- Annex-2 Approved PDM<sub>1</sub>
- Annex-3 Comments and Contributions

End

**List of Participants**

**[Solomon Islands Side]**

- Mrs. Ethel Frances, Director, Solomon Water Board
- Mr. Ray Andresen, Project Director, Acting General Manager, Solomon Water
- Mrs. Tima Kofana, Human Resources Manager, Solomon Water
- Mr. Benjamin Billy, NRW Taskforce Team Leader, Solomon Water
- Mrs. Marista Kapini, In-house Consultant, Solomon Water
- Mr. Mathias Bera, Network Pipe Maintenance & Repair, Solomon Water
- Mr. Frank Daukalia, Meter Repair/Replacement, Solomon Water
- Mr. Gavin Bare, GIS Sub-Team Leader, Solomon Water
- Ms. Lorreta Anii, Accountant, Solomon Water
- Ms. Agnes Kabui, Revenue Management Assistant, Solomon Water
- Mr. Peter Clark, Operation Advisor, Solomon Water (under the Two-year Plan by DFAT)
- Mr. Liam Eaton, Maintenance Advisor, Solomon Water (under the Two-year Plan by DFAT)

**[Japanese Side]**

- Mr. Yoshihiko Nishimura, Project Formulation Advisor, JICA Solomon Islands Office
- Ms. Keiko Nakamura, Researcher/Advisor, Embassy of Japan in Solomon Islands
- Mr. Akinori Miyoshi, Deputy Leader/NRW Reduction Measures-1, JICA Expert Team
- Mr. Akihiko Okazaki, Leakage Detection Technology, JICA Expert Team

MA  
 3/20  
 4/12

MA  
 3/20  
 4/12







Attachment-9 Minutes on the Follow-up of 3<sup>rd</sup> Joint Coordinating

Committee (JCC) on 30 March 2015



MINUTES OF MEETINGS  
BETWEEN  
JAPAN INTERNATIONAL COOPERATION AGENCY  
AND  
SOLOMON ISLANDS WATER AUTHORITY  
FOR  
THE PROJECT FOR IMPROVEMENT  
OF NON-REVENUE WATER REDUCTION CAPACITY  
FOR SOLOMON ISLANDS WATER AUTHORITY

The Japanese Terminal Evaluation Team (hereinafter referred to as "the Team") organized by the Japan International Cooperation Agency (hereinafter referred to as "JICA") and headed by Ms. Eriko Tamura, visited Solomon Islands from 11<sup>th</sup> to 28<sup>th</sup> August, 2015 for purposes of conducting a terminal evaluation of "The Project for Improvement of Non-Revenue Water Reduction Capacity (hereinafter referred to as "the Project").


During its stay, the Team had a series of discussions and exchanged views on the Project with Solomon Islands Water Authority (hereinafter referred to as "SW"). Subsequently, the Joint Coordinating Committee (hereinafter referred to as "the JCC") was held on 26<sup>th</sup> August, 2015.

As a result of the mission, the Team submitted the joint terminal evaluation report as attached hereto and Solomon Islander side agreed upon the description of the report.

Honiara, 26<sup>th</sup> August, 2015

田村 利子

Mr. Eriko Tamura  
Leader,  
The Terminal Evaluation Team,  
Japan International Cooperation  
Agency



Mr. Ian Gooden  
Project Director,  
General Manager,  
Solomon Water Islands Authority

TERMINAL EVALUATION REPORT  
FOR  
THE PROJECT FOR IMPROVEMENT OF  
NON-REVENUE WATER REDUCTION CAPACITY  
FOR SOLOMON ISLANDS WATER AUTHORITY  
IN  
SOLOMON ISLANDS

Honiara, Solomon Islands  
26 August 2015

Solomon Islands Water Authority  
Japan International Cooperation Agency




## TABLE OF CONTENTS

LIST OF ABBREVIATIONS.....	iii
LOCATION OF THE PROJECT SITE .....	v
Chapter 1 OUTLINE OF THE TERMINAL EVALUATION.....	1
1.1 Background .....	1
1.2 Project Information .....	2
1.3 Objectives of the Terminal Evaluation.....	3
1.4 Methodologies .....	3
1.5 Five OECD-DAC Criteria .....	4
1.6 Members and Schedule of the Terminal Evaluation .....	5
Chapter 2 EVALUATION OF PROJECT PERFORMANCE.....	8
2.1 Progress on Achieving Output Indicators.....	8
2.2 Progress toward Attaining Project Purpose Indicators.....	13
2.3 Prospect of Attaining Overall Goal Indicators.....	15
2.4 Record of Inputs .....	17
2.5 Implementation Process .....	18
Chapter 3 EVALUATION RESULTS .....	22
3.1 Relevance.....	22
3.2 Effectiveness .....	23
3.3 Efficiency .....	23
3.4 Impact.....	24
3.5 Sustainability .....	25
Chapter 4 CONCLUSIONS AND RECOMMENDATIONS .....	29
4.1 Conclusions .....	29
4.2 Recommendations .....	30
Chapter 5 LESSONS LEARNED .....	33

## Annexes

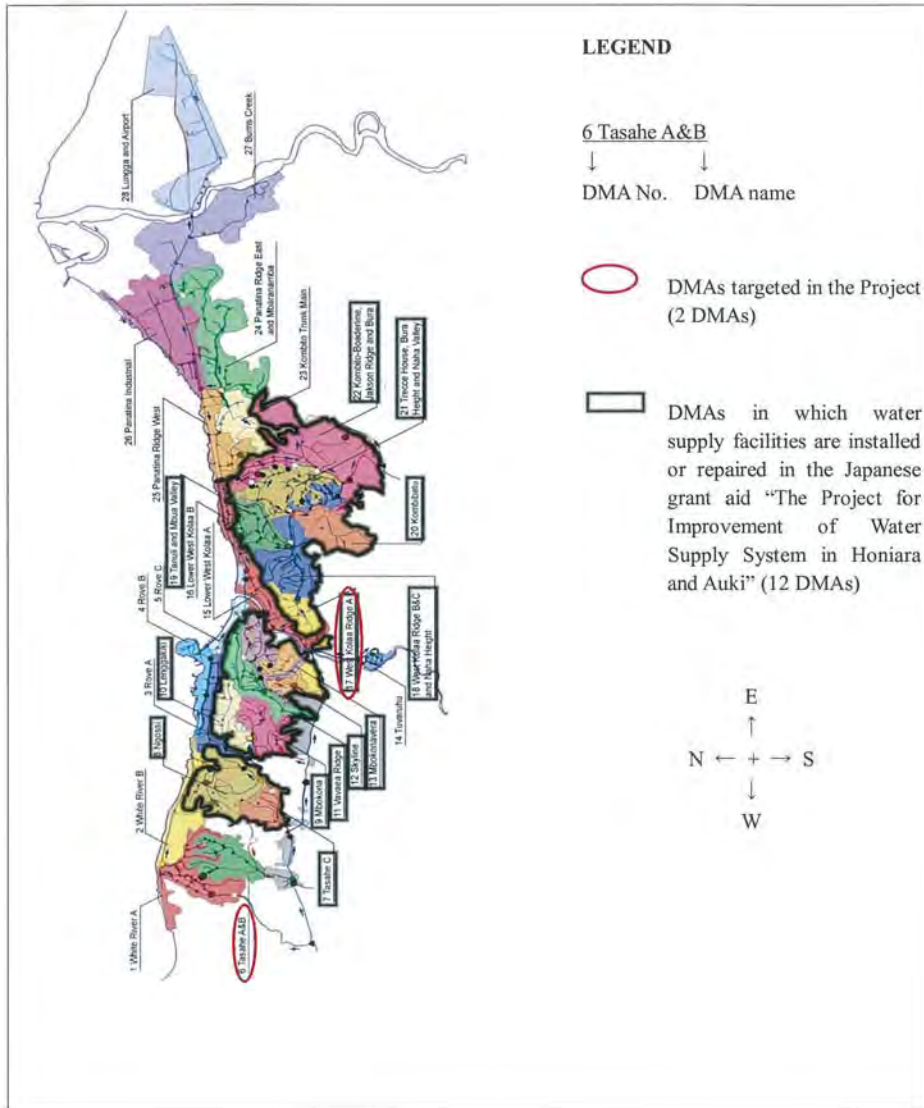
Annex 1: PDM Version 3 (current)
Annex 2: PO Version 3 (current)
Annex 3: Tables
Annex 4: List of JICA expert
Annex 5: List of Trainings
Annex 6: List of Equipment
Annex 7: List of C/P members

## LIST OF ABBREVIATIONS

AusAID	The Australian Agency for International Development (currently DFAT)
AUD	Australian Dollar
C/P	Counterpart
DAC	Development Assistance Committee, OECD
DFAT	Department of Foreign Affairs and Trade, Australian Government (formerly AusAID)
DMA	District Metered Area
E/N	Exchange of Notes
GIS	Geographic Information System
GM	General Manager
GOSI	Government of Solomon Islands
GPS	Global Positioning System
IWA	International Water Association
JCC	Joint Coordinating Committee
JICA	Japan International Cooperation Agency
JPY	Japanese Yen
LCZ	Leakage Control Zone
MMERE	Ministry of Mines, Energy and Rural Electrification
M/M	Minutes of Meeting or Man-month (unit of manpower)
MOFT	Ministry of Finance and Treasury
MOU	Memorandum of Understanding
NRW	Non-Revenue Water
OECD	The Organisation for Economic Co-operation and Development
OJT	On-the-Job Training
O&M	Operation & Maintenance
PC	Personal Computer
PDM	Project Design Matrix
PO	Plan of Operations
PRIF	Pacific Region Infrastructure Facility
PRV	Pressure Reducing Valve

RAP	SIWA Short Term Recovery Strategy and Action Plan
R/D	Record of Discussions
SBD	Solomon Islands Dollar
SCADA	Supervisory Control and Data Acquisition
SIEA	Solomon Islands Electricity Authority
SOP	Standard Operation Procedure
SW, SIWA	Solomon Water (or Solomon Islands Water Authority)

**LOCATION OF THE PROJECT SITE**



**Chapter 1 OUTLINE OF THE TERMINAL EVALUATION**

**1.1 Background**

In Solomon Islands, urban water supply and sewerage service is supplied by Solomon Islands Water Authority (SW). However, as for urban water, there has been a lot of issues to be solved in infrastructure, finance and human resources. Honiara's water supply coverage was 73% in 2006 and the water was not supplied stably because of unstable water resources (spring water and groundwater) and deficient facilities. In addition, high non-revenue water (NRW) ratio has deteriorated the water supply and financial situation. In light of those issues, the Government of Solomon Islands requested a development study to rehabilitate and improve the water supply and sewerage systems in Honiara, Auki, Noro and Tulagi in 2004. Based on the request, JICA conducted the development study from 2005 to 2006. The study included 1) an urgent rehabilitation plan for Honiara, 2) an urgent restoration plan for Auki or Tulagi, 3) a facility improvement plan for the water supply and sewerage systems of Honiara, Noro, Auki and Tulagi for the target year 2010, and 4) an action plan for supporting capacity development of SW to strengthen its management.

Based on these plans, grant aid "The Project for Improvement of Water Supply System in Honiara and Auki" was implemented to develop water sources and to construct transmission and distribution facilities. Exchange of Notes (E/N) was concluded in 2009, but start of construction had been delayed until 2012 because of land problems. Implementation of the grant aid enables stable and safe water supply to the residents in the target areas.

On the other hand, NRW ratio was still high, and its reduction has been indispensable to improve SW's service as well as financial situation. Then a short term expert on NRW reduction measures was dispatched from January 2010 to March 2010. Thus, a technical cooperation project for NRW reduction was requested to the Government of Japan. The implementation of "The Project for Improvement of Non-Revenue Water Reduction Capacity for Solomon Islands Water Authority (hereinafter referred to as "the Project") was formally agreed through signing of Record of Discussions (R/D) on July, 2012. The basic information of the Project is described in "1.2 Project Information".

Regarding management issue of SW, Pacific Region Infrastructure Facility (PRIF) supported to formulate SIWA Short Term Recovery Strategy and Action Plan (RAP) in May 2011. The primary objective of the RAP was to improve service levels and increase revenue of SW. The Australian Agency for International Development (AusAID, currently Department of Foreign Affairs and Trade, DFAT) concluded a Memorandum of Understanding (MOU) with SW for implementation of



RAP in October 2011. Subsequently, in 2013, the Australian Government developed “ The Solomon Water Development Plan, 2013 – 2015 (hereinafter referred to as “the Two-Year Plan”)”. The Two-Year was formulated continuously support the development of SW. The Project also aimed at supporting SW to achieve RAP and the the Two-Year Plan, in collaboration with other development partners.

## 1.2 Project Information

The outline of the Project is summarized in Table 1.1. The current versions of project design matrix (PDM) and plan of operations (PO) are listed in Annexes 1 and 2 respectively.

Table 1.1 Summary of the Project†

Project Name	The Project for Improvement of Non-Revenue Water Reduction Capacity for Solomon Islands Water Authority
Project Period	October 2012 - October 2015
Budget	About JPY 271 million (initially planned) JPY 274 million (actually disbursed as of the end of July 2015)
Target Area	Honiara City
Related Organizations	Solomon Islands Water Authority (SW)
Overall Goal	SW’s service levels are improved and SW’s revenue is increased.
Project Purpose	SW is assisted to achieve its target of reducing the NRW ratio in Honiara to 30%* by 2015.
Outputs	Output 1: Planning process of SW for NRW reduction is systemized. Output 2: The procedure for NRW reduction is established through the pilot areas and LCZs. Output 3: NRW reduction is implemented in accordance with the procedure in pilot areas and/or LCZs. Output 4: Water meter reading and billing process management are improved.

† after PDM Version 3 (current)

\* Indicators are based on the Two-Year Plan<sup>1</sup> target.

The Project period is divided into four phases as a matter of convenience: Phase-1 from October

2012 to March 2013, Phase-2 from April 2013 to March 2014, Phase-3 from April 2014 to March 2015 and Phase-4 from April 2015 to October 2015.

## 1.3 Objectives of the Terminal Evaluation

The objectives of the Terminal Evaluation are as follows:

- (1) To review the progress of the Project and evaluate the achievement by the five evaluation criteria and PDM;
- (2) To identify obstacles and/or facilitating factors that affected the implementation process;
- (3) To make recommendations on the project regarding the measures to be taken for the remaining period and the post-project period; and
- (4) To draw lessons learned from the Project implementation.

## 1.4 Methodologies

### 1.4.1 Evaluation Design

The evaluation was conducted within the framework of “JICA Project Evaluation Guidelines (2nd Edition (12 May 2014))<sup>2</sup>.” According to the guideline, JICA’s project-level evaluation consists of three components: (1) assessment of the performance of a project, (2) value judgment on (= the evaluation of) the project, using Five Evaluation Criteria proposed by OECD-DAC, and (3) making recommendations and drawing the lessons learned from the evaluation, to feed them into the future projects.

- (1) Assessment of Project performance.

This component involves three types of actions described below:

- Measurement of results and outputs, using the indicators shown in the PDM;
- Examination of implementation process, i.e. the analysis on how the events that took place in the implementation process (e.g. Project management/communication/change in government structure/natural disasters) have affected the Project performance;
- Examination of causal relationships between inputs/activities – outputs – project purpose, to confirm 1) which (and to what extent) project activities contributed to the achievement of the Project purpose, and 2) which other factors contributed or hindered the achievement of the Project purpose.

- (2) Recommendations and Lessons learned

<sup>2</sup> The 2014 Guideline is available only in Japanese. The English translation of the 1st Edition (June 2010), however, will provide a good overview of JICA’s basic project evaluation methods and procedures.  
[http://www.jica.go.jp/english/our\\_work/evaluation/tech\\_and\\_grant/guides/c810vm000001rfux-at/guideline\\_2010.pdf](http://www.jica.go.jp/english/our_work/evaluation/tech_and_grant/guides/c810vm000001rfux-at/guideline_2010.pdf)

<sup>1</sup> The Two-Year Plan is the basic operation plan involving the assistance by DFAT, followed by a one-year supplemental plan till 2016.

Based on the evaluation results, the Terminal Evaluation Team (hereinafter referred to as “the Team”) made recommendations to the Project on the actions to be taken by each stakeholder. The Team will also draw lessons learned from the results, as a feedback for other JICA projects in the future. All the findings including the evaluation results, recommendations and lessons learned, were summarized in this Terminal Evaluation Report.

#### 1.4.2 Method of Data Collection

Data and information were collected through literature / documentation review, questionnaire survey, interviews from persons concerned, and site visits. The details are listed in Table 1.2.

Table 1.2 Main data sources

Collection methods	Source
Literature Review	<ul style="list-style-type: none"> <li>➤ Reports made by the Project, including its regular progress reports and the completion reports for specific activities and the records of inputs;</li> <li>➤ Reports created by JICA during the preparation of the Project, such as the Detailed Design Survey and activity reports created by consultants;</li> <li>➤ Other relevant documents</li> </ul>
Questionnaires	A set of evaluation questions sent to Solomon Islands Water Authority (SW), Ministry of Mines, Energy, and Rural Electrification (MMERE), Department of Foreign Affairs and Trade, Australian Government (DFAT) and to the JICA expert team.
Interviews	<ul style="list-style-type: none"> <li>➤ Individual interviews to JICA expert, members of the NRW Management Team and DFAT staff members in water sector.</li> <li>➤ Focus group discussions with members of the NRW Action Team (once for Outputs 2 and 3, and once for Output 4).</li> </ul>
Site visit	Observation of Project activities.

#### 1.5 Five OECD-DAC Criteria

The project performance confirmed in Chapter 2 will be evaluated from five different qualitative points of view — “Relevance”, “Effectiveness”, “Efficiency”, “Impact”, and “Sustainability.” The five viewpoints are the evaluation criteria proposed by the Development Assistance Committee (DAC) of the Organisation for Economic Cooperation and Development (OECD) in 1991. The details of each criterion, including key evaluation questions, are listed in Table 1.3.

Table 1.3 Five OECD-DAC Criteria

Items	Viewpoint
Relevance	Relevance refers to the validity of the Project purpose and the overall goal in accordance with the policy direction of the Government of Solomon Islands (GOSI) and the Japanese Official Development Assistance as well as needs of beneficiaries and target groups.
Effectiveness	Effectiveness refers to the productivity of the implementation process, examining if the inputs of the Project were efficiently converted into the Output.
Efficiency	Efficiency refers to the extent to which the expected benefits of the Project have been achieved as planned, and examines if the benefit was brought about as a result of the Project.
Impact	Impact refers to direct and indirect, positive and negative impacts caused by implementing the Project, including the extent to which the overall goal has been attained.
Sustainability	Sustainability refers to the extent to which the Solomon Islands side can further develop the Project, and the benefits generated by the Project can be sustained in the policy, financial, institutional and technical aspects.

#### 1.6 Members and Schedule of the Terminal Evaluation

##### 1.6.1 Members

The members of the Team are as follows:

##### (1) Solomon Islands Side

Name	Field	Affiliation
Mr. Michael MAEHAHA		Senior Hydrologist, Ministry of Mines, Energy and Rural Electrification (MMERE)

##### (2) Japanese Side

Name	Field	Affiliation
Ms. Eriko TAMURA	Team Leader	Director, Water Resources Team 1, Global Environment Department, JICA
Mr. Yoshiki OMURA	Urban Water Supply	Senior Advisor (Water Supply Development), JICA
Ms. Momoko OTSUKA	Cooperation Planning	Assistant Director, Water Resources Team 1,

		Global Environment Department, JICA
Dr. Makoto TANAKA	Evaluation & Analysis	Senior Consultant, ICONS Inc.

### 1.6.2 Schedule

The evaluation was performed from 11 August 2015 to 28 August 2015 as shown in Table 1.4.

Table 1.4 Schedule of the Terminal Evaluation

	Date	Team Leader: Ms. Tamura	Urban Water Supply: Mr. Omura Cooperation Planning: Ms. Otsuka	Evaluation Analysis: Dr. Tanaka
1	Tue., 11 Aug.			Departure from Japan
2	Wed., 12 Aug.			Arrival at Honiara Meeting with JICA Solomon Office and the JICA expert team
3	Thu., 13 Aug.			Individual Interview to NRW Management Team, Mr. Ray ANDRESEN, Operation & Technical Manager, SW Individual Interview to NRW Management Team, Ms. Tima KOFANA, Human Resources Manager, SW Meeting with, Mr. Isaac LEKELALU. MMERE
4	Fri., 14 Aug.			Individual Interview to NRW Management Team, Ms. Debbie JOHNSEN, Finance & Administration Manager Individual Interview to DFAT, Ms. Alexandra & Mr. Edward
5	Sat., 15 Aug.			Documentation (revision of the draft evaluation report)
6	Sun., 16 Aug.			Documentation (revision of the draft evaluation report)
7	Mon., 17 Aug.			Group Interview to NRW Action Team (Output 2, 3)
8	Tue., 18 Aug.			Individual Interview to NRW Management Team, Mr. Ray ANDRESEN, Operation & Technical Manager, SW Group Interview to NRW Action Team (Output 4)

9	Wed., 19 Aug.		Departure from Japan	Documentation (revision of the draft evaluation report)
10	Thu., 20 Aug.		Arrival at Honiara Meeting at JICA Solomon Office	Observational attendance in NRW Action Team Weekly Meeting Meeting at JICA Solomon Office
11	Fri., 21 Aug.			Courtesy visit to Mr. Ian GOODEN, General Manager, SW Meeting with main C/P to discuss the draft evaluation report
12	Sat., 22 Aug.	Departure from Japan	Site visit Documentation (revision of the draft evaluation report)	Documentation (revision of the draft evaluation report)
13	Sun., 23 Aug.	Arrival at Honiara Documentation (revision of the draft evaluation report)		Documentation (revision of the draft evaluation report)
14	Mon., 24 Aug.			Meeting with main C/P to discuss the draft evaluation report
15	Tue., 25 Aug.			Meeting with main C/P to discuss the draft evaluation report
16	Wed., 26 Aug.			Holding JCC and Signing to the M/M
17	Thu., 27 Aug.			Meeting at JICA Solomon Office to report the Mission Results Meeting at Japanese Embassy to report the Mission Results Departure from Honiara
18	Fri., 28 Aug.			Arrival at Japan

## Chapter 2 EVALUATION OF PROJECT PERFORMANCE

### 2.1 Progress on Achieving Output Indicators

The status of achievements of the Project Outputs in terms of indicators as per PDM<sub>3</sub> is shown as follows.

Output 1: "Planning process of SW for NRW reduction is systemized."	
Verification indicators	Achievements
1.1 Annual budget for NRW reduction is secured in the pilot project areas and LCZs.	<ul style="list-style-type: none"> <li>- With the secured budget, the NRW reduction activities in the 15 pilot areas were completed. Actual cost incurred for the NRW reduction activities in the 15 pilot areas is shown in Table A.1 in Annex 3.</li> <li>- The activities in two selected DMAs<sup>3</sup> that include LCZs are in progress with the SW's budget for 2015, in which SBD 4.62 million is allocated for the activities in DMA. Actual cost incurred for the NRW reduction activities in the two DMAs has not been calculated yet, but estimated amount is shown in Table A.2 in Annex 3.</li> <li>- From above, <u>this indicator is achieved.</u></li> </ul>
1.2 The strategic implementation (rolling-out) plan for NRW reduction is approved by management of SW.	<ul style="list-style-type: none"> <li>- Based on the results of the pilot projects, SW commenced preparation of the strategic implementation (rolling-out) plan (herein after referred to as "the Strategic plan") with assistance of the JICA expert team from the first quarter of 2015. It will be finalized and approved by October 2015.</li> <li>- SW states that the strategic plan it will be utilized and modified afterwards by its own effort.</li> <li>- From above, <u>this indicator is likely to be achieved.</u></li> </ul>

<sup>3</sup> SW divided Honiara City into 28 district metered areas (DMAs) and is in progress to establish 28 DMAs. DMA are hydraulically separated sub-zones of water service area and LCZs are small zones in DMAs.

Output 2: "The procedure for NRW reduction is established through the pilot areas and LCZs."	
Verification Indicators	Achievements
2.1: A manual for NRW reduction is prepared.	<ul style="list-style-type: none"> <li>- The manual for NRW reduction consists of three components: NRW reduction measures, leakage detection techniques and updating GIS database. SW has used, improved and updated the manual in consideration for user-friendliness. The manual will be completed in Phase-4.</li> <li>- From above, <u>this indicator is likely to be achieved.</u></li> </ul>
2.2: The number of authorizations and disconnections of illegal connections is increased in the pilot project areas and LCZs.	<ul style="list-style-type: none"> <li>- In the 15 pilot areas, 140 illegal connections including parasite ones were identified which account for 9.6% of the total 1,464 households. Out of 140, 38 connections were legalized (authorized) and 102 connections were disconnected. This means that only 27.1% became valid customers while 72.9% were disconnected (see Table A.3 in Annex 3).</li> <li>- As for the baseline, the monthly number of legalizations (authorizations) of illegal connections was about 10 in a whole Honiara city in November, 2011 in spite of the SW's campaign for encouraging legalization. The monthly number of disconnections of illegal connections was about 20 according to an interview to SW. Those values are assumed as the baseline of the whole Honiara city.</li> <li>- Accordingly, baselines in the 15 pilot areas are estimated at 18 for legalization (authorization) and 36 for disconnection respectively<sup>4</sup>.</li> <li>- Therefore, the total number of legalizations (authorizations) and disconnections of illegal connections was increased from 54 to 140 for the 15 pilot areas as a result of the NRW</li> </ul>

<sup>4</sup> Baseline for the 15 pilot project areas (having 22 km pipe in total) : Monthly performance in Honiara (220 km pipe length) is distributed in proportion to pipe length, and multiplied by 18 months (the entire pilot project period). Thus the formula is shown below:

Baseline value [cases/ 15 pilot project area] = (monthly value in Honiara [cases/month/Honiara]) × (Total pipeline length in the 15 pilot areas [km/15 pilot project area]) ÷ (Total pipeline length in Honiara [km/Honiara]) × (the entire pilot project period [month])  
 = 10 × 22 ÷ 220 × 18 = 18 (\*1) (\*1) for authorization of illegal connection  
 = 20 × 22 ÷ 220 × 18 = 36 (\*2) (\*2) for disconnections of illegal connection

	<p>reduction activities as shown below.</p> <p>Activities against illegal connections in 15 pilot areas (unit: cases/15 pilot project area)</p> <table border="1"> <thead> <tr> <th></th> <th>Baseline</th> <th>Results</th> </tr> </thead> <tbody> <tr> <td>Identified illegal connections</td> <td>54</td> <td>140</td> </tr> <tr> <td>Authorizations</td> <td>18</td> <td>38</td> </tr> <tr> <td>Disconnections</td> <td>36</td> <td>102</td> </tr> </tbody> </table> <ul style="list-style-type: none"> <li>- The activities to Output 2 have been implemented in LCZs of the two selected DMA: "Tasahe A&amp;B" and "West Kola Ridge A". There is considerable increase in the number of legalizations (authorizations) and disconnections, but data are currently being processed.</li> <li>- From above, <u>this indicator is likely to be achieved, as the data for DMAs is not compiled.</u></li> </ul>		Baseline	Results	Identified illegal connections	54	140	Authorizations	18	38	Disconnections	36	102
	Baseline	Results											
Identified illegal connections	54	140											
Authorizations	18	38											
Disconnections	36	102											
2.3: The number of new service connections and replacement of malfunctioning customer meters is increased in the pilot project areas and LCZs.	<ul style="list-style-type: none"> <li>- In the 15 pilot areas, there were 268 households that were found unserved by SW, which accounted for 18.3% of the total 1,464 households. As a result of NRW reduction activities, 31 households proceeded to become connected or re-connected and accounted for 11.6% of the total unserved households (see Table A.4 in Annex 3).</li> <li>- It should be noted that the number of valid customers decreased during the NRW reduction activities by 1.3 points. It may be due to strict disconnection of arrear customers and sharp rise in water tariff.</li> <li>- The Project also installed 378 customer meters to new / unmetered / re-connected customers in the 15 pilot areas. In addition, 596 meters were replaced with new ones. These 974 meters, which were procured by the JICA expert, were effectively used in the 15 pilot areas (see Table A.5 in Annex 3). Meanwhile, the the Two-Year Plan Plan also procured about</li> </ul>												

	<p>3,000 meters. In DMAs, both the meters procured by JICA and the meters procured in the the Two-Year Plan will be used.</p> <ul style="list-style-type: none"> <li>- As for the baseline, SW installed 30 meters per month for new connections, replacement, and unmetered connections in a whole Honiara city before the Project according to an interview. Accordingly, baseline in the 15 pilot areas is estimated at 54 pieces of customer meters<sup>5</sup>.</li> <li>- Therefore, the number of new service connections and replacement of malfunctioning customer meters was increased from 54 to 974 in the 15 pilot areas as a result of the NRW reduction activities as shown below.</li> </ul> <p>Activities about customer meters in 15 pilot areas (unit: pieces of customer meters/15 pilot project area)</p> <table border="1"> <thead> <tr> <th></th> <th>Baseline</th> <th>Results</th> </tr> </thead> <tbody> <tr> <td>New service connections</td> <td>–</td> <td>378</td> </tr> <tr> <td>Replaced malfunctioning ones</td> <td>–</td> <td>596</td> </tr> <tr> <td>Total</td> <td>54</td> <td>974</td> </tr> </tbody> </table> <ul style="list-style-type: none"> <li>- In LCZs of the two selected DMAs: "Tasahe A&amp;B" and "West Kola Ridge A", there is considerable increase in the number of new service connections and replacement of malfunctioning customer meters, but the data are currently being processed.</li> <li>- From above, <u>this indicator is likely to be achieved, as the data for DMA is not compiled.</u></li> </ul>		Baseline	Results	New service connections	–	378	Replaced malfunctioning ones	–	596	Total	54	974
	Baseline	Results											
New service connections	–	378											
Replaced malfunctioning ones	–	596											
Total	54	974											

<sup>5</sup> Baseline for the 15 pilot project areas (having 22 km pipe in total) : Monthly performance in Honiara (220 km pipe length) is distributed in proportion to pipe length, and multiplied by 18 months (the entire pilot project period). Thus the formula is shown below:

$$\text{Baseline value [pieces of customer meters/15 pilot project area]} = (\text{monthly value in Honiara [pieces of customer meters /month/Honiara]} \times (\text{Total pipeline length in the 15 pilot areas [km/15 pilot project area]} \div (\text{Total pipeline length in Honiara [km/Honiara]})) \times (\text{the entire pilot project period [month]})$$

$$= 30 \times 22 \div 220 \times 18 = 54$$

**Output 3: “NRW reduction is implemented in accordance with the procedure in pilot areas and/or LCZs.”**

Verification Indicators	Achievements						
3.1: The number of pipe repairs is increased in the pilot project areas and LCZs.	<ul style="list-style-type: none"> <li>- There were 191 leak points detected in the 15 pilot areas, which were repaired as a part of the NRW reduction measures (see Table A.6 in Annex 3).</li> <li>- As for the baseline, the monthly number of pipe repairs by SW before the Project was 46 in a whole Honiara city in December, 2012</li> <li>- Accordingly, baseline in the 15 pilot areas is estimated as 83<sup>6</sup>.</li> <li>- Therefore, the number of pipe repairs was increased from 83 to 191 in the 15 pilot areas as shown in the below table.</li> </ul> <p style="text-align: center;">Activities about pipe repairs in 15 pilot areas (unit: cases/15 pilot project area)</p> <table border="1" style="margin-left: auto; margin-right: auto;"> <thead> <tr> <th></th> <th>Baseline</th> <th>Results</th> </tr> </thead> <tbody> <tr> <td>Pipe repairs</td> <td style="text-align: center;">83</td> <td style="text-align: center;">191</td> </tr> </tbody> </table> <ul style="list-style-type: none"> <li>- Consequently, leakage ratio was reduced by 27.7 points as average.(see Table A.7 in Annex 3).</li> <li>- In LCZs of the two selected DMA: “Tasahe A&amp;B” and “West Kola Ridge A” DMAs, there is considerable increase in the number of pipe repairs, but data are currently being processed.</li> <li>- From above, <u>this indicator is likely to be achieved, as the data for DMA is not compiled.</u></li> </ul>		Baseline	Results	Pipe repairs	83	191
	Baseline	Results					
Pipe repairs	83	191					

<sup>6</sup> Baseline for the 15 pilot project areas (having 22 km pipe in total) : Monthly performance in Honiara (220 km pipe length) is distributed in proportion to pipe length, and multiplied by 18 months (the entire pilot project period). Thus the formula is shown below:  
 Baseline value [cases/15 pilot project area] = (monthly value in whole Honiara [cases /month/Honiara]) × (Total pipeline length in the 15 pilot areas [km/15 pilot project area]) ÷ (Total pipeline length in Honiara [km/Honiara]) × (the entire pilot project period [month])  
 = 46× 22÷ 220× 18 = 83

**Output 4: “Water meter reading and billing process management are improved.”**

Verification Indicators	Achievements
4.1: Standard operating procedure (SOP) and training materials are formulated.	<ul style="list-style-type: none"> <li>- Draft of SOP on customer meter reading and billing system was prepared in April 2013, and has already been finalized with training materials based on know-how obtained through routine works.</li> <li>- From above, <u>this indicator is achieved.</u></li> </ul>

**2.2 Progress toward Attaining Project Purpose Indicators**

Status of indicators of the Project Purpose is shown as below.

**Project Purpose: “SW is assisted to achieve its target of reducing the NRW ratio in Honiara to 30% by 2015.”**

Verification Indicators	Achievements
1.The NRW ratio is reduced by 30 points in each pilot area, selected DMAs and/or LCZs.	<p><u>Status of the Achievement in the Pilot Areas</u></p> <ul style="list-style-type: none"> <li>- After the selection of 15 pilot areas in March 2013, SW and the JICA expert team implemented the pilot project from April 2013 to September 2014 (see Table 2.1).</li> <li>- Indicator 1 is achieved in all the pilot areas except for “Mbaranamba,” where the initial NRW ratio was less than 30%.</li> <li>- Regarding to “Mbaranamba”, of which NRW ratio before the activities was less than 30%, the Project was able to achieve conditions stipulated by Indicator 2.</li> <li>- Throughout the NRW reduction activities in “Mbaranamba”, the JICA expert team and SW found that leakage is not so high; around 20%, and decided to not only leakage detection, but to solve illegal connections and malfunctioning meters.</li> <li>- In “Lenggakiki” and “Tuvaruhu-1”, the Project could not achieve the reduction target of 30 points initially during implementing the NRW reduction activities, therefore the Project had to take additional measures leading to successful results.</li> </ul>
2. Regarding the pilot project areas, selected DMAs, and/or LCZs where the NRW ratio before the implementation of NRW reduction measures are less than 30%, the NRW reduction measures are implemented in accordance with features of each area and/or zone, so that	

effectiveness of the NRW reduction measures are validated.	<p><u>Status of the Achievement in the selected DMAs and/or LCZs</u></p> <ul style="list-style-type: none"> <li>- After demarcation of 28 DMAs and the prioritization in September 2014, SW and the JICA expert team started NRW reduction activities in DMAs in December, 2014. Indicator 1 is achieved in the two selected DMAs (see Table 2.2), even though pressure control in “Tasahe A&amp;B” has not been started. SW will start pressure control in “Tasahe A&amp;B”, soon after installation of PRVs, which is expected in the middle of September 2015.</li> <li>- From above, <u>Indicators 1 and 2 are achieved.</u></li> <li>-</li> </ul>
------------------------------------------------------------	--------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------

It should be noted that the present Project Purpose misleads about the degree of achievement of the Project. Both sides reconfirmed that the Project Purpose is intended that SW is assisted (through the Project), in the process of acquiring capacity to achieve its target of reducing the NRW ratio in Honiara to 30% by 2015 as described in the Two-Year Plan. Accordingly, the Project does not directly approach the goal of the Two-Year Plan. Though the Two-Year Plan’s goal will be hardly accomplished by 2015, the purpose of the Project “SW is assisted” is achieved.

Table 2.1 Reduction Point of NRW Ratio before/after NRW Reduction Activities in Pilot Areas

Pilot area	NRW Ratio (%)		Reduction (percentage point)
	Before	After	
White River- Namo Ruka	86.5	32.2	54.3
Independence Valley	57.7	9.9	47.9
Lenggakiki	62.0	33.2	28.8
After additional countermeasures		14.7	47.3
Mbokonavera-1	53.1	14.7	38.5
Tuvaruhu-1	65.4	41.4	24.0
After additional countermeasures		11.0	54.4
Tuvaruhu-2	67.2	20.5	46.7
Vavaea Ridge	63.1	27.2	35.8
Mbokona	50.2	19.2	31.0

Mbaranamba	23.2	3.5	19.7
Mbua Valley	50.9	6.8	44.1
Bahai Kukum	58.6	16.2	42.4
Panatina Valley	37.9	6.7	31.2
Naha 2	51.7	15.6	36.1
Naha 3	60.9	25.8	35.1
FFA Kola Road	47.1	14.9	32.2

Table 2.2 Reduction Point of NRW Ratio before/after NRW Reduction Activities in DMAs

DMA Name	NRW ratio (%)		Reduction (percentage points)
	Before	After	
Tasahe A&B	89.5	44.5	41.5
After pressure control		Not completed	NA
West Kola Ridge A	60.4	49.7	10.7
After additional countermeasures		20.3	40.1

### 2.3 Prospect of Attaining Overall Goal Indicators

Status of indicators that measure attainment level of the Overall goal is shown as below.

<b>Overall Goal: “SW’s service levels are improved and SW’s revenue is increased.”</b>	
Verification Indicators	Achievements
1. The NRW ratio in Honiara City is reduced to 20% by 2018.	<ul style="list-style-type: none"> <li>- SW reported in March, 2015 that the NRW ratio in Honiara City is 62.8% as of the end of 2014. This is quite far from the target value of 20% in Indicator 1.</li> <li>- SW is planning to continue NRW reduction activities in the remaining DMA. However, it is uncertain that SW can continue massive and concentrated commitment like during the Project period.</li> <li>- The Team considers that this high value of 62.8% is due to the following, which were hardly expected at the beginning of the Project. <ul style="list-style-type: none"> <li>- SW started its policy to disconnect arrear customers very</li> </ul> </li> </ul>

	<p>strictly and thoroughly after 2013.</p> <ul style="list-style-type: none"> <li>- Water supply facilities have been remarkably improved in Honiara city by the Japanese grant aid 'The Project for Improvement of Water Supply System in Honiara and Auki.' While pressure and quantity of water are improved especially in 12 DMAs, this improvement caused increase in water leakage.</li> <li>- In 2014, only 80% of the customers were metered. The rest 20% are charged in flat rate (fixed bills), which is equivalent to the volumetric rate for 32m<sup>3</sup> per month. Such flat rate customers seem to use much water or waste it after the completion of the grant aid project. Since water consumed beyond 32m<sup>3</sup> per month is defined as NRW, such water consumption is a possible cause of increasing NRW ratio.</li> </ul> <p>- From above, <u>the Team considers that achievement of this indicator is not feasible.</u></p>
<p>2. Ratio of operational revenue-to-expenditure is sustained at greater than 100%.</p>	<ul style="list-style-type: none"> <li>- The ratio of operational revenue-to-expenditure is 77% in 2014 according to the 5<sup>th</sup> progress report. The ratio is increased by 5 points.</li> <li>- However, there were several changes in external conditions which were not expected at the start of the Project: <ul style="list-style-type: none"> <li>- After the Project started, SW's water tariff continued to increase up to 1.7 times as expensive as the original.</li> <li>- As described in the achievement of Indicator 1, the Japanese grant aid has made great increases in water supply area, supplied water quantity, and the number of customers.</li> </ul> </li> </ul> <p>Thus, the improvement in the ratio of operational revenue-to-expenditure does not necessary reflect the Project Outputs.</p> <p>- From above, <u>the Team considers this indicator is inappropriate</u></p>

	<p><u>to evaluate the achievement of the Overall Goal.</u></p>
--	----------------------------------------------------------------

To sum up, Indicator 1 is unfeasible and Indicator 2 is irrelevant to the Project Outputs. SW and the Team agreed to change Indicator 1 to "Activities for NRW reduction are continued by SW's departments in charge.", and to delete Indicator 2.

## 2.4 Record of Inputs

### 2.4.1 Japanese Side

#### (1) Dispatch of Experts

JICA expert team were dispatched in six fields of charge: (a) Leader / Water Supply Planning, O&M, (b) Deputy Leader / NRW Reduction Measures -1, (c) NRW Reduction Measures -2, (d) Leakage Detection Technology, (e) GIS and (f) Customer Services & Public Relations. The members are listed in Annex 4.

#### (2) Counterpart (C/P) Trainings

The Project conducted three trainings in Japan for a total of 12 C/Ps from SW as listed in Table 2.3. The details are listed in Annex 5 (1).

Table 2.3 Trainings in Japan

Training	Number of trainees	Period (excluding travel days)
1st Training: NRW Management	4 persons	8 – 24 April 2013
2nd Training: NRW Action (Technical, GIS, Leakage Detection)	4 persons	7 – 25 October 2013
3rd Training: NRW Action (Meter Reading, Billing, and Tariff Collection)	4 persons	3 – 18 June 2014

#### (3) Technical trainings

The Project also conducted technical trainings for NRW Technical Sub-Team, Customer Service Sub-Team, GIS Sub-Team, and Leakage Detection Sub-Team, as listed in Annex 5 (2).

#### (4) Equipment

Equipment was purchased by the JICA expert, JICA Solomon Islands Office and JICA



headquarters, and the amount of which are JPY 15,493,662, JPY 14,864,877, and JPY 9,538,764 respectively. The details of the equipment are listed in Annex 6. The Japanese side has also expended SBD 116,129 (about JPY 1.8 million) for consumables as of the end of July 2015.

It is notable that internal leakage of unmetered connections is also a crucial problem to SW. Since lack of water meter makes a border of private and SW responsibilities of maintaining service connections, customers tend to think SW is held responsible for whole service connections and leave internal leakage unattended. To solve this problem, the JICA expert team suggested to expedite meter installation and use a water meter with a rotating flow indicator called 'pilot', which most Japanese water meters are equipped with and have comparative technical advantage in finding internal leakage. Even though such water meters are somewhat expensive than those SW uses, SW understood benefit of "pilot". Then the Project decided to include water meters equipped with pilots into the planned inputs.

#### 2.4.2 Solomon Islands Side

##### (1) Assignment of C/P personnel

26 persons in total are involved in the Project as the C/Ps from SW. In the Project, they belong to the NRW Management Team or the NRW Action Team, which consists of four sub-teams. The C/Ps are listed in Annex 7.

##### (2) Costs borne by the Solomon Islands Side

The Solomon Islands side provided the JICA expert team with project offices and facilities necessary for the Project implementation. SW also provided necessary valves, meters, pipes fittings and other materials. In addition, it bore administrative and operational expenses such as utility costs, local traveling costs, overtime wages, daily allowance for C/Ps and others. This was due to the arrangement in the R/D on 27 July 2012.

## 2.5 Implementation Process

### 2.5.1 Revision of the PDM

The Project is implemented in the framework of PDMs. The PDMs have been revised twice during the Project period as listed in Table 2.4.

Table 2.4 Revision of the PDM

Date	Contents of revisions	Background
Jun. 2013 (proposed) Aug. 2013 (agreed) PDM <sub>1</sub> → PDM <sub>2</sub>	<ul style="list-style-type: none"> <li>- Revision of the Project Purpose: "Non-revenue water (NRW) ratio In Honiara City is reduced."</li> <li>→ "SW is assisted to achieve its target of reducing the NRW ratio in Honiara to 30% by 2015."</li> <li>- Revision of the indicators to the Overall Goal and the Project Purpose               <ul style="list-style-type: none"> <li>- Indicators to the Overall Goal: "1. Water supply hours become longer. 2. The NRW ratio in Honiara City is reduced to XX % by 2018. 3. Ratio of current expense to current income becomes more than 100% by 2018."</li> <li>→ "1. The NRW ratio in Honiara City is reduced to 20% by 2018. 2. Ratio of operational revenue-to-expenditure is sustained at greater than 100%."</li> <li>- Indicators to the Project Purpose: "1. The NRW ratio is reduced to XX % in each pilot area and the NRW ratio in Honiara City is reduced to XX %."</li> <li>→ "1. The NRW ratio is reduced by 30 points in each pilot project area, selected DMAs and/or LCZs."</li> </ul> </li> <li>- Addition of NRW reduction activities in DMAs to the outputs and the activities.</li> </ul>	Reflecting DFAT's Two-year Plan (2013-2015)
Mar. 2015 PDM <sub>2</sub> → PDM <sub>3</sub>	<ul style="list-style-type: none"> <li>- Addition of Indicator 2 to the Project Purpose: "2. Regarding the pilot project areas, selected DMAs, and/or LCZs where the NRW ratio before the implementation of NRW reduction measures are less than 30%, the NRW reduction measures are implemented in accordance with features of each area and/or zone, so that effectiveness</li> </ul>	A pilot area "Mbaranamba" was found having a NRW ratio less than 30% before starting the NRW reduction activity. It was decided to continue that the NRW reduction measures to

of the NRW reduction measures are validated.”
-----------------------------------------------

study effectiveness of activities.
------------------------------------

These revisions reflect the information that was unexpected at the beginning but found during the Project period so that the Project corresponded to the actual situation.

### 2.5.2 Promoting factors

Implementation of the Project is positively affected by;

#### (1) Coordination with AusAID (currently DFAT)

AusAID (then) and JICA exchanged MOUs on cooperation to SW on 12 December 2011 and 15 August 2013. The latter includes SW as one of signatories.

Both AusAID (currently DFAT) and JICA actively participated in the sector meetings. AusAID has been also invited to JCC meetings of the Project. After the Project was started, SW formed a plan to introduce the idea of DMA with equipment provided by AusAID. SW requested JICA to accommodate the concept of DMA into pilot project areas and installation of pressure reducing valves. JICA agreed with such a modification as technically preferable one.

The Project smoothly used pipe material already procured with the Australian fund in pilot project areas to minimize the influence of delayed procurement in JICA's part.

### 2.5.3 Hindering factors

Several factors affected the implementation of the Project:

#### (1) Delay in the procurement of goods by DFAT

The Project is planned to utilize a variety of goods such as PRVs, supervisory control and data acquisition (SCADA) systems, other accessories and vehicles, procured by DFAT. Especially, the delay in the procurement of two PRVs for a DMA; “Tasahe A&B” DMA and a cascading meter for a DMA; “West Kola Ridge A” has had severe effect on the Project implementation. According to DFAT, the procurement of these goods delayed considerably due to several reasons including custom clearance and transportation.

#### (2) Flood

At the beginning of April 2014, Cyclone Ita hit Guadalcanal Island and caused a great flood in Honiara City. This flood damaged the water supply system in the city. SW was forced to mobilize to recovery works, resulting in about 1.5 month delay in the Project.

### (3) Resignation of NRW Management Team members

The NRW Management Team consists of five members in the management level of SW. During the Project period, the following personnel resigned. Each resignation and succession required a considerable time for the successor to get involved in the Project. Accordingly, it has severely affected the implementation of the Project.

- Finance & Administration Manager, who was dispatched by DFAT, resigned due to individual reasons, in June, 2013. This position is succeeded by another person dispatched from DFAT
- General Manager, who was from the United Kingdom, resigned in December, 2014. This position was vacant for seven months, and Operation & Technical Manager was an acting general manager,
- Service Delivery & Communications Manager resigned in November, 2014, and this position is still vacant.
- Human Resources Manager resigned in August 2015, and this position is vacant.

## Chapter 3 EVALUATION RESULTS

### 3.1 Relevance

The relevance of the Project is evaluated as **high** due to following reasons.

#### 3.1.1 Necessity

The Project will contribute to reduction of physical loss of water. It will result in increase of water supplied to customers. Decrease of both physical and apparent losses is expected to contribute to enhance financial status of SW and provide sustainable water services to customers. Thus, the Project meets the necessity of beneficiary groups.

#### 3.1.2 Priority

The long-term course of Solomon Island's national development is described in the 'National Development Strategy 2011 to 2020.' It places "Improving the livelihoods of all the people of the Solomon Islands." as one of its two pillars of the central focus areas in the national development strategy. It declares "Develop physical infrastructure and utilities to ensure all Solomon Islanders have access to essential services and markets" in its 'Objective 6.' There has been no significant change in national policies since the beginning of the Project, thus, the Project aims to reduce NRW, which corresponds to the direction of this strategy.

In addition, SW and DFAT put strong priority on reducing NRW in accordance to 'SIWA Short Term Recovery Strategy and Action Plan' (RAP). RAP pointed out the following and emphasized the necessity of NRW reduction.

- Unauthorized consumption (1,680,000 m<sup>3</sup>/year) represents a loss of income of at least SBD 9.74 million per year.
- Physical losses (2,203,000 m<sup>3</sup>/year) represent a loss of income of at least SBD 8.8 million per year and an opportunity cost for the sale of the water of SBD 12.8 million per year.
- SW does not have the capability in trained manpower, equipment and transport to operate an effective and concerted leakage reduction program.

Subsequently to the completion of RAP, SW and DFAT prepared the Two-Year Plan. In the Two-Year Plan, SW and DFAT also declare to cope with reducing NRW. Accordingly, the Project is consistent with SW's needs and the DFAT's assistance policy.

As for the Japanese policy, the strengthening of economic development basis is one of its important assistance strategies in its 'Country Assistance Policy for Solomon Islands' and 'Rolling Plan for Solomon Islands' (August 2010). In light of those policies, Japan has developed an



assistance program 'Construction and O&M of Economic Infrastructures'. As parts of the program, JICA implemented this Project and the grant aid 'The Project for Improvement of Water Supply System in Honiara and Auki' from June 2009 to June 2014.

#### 3.1.3 Relevance of approach

The Project was planned and implemented by utilizing the know-how of many JICA's technical cooperation on NRW reduction. In addition, SW's initial capacity and the DFAT's assistance policy were taken into considerations. As a result, the Project successfully implemented and leads to capacity development of SW.

### 3.2 Effectiveness

The effectiveness of the Project is evaluated as **high**.

The two indicators of the Project Purpose were achieved in all 15 pilot areas and two selected DMAs, as described in "2.2 Progress toward Attaining Project Purpose Indicators.". These results show the effect of capacity development and the validity of the NRW reduction measures. The NRW reduction procedure has been established (Output 2) and applied to actual works (Output 3). However, Output of the Project was hindered by important assumptions, such as procurement of equipment by DFAT is implemented based on the planned schedule. In addition, the other important assumptions, not much resignation is occurred in the main C/Ps, affected Output 1. Therefore, SW could not secure enough time for utilization and modification of the Strategic plan with the assistance of the JICA expert team.

### 3.3 Efficiency

The efficiency of the Project is evaluate as **moderate**, described as below.

#### 3.3.1 Efficiency of inputs from the Japanese side

The inputs from the Japanese side were realized as planned in terms of quality, quantity, and timing. Generally speaking, those inputs were fully utilized to implement each activity. As for the inputs from the Japanese side, the following is notable.

Water leak detectors (leak noise correlators), which is one of the provided equipment, were not fully utilized for the Project's activities. There was less chance to use it. It is because those detectors are suitable for paved roads, but most part of the existing water supply pipes is buried under unpaved roads, hills and bushes in Solomon Islands.



### 3.3.2 Efficiency of inputs from the Solomon Islands side

The inputs from the Solomon Islands side were as a whole realized as planned. However, decision making for the Project was suspended by the resignation of the several C/Ps. Among others, the former General Manager resigned in December 2014 followed by seven-months' absence. According to SW, the absence of GM caused less instruction from the management side and approval of the Strategic plan. The approval will be in October 2015, therefore, SW cannot secure enough time for utilization and modification of the Strategic plan with the JICA expert team (see "3.2 Effectiveness"). Moreover, the absence of GM caused delay in organization reform.

### 3.3.3 Efficiency affected by the Australian side

The procurement of equipment by DFAT such as PRVs delayed. In addition, manpower, for such as hydraulic analysis, procurement and project management, input was later than planned. The delay heavily affected the implementation of the Project. The activities concerned to Outputs 2 and 3 were implemented more than a year later than as planned.

## 3.4 Impact

The Overall Goal is not expected to be achieved by 2018 according to the current indicators, because those indicators are found to be unfeasible and irrelevant. Therefore, SW and the Team agreed to change the indicators as described in "2.3 Prospect of Attaining Overall Goal Indicators." The revised indicator seems to be achieved, provided that SW carries out organizational reform, which is explained in 3.5.2 Organizational Aspects.

Moreover, there are **several positive impacts** found.

First positive impact is that communication among SW staffs is promoted by the establishment of the NRW Action Team. The establishment of the team provides SW opportunities for the following; bringing different division together, promoting continuous communication, sharing issues that SW encounter, increasing knowledge, knowing responsibility of other teams to reduce NRW, sharing information, strengthening staff bonding.

Second positive impact is strengthening the awareness raising program. Before the Project, SW has only one staff in charge of such program. The Project encourage SW to promote the program, and advice SW more effective methods. Subsequently, SW allocated more budget and manpower, and implemented the program at schools and communities. In addition, SW has started to use radio, which has had a great effect on the awareness raising. After carrying out the program, SW, especially the members of the Customer Service Sub-Team, observed changes in customers' awareness on water

supply services.

Third positive impact is mutual encouragement between the C/Ps to tackle the NRW reduction. The NRW Action Team has started to hold weekly meetings. Several C/Ps are designated to a DMA, and have the responsibility to reduce the NRW ratio by themselves. Each C/P reports the progress of NRW reduction, as well as his/her weekly tasks in weekly meetings. This system causes mutual encouragement among C/Ps, and it keeps them very motivated.

Fourth positive impact is development of GIS. It highly helps SW to manage information of customers and water supply systems, such as customer meters and networks. Accordingly, it makes NRW reduction activities more efficiently.

Fifth positive impact is that SW has gained knowledge to do cost-effectiveness analysis. The cost-effectiveness analysis has raised the motivation of the NRW Action Team members. In addition, C/Ps was encouraged to maximize their resources, such as manpower, material, and time. The NRW Management Team also appreciates the cost-effectiveness analysis.

## 3.5 Sustainability

The Sustainability of the Project is evaluated as **relatively low** but expected to be improved, provided that SW makes efforts with assistance of JICA and DFAT.

### 3.5.1 Policy and Institutional Aspects

As mentioned in "3.1 Relevance", the government of Solomon Islands recognizes the importance of reduction of NRW. SW and DFAT is planning to formulate the five-year plan as their next action plan to improve water supply services in Honiara City, including the reduction of NRW.

SW also drafted the Strategic plan in the first quarter of 2015. The plan will be finalized by SW by October 2015. Successively SW will utilize and modify the plan by its own effort.

Thus the sustainability in terms of policy and institutional aspects is ensured.

### 3.5.2 Organizational Aspects

SW states to continue its efforts to reduce NRW in Honiara City after the Project is completed. SW is planning to keep the NRW Action Team, which was established by the Project, as "Task Force" with minor changes. The current leader of the NRW Action Team will continuously have his leadership for this Task Force under the supervision of the Operation & Technical Manager. This will ensure most staff members who developed their capacities by the Project to utilize their experience in the next step of reducing the NRW. The Task Force will have the responsibility of

whole NRW reduction activities including monitoring, maintenance, metering, and utilization of the strategic plan.

Thus the sustainability in terms of organizational aspects is supposed to be ensured, provided that the planned organizational reform is realized quickly.

### 3.5.3 Financial Aspects

The Strategic plan estimates required budget for NRW reduction activities from FY 2016 up to FY 2018. (Refer to Table 3.1.) The table indicates that the maximum estimate is SBD 5.8 Million required for NRW activities of FY 2016, which is equivalent to 12% of O&M works allocated in FY 2015 budget. Annual NRW allocations of FY 2017 and FY 2018 are lower than the FY 2016 and therefore SW seems to be able to accommodate annual requirements into its budgets easily.

Table 3.1 Cost Estimate for NRW Activities

Period	DMA's	Approximate Amount (SBD Million)
FY 2016	9	5.80
FY 2017	9	4.40
FY 2018	5	1.90
Total (FY 2016~FY 2018)	23	12.10

Note: SW Fiscal Year: January 01 to December 31

SW's financial capacity will be further enhanced if the scheduled tariff study reflects the social and economic issues and subsequent tariff revision were realized immediately. In early 2012 just before the start of the Project, SW was indebted to Solomon Islands Electricity Authority (SIEA) about SBD 36.7 million. To tackle this problem, the Ministry of Finance and Treasury (MOFT), MMERE, SIEA and SW agreed in June 2012 to write off part of the debt and regular revision of the water tariff reflecting the commodity price index and the current electricity rate. Under this agreement, SW's water tariff has been continuously raised to 1.7 times as the 2012 level. The revisions made SW possible to repay the outstanding debt to SIEA while such high water charges are too heavy to bear for a low income household. SW is recently planning another tariff revision; e.g., the current two-category tariff may be modified considering income levels for domestic customers (classified according to their tax payment records) and including more categories such as industries, hospitals, schools, and NGOs for non-domestic customers. It will affect SW's revenues. SW is planning to engage external consultants in the tariff study at the beginning of 2016 with DFAT fund. The new tariff is expected to consider both SW's financial balance and relaxing

the heavy burden on low income customers.

DFAT also continues its financial assistance to SW as agreed on the Two-Year Plan (2013-2015). The Two-Year plan and the following one-year supplemental plan will disburse the amounts shown in Table 3.2 by 2016. According to DFAT, it is planning to continue its financial support through a new five-year plan (2016-2020).

Table 3.2 Summary of the Two-year Plan budget

Program output	Planned expenditure (AUD)
Improved levels of service for water supply	7,744,783
Improved customer care and communications	0
Strengthened financial management and administration	90,000
Improved organizational capacity	1,681,000
Improved strategic planning	180,000
Management	1,800,000
Monitoring and Evaluation	72,000
<b>TOTAL EXPENDITURE</b>	<b>11,567,783</b>
Solomon Water capital contribution 2014	1,052,632
Solomon Water capital contribution 2015	526,316
<b>TOTAL DFAT contribution required</b>	<b>9,988,836</b>

To sum up, SW is found having somewhat positive financial factors related to NRW reduction activities. However, the financial sustainability heavily relies on the planned tariff modification and Australian assistance after FY 2017. Therefore, the Team concerns about the financial sustainability.

### 3.5.4 Technical Aspects

SW has still has a couple of technical issues, which may affect sustainability of the Project.

First, customer information is not provided to GIS database timely and correct manner by the meter-reading team. Although the team members became proficient in operating handy terminal for meter-reading, some difficulties remain in fully using GPS functions of the terminal and providing GIS database with customer information on GPS basis.

Second, some C/P members concerned about monitoring and maintenance of DMAs, where NRW reduction activity is conducted. Currently, SW's monitoring NRW is limited to passive measures such as customers' telephone calls of leakages. C/P members have an idea that SW has to take a preventive approach to maintain the reduced NRW. The evaluation team recognizes the need of assistance.

Thus the sustainability in technical aspects is partially ensured, and SW needs assistance in the areas of smooth linkage between meter-reading works and GIS database, customer information in particular and preventive approach to NRW.

### 3.5.5 Society, Culture and Environmental Aspects

It is important to take consideration for vulnerable groups, by developing affordable tariff system, managing illegal connections, and dealing with arrear customers appropriately. Otherwise, the sustainability in terms of society aspects would be evaluated as low.

## Chapter 4 CONCLUSIONS AND RECOMMENDATIONS

### 4.1 Conclusions

As for the PDMs, Output 1, 2, 3 is likely to be achieved and Output 4 is achieved. Also, the Project Purpose is achieved. Regarding the Overall Goal, SW and the Team agreed to modify its indicators. Even though the new indicator is set for the Overall Goal, the Team assumes achievement of the new indicator is still challenging due to the results of five evaluation criteria of OECD as follows:

Criteria	Evaluation	
Relevance	high	The Project is consistent with the relevant policies, plans, and needs of beneficiary.
Effectiveness	high	Output 2, 3 and 4 have already achieved, and Output 1 will be achieved in the Project period.
Efficiency	moderate	There are some delays in inputs such as procurement of equipment and manpower input, which led to delay in project activities.
Impact	moderate	The both sides agreed to revise the indicators to be achieved after the project period to be more feasible. There are some positive impacts found.
Sustainability	<b>relatively low</b>	Some concerns remain for sustainability in organizational, technical, financial and social aspects.

Though the Project achieved significant capacity development of SW, sustainability is concerned in terms of organizational, technical, financial and social aspects. As for improvement of technical and organizational sustainability, the Team recognized necessity of both establishment of “Task Force” and capacity building of “Task Force” in terms of monitoring and maintenance.

Regarding “Task Force”, the former GM had planned to establish the post, however, he left SW on the halfway. Thus, the establishment is postponed for more than a year. As for the capacity building on monitoring, according to the original plan, the Project had about a year after the completion of NRW reduction activities. JICA expert team expected to utilize this one year for the capacity building on monitoring. However, the Project activities were delayed because of several reasons, such as flood, delay in procurement, etc.

Therefore, the Team suggested extending the Project period for a couple of months. However, as mentioned in “4.2 Recommendation”, some arrangements are required to SW in order to assist

improving organizational and technical sustainability. Financial sustainability and social sustainability is expected to be ensured by SW's efforts supported by DFAT.

#### 4.2 Recommendations

The following actions should be taken before and after the Project completion:

##### 4.2.1 Recommendation during the Project period

###### (1) Measures to be taken for ensuring sustainability

The following activities are recommended to ensure the organizational and technical sustainability.

###### 1) Organizational sustainability

The organizational reform to establish "Task Force", which has the whole responsibility in managing NRW, has been delayed for more than a year by the resignation of the General Manager. As lessons learned from the other JICA's projects shows, the establishment of responsible post is crucially important to continue the management of NRW. Both SW and the Team agreed that the establishment of "Task Force" will be implemented by the end of November. Otherwise, JICA expert team cannot be dispatched to assist the technical sustainability written in 4.2 (1).

It is noted from SW that after establishment of "Task Force", job description should be developed for "Task Force" members with the assistance of Human Resources Manager. Since this position is currently vacant, the Team strongly recommend SW to solve the issue as soon as possible.

###### 2) Technical sustainability

Some C/Ps and JICA expert team showed concerns in SW's capacity in monitoring and maintenance of DMAs, where already NRW reduction measures are taken. In the Project, SW and JICA expert team are tackling reducing NRW ratio in DMAs without systematic monitoring and maintenance. From a view point of preventive maintenances, the Team recognizes the importance of capacity development in monitoring and maintenance. However, currently, SW has no post that is in charge of this duty. Thus, the establishment of "Task Force", which includes monitoring and maintenance post, is the condition to additional assistance in the area.

###### (2) Revision of PDM

The present two indicators for Overall Goal "SW's service levels are improved and SW's revenue is increased." are not expected to be achieved within 3 years after the Project completion



due to several changes in circumstance. Moreover, Indicator 1 is not technically feasible and Indicator 2 does not reflect its achievement due to external conditions. Thus, the Team proposes that Indicator 1 is revised as "NRW reduction activities are continued by SW's departments in charge." and Indicator 2 is deleted.

###### (3) Appointment of the proper management staff and follow up of tasks to be carried out

The Project experienced frequent changes of the C/P members, especially at the management level, which caused delay in decision-making and implementation of some activities. SW is recommended to prevent such resignation, and, in case it occurs, SW should take immediate actions to cover the vacant position for ensuring the task continues.

###### (4) Close communication among SW

Closer communication among the managers and field staff is necessary to promote the Project activities and to accelerate the accomplishment of the Two-year plan. In addition, smooth communication should be ensured among technical, finance, service delivery, and human resources division to efficiently reduce NRW ratio.

##### 4.2.2 Recommendation after the project period

###### (1) Continuous utilization and modification of the Strategic plan

The Strategic plan should be continuously utilized and modified in accordance with the NRW reduction activities in the field and other changes in circumstances.

###### (2) Maintaining motivation of C/P staff members

The Project has had some positive impacts on staffs' motivation. According to some interviews, activities, such as communication between C/Ps, information sharing in the weekly meetings, awareness raising, bonding among staff members, has raised staffs' motivation. In addition to staffs' motivation, strong commitment by those in management is crucial.

###### (3) Enhancement of awareness raising activities

The project increased the number of awareness raising activities for customers, and this will contribute to customers' understanding, which will contribute to improvement in bill collection and financial status of SW. Increase in budget and manpower is highly recommended to enhance awareness raising activities.



(4) Utilization of GIS

Technical assistance for utilization of GIS was provided by the Project and C/P staff members recognized the effectiveness of GIS for NRW management. However, assistance for GIS is an aspect of NRW reduction, and the Project cannot fully support the capacity development for utilizing GIS. Thus, SW is recommended to seek assistance and training opportunities for utilization of GIS.

(5) Modification of tariff table

Current tariff table is unaffordable to some vulnerable groups, and it causes illegal connection and arrear customers. SW is planning to revise the tariff table with assistance from DFAT, so the Team strongly recommends modifying the tariff table with consideration to the social and economic conditions of Solomon Islands.

## Chapter 5 LESSONS LEARNED

The team pointed out that the importance of the following lessons for the JICA's other projects.

(1) Careful consideration on the relation of the existing policies and plans and target of the technical cooperation project

When designing projects, the existing policies and plans should be carefully referred to in employing them for project purposes, overall goals and their indicators of technical cooperation projects. These policies and government plans are sometimes too ambitious to accomplish within 3 to 5 years while a project period is limited to similar length. In view of long time that such policies and plans usually require, targets or goals stated in existing policies and plans should be carefully examined in employing them as project purpose or indicators of project performance.

(2) Consideration of effects by capital investment

The baseline should be reviewed when any change of physical conditions is found. During the project period, Japanese government provided grant aid "the Project for improvement of water supply facilities in Honiara and Auki". The former works had considerable impacts to the water services in town such as increase of service pressure and production. These two factors substantially affect NRW reduction activities from the baseline of the Project.

(3) Coordination with activities by other development partners

A project should be designed to be flexible as much as possible for accommodating any potential change on the part of the other development partner. Progress of relevant activities should be carefully monitored and necessary actions should be taken quickly and flexibly when some delays of inputs and negative effects are found.

(4) Encouragement of communication of different groups

Communication and mutual exchange of information should be strongly encouraged between different groups, units and divisions. C/P members of the Project hold weekly meetings with their own initiative, and this contributes to information sharing, motivation raising, and enhancement of organizational capacity. Activities promoting exchanges of different groups should be planned in project design,

(5) Consideration on relation of NRW reduction and appropriate water tariff system

A project should be carefully designed considering factors such as the current tariff system and



a water service provider's policy to unauthorized water use. SW takes tough stance to illegal users and non-payment users. Together with influence of high water tariff, many non-payment users remain failing to pay bills or bypass water meters. Such actions increase unauthorized water use and thus result in higher NRW ratio. It should be noted that NRW reduction work has to make approaches not only technical aspects but social and managerial issues.

(6) Monitoring and maintenance in the pilot activities

The Team finds the importance of systematic maintenance and monitoring of NRW after implementing NRW reduction in the pilot areas. Though it depends on each projects' period and context, it is better to include the maintenance and monitoring activities in the pilot projects of NRW management.

**Annex 1: PDM Version 3 (current)**

Project Title: The Project for Improvement of Non-Revenue Water Reduction Capacity for Solomon Islands Water Authority in Solomon Islands  
Target Area: Honiara City

**Project Design Matrix (PDM<sub>3</sub>)**

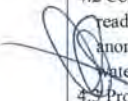
Project Period: October 2012 to October 2015 (3 years)

		Target Group: SW Staff		Date: 19 March 2015
Narrative Summary		Objectively Verifiable Indicators	Means of Verification	Important Assumptions
<p><b>Overall Goal:</b> SW's service levels are improved and SW's revenue is increased.</p> <p><b>Project Purpose:</b> SW is assisted to achieve its target of reducing the NRW ratio in Honiara to 30%* by 2015.</p> <p><b>Outputs:</b> Planning process of SW for NRW reduction is systematized.</p>	<p>1. The NRW ratio in Honiara City is reduced to 20%* by 2018.</p> <p>2. Ratio of operational revenue-to-expenditure is sustained at greater than 100%.</p> <p>1. The NRW ratio is reduced by 30** points in each pilot area, selected DMAs and/or LCZs.</p> <p>2. Regarding the pilot project areas, selected DMAs, and/or LCZs where the NRW ratio before the implementation of NRW reduction measures are less than 30%, the NRW reduction measures are implemented in accordance with features of each area and/or zone, so that effectiveness of the NRW reduction measures are validated.</p> <p>1.1 Annual budget for NRW reduction is secured in the pilot project areas and</p>	<p>1. SW Annual Operation Report</p> <p>2. SW Annual Operation Report</p> <p>1. Project Report</p>	<p>Budgetary and human resources necessary for stable water supply are continuously allocated by SW.</p> <p>1.1 Annual Budget Plans</p> <p>1.2 Strategic implementation.</p>	<p>SW staff trained by the Project continue to work in their respective positions.</p>

	LCZs. 1.2 The strategic implementation (rolling-out) plan for NRW reduction is approved by management of SW.	(rolling-out) plan for NRW reduction	
2. The procedure for NRW reduction is established through the pilot areas and LCZs.	2.1 A manual for NRW reduction is prepared. 2.2 The number of authorizations and disconnections of illegal connections is increased in the pilot project areas and LCZs. 2.3 The number of new service connections and replacement of malfunctioning customer meters is increased in the pilot project areas and LCZs.	2.1 Project Reports 2.2 Project Reports 2.3 Project Reports	
3. NRW reduction is implemented in accordance with the procedure in pilot areas and/or LCZs.	3.1 The number of pipe repairs is increased in the pilot project areas and LCZs.	3.1 Project Reports	
4. Water meter reading and billing process management are improved.	4.1 Standard operating procedure (SOP) and training materials are formulated.	4.1 Project Reports	
Activities:	Inputs:		
1.1 Establish the NRW Management Team in SW. 1.2 Review the current NRW reduction activities done by SW. 1.3 Assist in hydraulic analysis including identification of problems in the existing network. 1.4 Select pilot project areas and DMAs. 1.5 Formulate an annual action plan on NRW reduction in the pilot project areas and LCZs.	<u>Solomon Islands Side</u> 1. Personnel - Project Director - Project Manager - NRW Management Team (5 members) - NRW Action Team (19 members) Technical Sub-Team (8 members) Customer Services Sub-Team (6 members) GIS Sub-Team (2 members) Leakage Detection Sub-Team (3 members) 2. Creation of discrete DMAs		Natural disasters do not give a profound effect to the project activities.

1.6 Monitor the progress of NRW reduction activities in the pilot project areas and LCZs. 1.7 Analyze cost-effectiveness of NRW reduction activities. 1.8 Prepare strategic implementation (rolling-out) plan for NRW reduction in the whole Honiara City.	3. Provision of the project offices and facilities necessary for the project implementation 4. Expenses for implementing pilot projects in Honiara City: - Provide the necessary valves, meters, pipes fittings and other materials. - Provide labor to implement the project including PR resources. - Provide management support to facilitate successful implementation of the pilot project 5. Administrative and operational expenses - Electricity, water, communication, etc. - Local traveling costs and daily subsistence allowance (DSA) for counterpart personnel - Others as necessary		
2.1 Establish the NRW Action Team in SW. 2.2 Check existing flow meters and replace the malfunctioning meters with new ones at all the water sources. 2.3 Conduct training on NRW reduction for the NRW Action Team.	<u>Japanese side</u> 1. Expert - Leader / Water Supply Planning, Operation and Management - Deputy Leader / NRW Reduction Measures -1 - NRW Reduction Measures -2 - Leakage Detection Technology - GIS - Customer Services & Public Relations - Coordinator - GIS Advisor 2. Training of counterpart personnel in Japan 3. Provision of machinery and equipment < Equipment by JICA Expert Team > - Ultrasonic flow meter - Data logger - Water leak detector (Leak noise correlator) - Water leak detector (Acoustic type) - Metal locator - Non-metal pipe locator		Pre-conditions: The peace and order in the targeted area does not become worse.
3.1 Provide assistance in the definition and creation of discrete DMA's and their boundaries. 3.2 Provide assistance in the creation of LCZ within the DMAs. 3.3 Update existing water distribution network drawings by using GIS in the pilot project areas and DMAs. 3.4 Install necessary valves for isolation of the pilot project areas and DMAs, install flow meters, and measure the NRW ratio before implementation of the pilot project. 3.5 Identify the causes of NRW (water leakage, illegal connections and meter-related losses) in the pilot project areas and DMAs through the			

<p>OJT.</p> <p>3.6 Implement NRW reduction measures such as legalization of users, leakage detection, leakage repair, water meter installation and optimization of water pressure in the pilot project areas and DMAs, and measure the NRW ratio after implementation of the pilot projects.</p> <p>3.7 Prepare reports of results including cost and benefit.</p> <p>3.8 Provide advice for the improvement of pipe system design, installation and network operation.</p> <p>3.9 Convene the workshops to share the experiences, outcomes and etc. of the pilot projects.</p> <p>3.10 Provide capacity development and training using the DMA's and LCZ's as the basis for NRW reduction activities.</p> <p>3.11 Prepare a manual for NRW reduction.</p>	<ul style="list-style-type: none"> <li>- Distance meter</li> <li>- Hammer drill</li> <li>- Drill bits</li> <li>- Boring bar</li> <li>- Generator</li> <li>- Acoustic rods</li> <li>- Residual chlorine analyzer</li> <li>- Bulk flow meters</li> <li>- Sluice valves (To isolate pilot areas)</li> <li>- Test meter</li> <li>- Handy Terminals (Data recorder of meter reading)</li> <li>- GPSs</li> <li>- Personal computers</li> <li>- Plotter</li> <li>- Printer</li> <li>- Multifunction copier</li> <li>&lt; Equipment by JICA offices &gt;</li> <li>- Small-size excavator</li> <li>- Pick-up trucks</li> <li>- Data loggers</li> <li>- Customer meters</li> <li>4. Local expenses for the project activities</li> <li>- Teaching materials for training and workshops</li> <li>- Others</li> </ul>	
<p>4.1 Formulate the work schedule and staff assignment plan for water meter readers.</p> <p>4.2 Conduct training on water meter reading and reporting methods for anomalies and illegal connections for water meter readers.</p> <p>4.3 Promote PR activities on water conservation and saving, and water</p>		



3

<p>tariff for the customers.</p> <p>4.4 Monitor the water meter reading and billing activities.</p> <p>4.5 Report the monitoring results, such as anomalies and illegal connections, to the responsible sections.</p>	
-----------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------	--

Note: Pilot Project includes NRW reduction activities not only in Pilot Area but also in DMAs.  
 \* Indicators are based on SW's Two-year Plan (2013-2015) target.  
 \*\* The target figure is set temporarily based on the result of only one pilot project. Therefore, the figure might be changed in next JCC based on the progress of the pilot project.



3

# Annex 2: PO (current)

Project Title: The Project for Improvement of Non-Reserve Water Reduction Capacity for Solomon Islands Water Authority by Solomon Islands  
 Target Area: Honiara City Target Group: SW Staff Project Period: November 2012 to October 2015 (3 years)

Task	Phase 1 (2012-2013)	Phase 2 (2013-2014)	Phase 3 (2014-2015)	Phase 4 (2015-2016)	Status	Remarks/Comments
<b>Input from Solomon Islands (SW's Personnel)</b>						
<b>NW Management Team</b>						
1. Mr. Richard A. WINE, Project Director (General Manager)	●	●	●	●	●	13.5.2012
2. Mr. Peter ANDRESEN, Project Manager (Operations & Technical Manager)	●	●	●	●	●	29.5.2012
3. Mr. Ronald DAVIES, Site Director (SHE/HS&E & Administration Manager)	●	●	●	●	●	29.5.2012
4. Mr. Peter WILSON, Finance & Procurement Manager	●	●	●	●	●	29.5.2012
5. Mr. Elin MARIJØR, Finance Director (Finance & Communication Manager)	●	●	●	●	●	29.5.2012
<b>NW Action Team (Technical Sub-Team)</b>						
6. Mr. Stephen HILL, Deputy Team Leader (Sub-Team Leader (SHE/HS&E) Technical)	●	●	●	●	●	29.5.2012
7. Mr. Scott ADA, Deputy Sub-Team Leader (Customer Connection & Manager)	●	●	●	●	●	29.5.2012
8. Mr. Michael BARR, Customer Connection & Marketing Manager (Assistant)	●	●	●	●	●	29.5.2012
9. Mr. Mike TAYLOR, Deputy Sub-Team Leader (Customer Connection & Support)	●	●	●	●	●	29.5.2012
10. Mr. Michael BARR, Head of Pipe Repair Team (Pipe Maintenance & Repair)	●	●	●	●	●	29.5.2012
11. Mr. Frank DUNN, Deputy Sub-Team Leader (Procurement)	●	●	●	●	●	29.5.2012
12. Mr. Frank DUNN, Head of Utility Support Equipment Team (Pipe Materials Management & Procurement)	●	●	●	●	●	29.5.2012
13. Mr. Chris WILSON, Deputy Sub-Team Leader (Finance & Training)	●	●	●	●	●	29.5.2012
<b>NW Action Team (Finance &amp; Training Sub-Team)</b>						
14. Mr. Elin MARIJØR, Deputy Team Leader (Finance Director & Communication Mgr)	●	●	●	●	●	29.5.2012
15. Mr. Stephen HILL, Deputy Sub-Team Leader (Customer Conn)	●	●	●	●	●	29.5.2012
16. Mr. Michael BARR, Deputy Sub-Team Leader (Customer Conn & Support)	●	●	●	●	●	29.5.2012
17. Mr. Mike TAYLOR, Deputy Sub-Team Leader (Customer Conn & Support)	●	●	●	●	●	29.5.2012
18. Mr. Michael BARR, Head of Pipe Repair Team (Pipe Maintenance & Repair)	●	●	●	●	●	29.5.2012
19. Mr. Frank DUNN, Deputy Sub-Team Leader (Procurement)	●	●	●	●	●	29.5.2012
20. Mr. Frank DUNN, Head of Utility Support Equipment Team (Pipe Materials Management & Procurement)	●	●	●	●	●	29.5.2012
21. Mr. Chris WILSON, Deputy Sub-Team Leader (Finance & Training)	●	●	●	●	●	29.5.2012
<b>NW Action Team (Finance &amp; Training Sub-Team)</b>						
22. Mr. Elin MARIJØR, Deputy Team Leader (Finance Director & Communication Mgr)	●	●	●	●	●	29.5.2012
23. Mr. Stephen HILL, Deputy Sub-Team Leader (Customer Conn)	●	●	●	●	●	29.5.2012
24. Mr. Michael BARR, Deputy Sub-Team Leader (Customer Conn & Support)	●	●	●	●	●	29.5.2012
25. Mr. Mike TAYLOR, Deputy Sub-Team Leader (Customer Conn & Support)	●	●	●	●	●	29.5.2012
26. Mr. Michael BARR, Head of Pipe Repair Team (Pipe Maintenance & Repair)	●	●	●	●	●	29.5.2012
27. Mr. Frank DUNN, Deputy Sub-Team Leader (Procurement)	●	●	●	●	●	29.5.2012
28. Mr. Frank DUNN, Head of Utility Support Equipment Team (Pipe Materials Management & Procurement)	●	●	●	●	●	29.5.2012
29. Mr. Chris WILSON, Deputy Sub-Team Leader (Finance & Training)	●	●	●	●	●	29.5.2012
<b>Input from Solomon Islands (Offices, Facilities and Expenses)</b>						
1. Provision of project office and facilities	●	●	●	●	●	29.5.2012
2. Provision of telecommunication facilities	●	●	●	●	●	29.5.2012
3. Administration and operational expenses	●	●	●	●	●	29.5.2012
<b>Input from Japan (JICA Expert Team)</b>						
1. Mr. Takahiro FUJIMURA, Leader - Water Supply Planning, Operation and Management	●	●	●	●	●	30.2.2012
2. Mr. Akio MITSUDA, Deputy Leader - Water Supply Planning, Operation and Management	●	●	●	●	●	30.2.2012
3. Mr. Masahiko NISHI, Deputy Leader - Water Supply Planning, Operation and Management	●	●	●	●	●	30.2.2012
4. Mr. Akio MITSUDA, Deputy Leader - Water Supply Planning, Operation and Management	●	●	●	●	●	30.2.2012
5. Mr. Masahiko NISHI, Deputy Leader - Water Supply Planning, Operation and Management	●	●	●	●	●	30.2.2012
6. Mr. Takahiro FUJIMURA, Deputy Leader - Water Supply Planning, Operation and Management	●	●	●	●	●	30.2.2012
7. Mr. Akio MITSUDA, Deputy Leader - Water Supply Planning, Operation and Management	●	●	●	●	●	30.2.2012
8. Mr. Masahiko NISHI, Deputy Leader - Water Supply Planning, Operation and Management	●	●	●	●	●	30.2.2012
<b>Input from Japan (Equipment by JICA Expert Team)</b>						
1. Personal computer	1	1	●	●	●	Completed
2. Desk set	1	1	●	●	●	Completed
3. Chair	1	1	●	●	●	Completed
4. Water tank (water tank with cooler)	1	1	●	●	●	Completed
5. Water tank (water tank)	1	1	●	●	●	Completed
6. Non metal pipe (water)	2	1	●	●	●	Completed
7. Electric meter and	1	1	●	●	●	Completed
8. Pipe	2	1	●	●	●	Completed
9. Pipe	2	1	●	●	●	Completed
10. Pipe	10	5	●	●	●	Completed
11. Pipe	2	1	●	●	●	Completed
12. Pipe	2	1	●	●	●	Completed
13. Pipe	2	1	●	●	●	Completed
14. Pipe	2	1	●	●	●	Completed
15. Pipe	2	1	●	●	●	Completed
16. Pipe	2	1	●	●	●	Completed
17. Pipe	2	1	●	●	●	Completed
18. Pipe	2	1	●	●	●	Completed
19. Pipe	2	1	●	●	●	Completed
20. Pipe	2	1	●	●	●	Completed
21. Pipe	2	1	●	●	●	Completed
22. Pipe	2	1	●	●	●	Completed
23. Pipe	2	1	●	●	●	Completed
24. Pipe	2	1	●	●	●	Completed
25. Pipe	2	1	●	●	●	Completed
26. Pipe	2	1	●	●	●	Completed
27. Pipe	2	1	●	●	●	Completed
28. Pipe	2	1	●	●	●	Completed
29. Pipe	2	1	●	●	●	Completed
30. Pipe	2	1	●	●	●	Completed
31. Pipe	2	1	●	●	●	Completed
32. Pipe	2	1	●	●	●	Completed
33. Pipe	2	1	●	●	●	Completed
34. Pipe	2	1	●	●	●	Completed
35. Pipe	2	1	●	●	●	Completed
36. Pipe	2	1	●	●	●	Completed
37. Pipe	2	1	●	●	●	Completed
38. Pipe	2	1	●	●	●	Completed
39. Pipe	2	1	●	●	●	Completed
40. Pipe	2	1	●	●	●	Completed
41. Pipe	2	1	●	●	●	Completed
42. Pipe	2	1	●	●	●	Completed
43. Pipe	2	1	●	●	●	Completed
44. Pipe	2	1	●	●	●	Completed
45. Pipe	2	1	●	●	●	Completed
46. Pipe	2	1	●	●	●	Completed
47. Pipe	2	1	●	●	●	Completed
48. Pipe	2	1	●	●	●	Completed
49. Pipe	2	1	●	●	●	Completed
50. Pipe	2	1	●	●	●	Completed
51. Pipe	2	1	●	●	●	Completed
52. Pipe	2	1	●	●	●	Completed
53. Pipe	2	1	●	●	●	Completed
54. Pipe	2	1	●	●	●	Completed
55. Pipe	2	1	●	●	●	Completed
56. Pipe	2	1	●	●	●	Completed
57. Pipe	2	1	●	●	●	Completed
58. Pipe	2	1	●	●	●	Completed
59. Pipe	2	1	●	●	●	Completed
60. Pipe	2	1	●	●	●	Completed
61. Pipe	2	1	●	●	●	Completed
62. Pipe	2	1	●	●	●	Completed
63. Pipe	2	1	●	●	●	Completed
64. Pipe	2	1	●	●	●	Completed
65. Pipe	2	1	●	●	●	Completed
66. Pipe	2	1	●	●	●	Completed
67. Pipe	2	1	●	●	●	Completed
68. Pipe	2	1	●	●	●	Completed
69. Pipe	2	1	●	●	●	Completed
70. Pipe	2	1	●	●	●	Completed
71. Pipe	2	1	●	●	●	Completed
72. Pipe	2	1	●	●	●	Completed
73. Pipe	2	1	●	●	●	Completed
74. Pipe	2	1	●	●	●	Completed
75. Pipe	2	1	●	●	●	Completed
76. Pipe	2	1	●	●	●	Completed
77. Pipe	2	1	●	●	●	Completed
78. Pipe	2	1	●	●	●	Completed
79. Pipe	2	1	●	●	●	Completed
80. Pipe	2	1	●	●	●	Completed
81. Pipe	2	1	●	●	●	Completed
82. Pipe	2	1	●	●	●	Completed
83. Pipe	2	1	●	●	●	Completed
84. Pipe	2	1	●	●	●	Completed
85. Pipe	2	1	●	●	●	Completed
86. Pipe	2	1	●	●	●	Completed
87. Pipe	2	1	●	●	●	Completed
88. Pipe	2	1	●	●	●	Completed
89. Pipe	2	1	●	●	●	Completed
90. Pipe	2	1	●	●	●	Completed
91. Pipe	2	1	●	●	●	Completed
92. Pipe	2	1	●	●	●	Completed
93. Pipe	2	1	●	●	●	Completed
94. Pipe	2	1	●	●	●	Completed
95. Pipe	2	1	●	●	●	Completed
96. Pipe	2	1	●	●	●	Completed
97. Pipe	2	1	●	●	●	Completed
98. Pipe	2	1	●	●	●	Completed
99. Pipe	2	1	●	●	●	Completed
100. Pipe	2	1	●	●	●	Completed

# Annex 2: PO (current)

Task	Phase 1 (2012-2013)	Phase 2 (2013-2014)	Phase 3 (2014-2015)	Phase 4 (2015-2016)	Status	Remarks/Comments
<b>Input from Japan (Equipment by JICA Solomon Office)</b>						
1. Desk set	1	1	●	●	●	Completed
2. Chair	1	1	●	●	●	Completed
3. Water tank (water tank with cooler)	1	1	●	●	●	Completed
4. Water tank (water tank)	1	1	●	●	●	Completed
5. Non metal pipe (water)	2	1	●	●	●	Completed
6. Electric meter and	1	1	●	●	●	Completed
7. Pipe	2	1	●	●	●	Completed
8. Pipe	2	1	●	●	●	Completed
9. Pipe	10	5	●	●	●	Completed
10. Pipe	2	1	●	●	●	Completed
11. Pipe	2	1	●	●	●	Completed
12. Pipe	2	1	●	●	●	Completed
13. Pipe	2	1	●	●	●	Completed
14. Pipe	2	1	●	●	●	Completed
15. Pipe	2	1	●	●	●	Completed
16. Pipe	2	1	●	●	●	Completed
17. Pipe	2	1	●	●	●	Completed
18. Pipe	2	1	●	●	●	Completed
19. Pipe	2	1	●	●	●	Completed
20. Pipe	2	1	●	●	●	Completed
21. Pipe	2	1	●	●	●	Completed
22. Pipe	2	1	●	●	●	Completed
23. Pipe	2	1	●	●	●	Completed
24. Pipe	2	1	●	●	●	Completed
25. Pipe	2	1	●	●	●	Completed
26. Pipe	2	1	●	●	●	Completed
27. Pipe	2	1	●	●	●	Completed
28. Pipe	2	1	●	●	●	Completed
29. Pipe	2	1	●	●	●	Completed
30. Pipe	2	1	●	●	●	Completed
31. Pipe	2	1	●	●	●	Completed
32. Pipe	2	1	●	●	●	Completed
33. Pipe	2	1	●	●	●	Completed
34. Pipe	2	1	●	●	●	Completed
35. Pipe	2	1	●	●	●	Completed
36. Pipe	2	1	●	●	●	Completed
37. Pipe	2	1	●	●	●	Completed
38. Pipe	2	1	●	●	●	Completed
39. Pipe	2	1	●	●	●	Completed
40. Pipe	2	1	●	●	●	Completed
41. Pipe	2	1	●	●	●	Completed
42. Pipe	2	1	●	●	●	Completed
43. Pipe	2	1	●	●	●	Completed
44. Pipe	2	1	●	●	●	Completed
45. Pipe	2	1	●	●	●	Completed
46. Pipe	2	1	●	●	●	Completed
47. Pipe	2	1	●	●	●	Completed
48. Pipe	2	1	●	●	●	Completed
49. Pipe	2	1	●	●	●	Completed
50. Pipe	2	1	●	●	●	Completed
51. Pipe	2	1	●	●	●	Completed
52. Pipe	2	1	●	●	●	Completed
53. Pipe	2	1	●	●	●	Completed
54. Pipe	2	1	●	●	●	Completed
55. Pipe	2	1	●	●	●	Completed
56. Pipe	2	1	●	●	●	Completed
57. Pipe	2	1				

Annex 2: PO (current)

Year	Project	Activity	Start Date	End Date	Duration (Days)	Progress (%)	Remarks
2023	Pilot Project and DMA V CZ	1. SW-10. Mangrove Rehabilitation	01/01/23	31/03/23	90	100	Completed
		2. SW-11. Mangrove Rehabilitation	01/01/23	31/03/23	90	100	Completed
		3. SW-12. Mangrove Rehabilitation	01/01/23	31/03/23	90	100	Completed
		4. SW-13. Mangrove Rehabilitation	01/01/23	31/03/23	90	100	Completed
		5. SW-14. Mangrove Rehabilitation	01/01/23	31/03/23	90	100	Completed
		6. SW-15. Mangrove Rehabilitation	01/01/23	31/03/23	90	100	Completed
		7. SW-16. Mangrove Rehabilitation	01/01/23	31/03/23	90	100	Completed
		8. SW-17. Mangrove Rehabilitation	01/01/23	31/03/23	90	100	Completed
		9. SW-18. Mangrove Rehabilitation	01/01/23	31/03/23	90	100	Completed
		10. SW-19. Mangrove Rehabilitation	01/01/23	31/03/23	90	100	Completed
		11. SW-20. Mangrove Rehabilitation	01/01/23	31/03/23	90	100	Completed
		12. SW-21. Mangrove Rehabilitation	01/01/23	31/03/23	90	100	Completed
		13. SW-22. Mangrove Rehabilitation	01/01/23	31/03/23	90	100	Completed
		14. SW-23. Mangrove Rehabilitation	01/01/23	31/03/23	90	100	Completed
		15. SW-24. Mangrove Rehabilitation	01/01/23	31/03/23	90	100	Completed
		16. SW-25. Mangrove Rehabilitation	01/01/23	31/03/23	90	100	Completed
		17. SW-26. Mangrove Rehabilitation	01/01/23	31/03/23	90	100	Completed
18. SW-27. Mangrove Rehabilitation	01/01/23	31/03/23	90	100	Completed		
19. SW-28. Mangrove Rehabilitation	01/01/23	31/03/23	90	100	Completed		
20. SW-29. Mangrove Rehabilitation	01/01/23	31/03/23	90	100	Completed		
21. SW-30. Mangrove Rehabilitation	01/01/23	31/03/23	90	100	Completed		
22. SW-31. Mangrove Rehabilitation	01/01/23	31/03/23	90	100	Completed		
23. SW-32. Mangrove Rehabilitation	01/01/23	31/03/23	90	100	Completed		
24. SW-33. Mangrove Rehabilitation	01/01/23	31/03/23	90	100	Completed		
25. SW-34. Mangrove Rehabilitation	01/01/23	31/03/23	90	100	Completed		
26. SW-35. Mangrove Rehabilitation	01/01/23	31/03/23	90	100	Completed		
27. SW-36. Mangrove Rehabilitation	01/01/23	31/03/23	90	100	Completed		
28. SW-37. Mangrove Rehabilitation	01/01/23	31/03/23	90	100	Completed		
29. SW-38. Mangrove Rehabilitation	01/01/23	31/03/23	90	100	Completed		
30. SW-39. Mangrove Rehabilitation	01/01/23	31/03/23	90	100	Completed		
31. SW-40. Mangrove Rehabilitation	01/01/23	31/03/23	90	100	Completed		
32. SW-41. Mangrove Rehabilitation	01/01/23	31/03/23	90	100	Completed		
33. SW-42. Mangrove Rehabilitation	01/01/23	31/03/23	90	100	Completed		
34. SW-43. Mangrove Rehabilitation	01/01/23	31/03/23	90	100	Completed		
35. SW-44. Mangrove Rehabilitation	01/01/23	31/03/23	90	100	Completed		
36. SW-45. Mangrove Rehabilitation	01/01/23	31/03/23	90	100	Completed		
37. SW-46. Mangrove Rehabilitation	01/01/23	31/03/23	90	100	Completed		
38. SW-47. Mangrove Rehabilitation	01/01/23	31/03/23	90	100	Completed		
39. SW-48. Mangrove Rehabilitation	01/01/23	31/03/23	90	100	Completed		
40. SW-49. Mangrove Rehabilitation	01/01/23	31/03/23	90	100	Completed		
41. SW-50. Mangrove Rehabilitation	01/01/23	31/03/23	90	100	Completed		
42. SW-51. Mangrove Rehabilitation	01/01/23	31/03/23	90	100	Completed		
43. SW-52. Mangrove Rehabilitation	01/01/23	31/03/23	90	100	Completed		
44. SW-53. Mangrove Rehabilitation	01/01/23	31/03/23	90	100	Completed		
45. SW-54. Mangrove Rehabilitation	01/01/23	31/03/23	90	100	Completed		
46. SW-55. Mangrove Rehabilitation	01/01/23	31/03/23	90	100	Completed		
47. SW-56. Mangrove Rehabilitation	01/01/23	31/03/23	90	100	Completed		
48. SW-57. Mangrove Rehabilitation	01/01/23	31/03/23	90	100	Completed		
49. SW-58. Mangrove Rehabilitation	01/01/23	31/03/23	90	100	Completed		
50. SW-59. Mangrove Rehabilitation	01/01/23	31/03/23	90	100	Completed		
51. SW-60. Mangrove Rehabilitation	01/01/23	31/03/23	90	100	Completed		
52. SW-61. Mangrove Rehabilitation	01/01/23	31/03/23	90	100	Completed		
53. SW-62. Mangrove Rehabilitation	01/01/23	31/03/23	90	100	Completed		
54. SW-63. Mangrove Rehabilitation	01/01/23	31/03/23	90	100	Completed		
55. SW-64. Mangrove Rehabilitation	01/01/23	31/03/23	90	100	Completed		
56. SW-65. Mangrove Rehabilitation	01/01/23	31/03/23	90	100	Completed		
57. SW-66. Mangrove Rehabilitation	01/01/23	31/03/23	90	100	Completed		
58. SW-67. Mangrove Rehabilitation	01/01/23	31/03/23	90	100	Completed		
59. SW-68. Mangrove Rehabilitation	01/01/23	31/03/23	90	100	Completed		
60. SW-69. Mangrove Rehabilitation	01/01/23	31/03/23	90	100	Completed		
61. SW-70. Mangrove Rehabilitation	01/01/23	31/03/23	90	100	Completed		
62. SW-71. Mangrove Rehabilitation	01/01/23	31/03/23	90	100	Completed		
63. SW-72. Mangrove Rehabilitation	01/01/23	31/03/23	90	100	Completed		
64. SW-73. Mangrove Rehabilitation	01/01/23	31/03/23	90	100	Completed		
65. SW-74. Mangrove Rehabilitation	01/01/23	31/03/23	90	100	Completed		
66. SW-75. Mangrove Rehabilitation	01/01/23	31/03/23	90	100	Completed		
67. SW-76. Mangrove Rehabilitation	01/01/23	31/03/23	90	100	Completed		
68. SW-77. Mangrove Rehabilitation	01/01/23	31/03/23	90	100	Completed		
69. SW-78. Mangrove Rehabilitation	01/01/23	31/03/23	90	100	Completed		
70. SW-79. Mangrove Rehabilitation	01/01/23	31/03/23	90	100	Completed		
71. SW-80. Mangrove Rehabilitation	01/01/23	31/03/23	90	100	Completed		
72. SW-81. Mangrove Rehabilitation	01/01/23	31/03/23	90	100	Completed		
73. SW-82. Mangrove Rehabilitation	01/01/23	31/03/23	90	100	Completed		
74. SW-83. Mangrove Rehabilitation	01/01/23	31/03/23	90	100	Completed		
75. SW-84. Mangrove Rehabilitation	01/01/23	31/03/23	90	100	Completed		
76. SW-85. Mangrove Rehabilitation	01/01/23	31/03/23	90	100	Completed		
77. SW-86. Mangrove Rehabilitation	01/01/23	31/03/23	90	100	Completed		
78. SW-87. Mangrove Rehabilitation	01/01/23	31/03/23	90	100	Completed		
79. SW-88. Mangrove Rehabilitation	01/01/23	31/03/23	90	100	Completed		
80. SW-89. Mangrove Rehabilitation	01/01/23	31/03/23	90	100	Completed		
81. SW-90. Mangrove Rehabilitation	01/01/23	31/03/23	90	100	Completed		
82. SW-91. Mangrove Rehabilitation	01/01/23	31/03/23	90	100	Completed		
83. SW-92. Mangrove Rehabilitation	01/01/23	31/03/23	90	100	Completed		
84. SW-93. Mangrove Rehabilitation	01/01/23	31/03/23	90	100	Completed		
85. SW-94. Mangrove Rehabilitation	01/01/23	31/03/23	90	100	Completed		
86. SW-95. Mangrove Rehabilitation	01/01/23	31/03/23	90	100	Completed		
87. SW-96. Mangrove Rehabilitation	01/01/23	31/03/23	90	100	Completed		
88. SW-97. Mangrove Rehabilitation	01/01/23	31/03/23	90	100	Completed		
89. SW-98. Mangrove Rehabilitation	01/01/23	31/03/23	90	100	Completed		
90. SW-99. Mangrove Rehabilitation	01/01/23	31/03/23	90	100	Completed		
91. SW-100. Mangrove Rehabilitation	01/01/23	31/03/23	90	100	Completed		

Annex 3: Tables

Table A.1 Initial Cost for NRW Reduction Activities in Pilot Areas

Pilot area	Pipeline length (m)	Total No. of households	Total initial cost (SBD)
White River- Namo Ruka	1,063.23	83	99,689
Independence Valley	2,184.45	91	113,921
Lenggakiki	2,481.38	161	115,868
Mbokonavera-1	1,104.12	76	80,922
Tuvaruhu-1	1,205.88	47	76,737
Tuvaruhu-2	1,371.31	62	90,049
Vavaea Ridge	1,298.15	163	165,649
Mbokona	1,418.66	110	245,145
Mbaranamba	1,512.29	100	84,221
Mbua Valley	1,989.95	122	308,263
Bahai Kukum	1,691.80	182	282,361
Panatina Valley	885.12	60	129,931
Naha 2	785.93	57	130,413
Naha 3	959.63	67	131,759
FFA Kola Road	2,275.52	82	176,436
Total	22,227.42	1,463	2,231,364

Table A.2 Budget for NRW Reduction Activities in the two DMAs

DMA	Budget (SBD)
Tasahe A&B	616,000
West Kola Ridge A	616,000

Table A.3 Number of Authorizations and Disconnections of Illegal Connections

Pilot area	Total households	Illegal connections <sup>*1</sup>	Ratio of illegal connections to total households (%)	Legalized cases (authorized connections)	Ratio of legalized cases to illegal connections (%)	Disconnected cases	Ratio of disconnected cases to illegal connections (%)
	[1]	[2]	[3] = [2] / [1] × 100	[4]	[5] = [4] / [2] × 100	[6]	[7] = [6] / [2] × 100
White River- Namo Ruka	83	28	33.7%	6	21.4%	22	78.6%
Independence Valley	91	7	7.7%	1	14.3%	6	85.7%
Lenggakiki	161	35	21.7%	1	2.9%	34	97.1%
Mbokonavera-1	76	2	2.6%	0	0.0%	2	100.0%
Tuvaruhu-1	48	6	12.5%	3	50.0%	3	50.0%
Tuvaruhu-2	62	11	17.7%	3	27.3%	8	72.7%
Vavaea Ridge	163	0	0.0%	0	0.0%	0	0.0%
Mbokona	110	10	9.1%	5	50.0%	5	50.0%
Mbaranamba	100	2	2.0%	2	100.0%	0	0.0%
Mbua Valley	122	13	10.7%	7	53.8%	6	46.2%
Bahai Kukum	182	14	7.7%	8	57.1%	6	42.9%
Panatina Valley	60	0	0.0%	0	0.0%	0	0.0%
Naha 2	57	2	3.5%	0	0.0%	2	100.0%
Naha 3	67	10	14.9%	2	20.0%	8	80.0%
FFA Kola Road	82	0	0.0%	0	0.0%	0	0.0%
<b>Total</b>	<b>1,464</b>	<b>140</b>	<b>9.6%</b>	<b>38</b>	<b>27.1%</b>	<b>102</b>	<b>72.9%</b>

\*1 Illegal connections and illegal parasite users are not included.

Table A.4 Number of New Service Connections and Re-connections

Pilot area	Total households	Unserviced households <sup>*1</sup> (before)	Ratio of unserviced households to total households (%)	New/Re-connection	Ratio of new/re-connection to unserviced households (%)
	[1]	[2]	[3] = [2] / [1] × 100	[4]	[5] = [4] / [2] × 100
White River- Namo Ruka	83	11	13.3%	2	18.2%
Independence Valley	91	16	17.6%	3	18.8%
Lenggakiki	161	11	6.8%	6	54.5%
Mbokonavera-1	76	10	13.2%	0	0.0%
Tuvaruhu-1	48	4	8.3%	3	75.0%
Tuvaruhu-2	62	10	16.1%	1	10.0%
Vavaea Ridge	163	69	42.3%	8	11.6%
Mbokona	110	12	10.9%	6	50.0%
Mbaranamba	100	20	20.0%	0	0.0%
Mbua Valley	122	16	13.1%	1	6.3%
Bahai Kukum	182	53	29.1%	1	1.9%
Panatina Valley	60	9	15.0%	0	0.0%
Naha 2	57	13	22.8%	0	0.0%
Naha 3	67	2	3.0%	0	0.0%
FFA Kola Road	82	12	14.6%	0	0.0%
<b>Total</b>	<b>1,464</b>	<b>268</b>	<b>18.3%</b>	<b>31</b>	<b>11.6%</b>

\*1 Illegal connections and illegal parasite users are not included.

Table A.5 Number of New Installation and Replacement of Customer Meters

Pilot area	Total households	Meters, new installation	Meters, replacement	Replacement & new installation	Ratio of replacement & new installation to total households (%)
	[1]	[2]	[3]	[4] = [2] + [3]	[5] = [4] / [1] × 100
White River- Namo Ruka	83	37	12	49	59.0%
Independence Valley	91	37	35	72	79.1%
Lenggakiki	161	29	89	118	73.3%
Mbokonavera-1	76	30	32	62	81.6%
Tuvaruhu-1	48	16	11	27	56.3%
Tuvaruhu-2	62	16	16	32	51.6%
Vavaea Ridge	163	36	57	93	57.1%
Mbokona	110	45	28	73	66.4%
Mbaranamba	100	11	39	50	50.0%
Mbua Valley	122	34	58	92	75.4%
Bahai Kukum	182	44	53	97	53.3%
Panatina Valley	60	15	35	50	83.3%
Naha 2	57	6	36	42	73.7%
Naha 3	67	9	46	55	82.1%
FFA Kola Road	82	13	49	62	75.6%
<b>Total</b>	<b>1,464</b>	<b>378</b>	<b>596</b>	<b>974</b>	<b>66.5%</b>

Table A.7 Reduction Point of Leakage Ratio before/after NRW Reduction Activities

Pilot area	Leakage ratio (% , before)	Leakage ratio (% , after)	Reduction (percentage point)
	[1]	[2]	[3] = [1] - [2]
White River- Namo Ruka	49.2	30.7	18.5
Independence Valley	15.7	8.6	7.1
Lenggakiki	52.1	14.3	37.8
Mbokonavera-1	50.1	10.6	39.5
Tuvaruhu-1	59.4	11.0	48.4
Tuvaruhu-2	52.8	19.4	33.4
Vavaea Ridge	60.7	24.7	36.0
Mbokona	44.7	19.0	25.7
Mbaranamba	21.3	3.3	18.0
Mbua Valley	39.7	6.7	33.0
Bahai Kukum	42.7	16.2	26.5
Panatina Valley	24.8	6.1	18.7
Naha 2	42.5	14.9	27.6
Naha 3	42.1	25.8	16.3
FFA Kola Road	44.5	14.9	29.6
<b>Average</b>	<b>42.8</b>	<b>15.1</b>	<b>27.7</b>

Table A.6 Number of Leak Points and Pipe Repairs

Pilot area	Pipe length (m)	No. of leak points	No. of pipe repairs	Per-km leak points
	[1]	[2]	[3]	[4] = [2] / [1] × 1,000m
White River- Namo Ruka	1,063.23	13	13	12
Independence Valley	2,184.45	12	12	5
Lenggakiki	2,481.38	31	31	12
Mbokonavera-1	1,104.12	13	13	12
Tuvaruhu-1	1,205.88	9	9	7
Tuvaruhu-2	1,371.31	9	9	7
Vavaea Ridge	1,298.15	11	11	8
Mbokona	1,418.66	25	25	18
Mbaranamba	1,512.29	12	12	8
Mbua Valley	1,989.95	18	18	9
Bahai Kukum	1,691.80	18	18	11
Panatina Valley	885.12	3	3	3
Naha 2	785.93	2	2	3
Naha 3	959.63	10	10	10
FFA Kola Road	2,275.52	5	5	2
<b>Total</b>	<b>22,227.42</b>	<b>191</b>	<b>191</b>	<b>9</b>

Annex 4: List of JICA experts

As of 31 July 2015

(1) Work in Solomon Islands

Name	Field of charge		Dispatched period (M/M)				
			1st year	2nd year	3rd year	4th year	Total
Mr. Taketoshi FUJIYAMA	Leader / Water Supply Planning, O&M	Planned	3.03	6.47	3.50	1.80	14.80
		Achieved	3.07	4.90	5.27	1.77	15.00
Mr. Akinori MIYOSHI	Deputy Leader / NRW Reduction Measures -1	Planned	1.00	3.20	4.50	1.87	10.57
		Achieved	1.03	3.17	4.33	0.87	9.40
Mr. Masatoshi SENO	NRW Reduction Measures -2	Planned	3.00	3.30	1.93	0.00	8.23
		Achieved	3.00	3.10	0.00	0.00	6.10
Mr. Akihiko OKAZAKI	Leakage Detection Technology	Planned	1.80	3.57	2.00	1.00	8.37
		Achieved	1.77	1.73	2.43	1.37	7.30
Mr. Masakazu ASAI	GIS	Planned	2.00	2.20	1.20	0.60	6.00
		Achieved	2.00	1.50	1.30	0.60	5.40
Mr. Kenji KASAMATSU / Mr. Yoshiharu WADA	Customer Services & Public Relations	Planned	2.00	2.17	1.13	0.00	5.30
		Achieved	2.03	2.13	0.57	0.57	5.30
Total		Planned	12.83	20.91	14.26	5.27	53.27
		Achieved	12.90	16.53	13.90	5.18	48.51

(2) Work in Japan

Name	Field of charge		Dispatched period (M/M)				
			1st year	2nd year	3rd year	4th year	Total
Mr. Taketoshi FUJIYAMA	Leader / Water Supply Planning, O&M	Planned	0.07	0.00	0.00	0.03	0.10
		Achieved	0.07	0.00	0.00	0.00	0.07
Mr. Yoshiharu WADA	Management of Trainings in Japan	Planned	0.00	1.07	0.53	0.00	1.60
		Achieved	0.00	1.07	0.53	0.00	1.60
Total		Planned	0.07	1.07	0.53	0.03	1.70
		Achieved	0.07	1.07	0.53	0.00	1.67

(3) Others

Name	Field of charge		Dispatched period (M/M)				
			1st year	2nd year	3rd year	4th year	Total
Mr. Norio ISHIJIMA / Mr. Kazutoshi MASUDA	GIS Advisor	Planned	-	-	-	-	-
		Achieved	0.50	0.00	0.67	1.20	2.37
Ms. Akiko SAKAMOTO	Coordinator / Water Supply Planning, O&M	Planned	-	-	-	-	-
		Achieved	0.97	1.10	0.00	0.00	2.07
Total		Planned	-	-	-	-	-
		Achieved	1.47	1.10	0.67	1.20	4.44

Annex 5: List of Trainings

(1) Counterpart Trainings in Japan

No.	Name	Post	Occupation
1st Training in April 2013			
1	Ms. Ellen Maruarofo	Service Delivery & Communications Manager	Service Delivery & Communication Division
2	Mr. Benjamin Billy Bulao	Action Team Leader 1 / Sub-Team Leader (NRW Task Force Leader)	Technical Division
3	Mr. Austin Ata	Deputy Sub-Team Leader (Customer Connections)	Service Coordinator, Customer Care & Communication Division
4	Ms. Daisy Rose Menaga	Deputy Sub-Team Leader (Meter Reading)	Meter Reading Team
2nd Training in October 2013			
1	Mr. Mathias Vau Chenga Bera	Pipe Repair (Network Pipe Maintenance & Repair)	Technical Division
2	Mr. Frank Daukalia	Meter Repair / Replacement (Pipe Materials Management & Procurement)	Technical Division
3	Mr. Mathew Mafe Tevasa	Leak Detection Sub-Team	Technical Division
4	Mr. Gavin Bastori Bare	Sub-Team Leader (GIS Technician)	Technical Division
3rd Training in June 2014			
1	Ms. Kofann Tima B.	Human Resources Manager	Human Resources Division
2	Mr. Iroi Lawrence Fadaua	Chief Accountant	Revenue Collector, Finance Division
3	Ms. Tinarai Roster Ihodi	Deputy Sub-Team Leader (Debt Collection)	Debt Collection, Finance Division
4	Ms. Pidoke Marilyn Boke	Customer Care Officer	Service Delivery & Communication Division



## (2) Lectures / Trainings / Workshops and Tests (excluding Trainings in Japan)

Name	Date	Contents	Number of participants			
			NRW Man. Team	NRW Act. Team	Other SW staff	Others
Lecture/Training/Workshop 1	2012/11/22	Introductory Meeting for NRW Project	6	13	0	3
Lecture/Training/Workshop 2	2012/12/14	Draft Result of the Capacity Assessment and Capacity Needs	4	1	0	6
Lecture/Training/Workshop 3	2013/4/24	The 1st JCC	4	2	0	8
Lecture/Training/Workshop 4	2013/5/31	Debriefing Session of the 1st CP Training in Japan	6	5	0	1
Lecture/Training/Workshop 5	2013/6/27	Review on Analysis of IWA Water Balance	1	9	2	1
Lecture/Training/Workshop 6	2013/6/28	Mini-workshop on Progress and Achievement of the Pilot Activities	3	7	3	2
Lecture/Training/Workshop 7	2013/6/28	Role-play	1	3	7	2
Lecture/Training/Workshop 8	2013/8/16	Purpose of the GIS Database	1	11	5	3
Lecture/Training/Workshop 9	2013/8/20	GPS Training	0	5	3	2
Lecture/Training/Workshop 10	2013/8/26	Brainstorming	1	12	3	1
Lecture/Training/Workshop 11	2013/8/29	Training for the NRW Reduction(Leakage Detection)	0	11	5	2
Lecture/Training/Workshop 12	2013/8/30	Brainstorming	1	10	1	2
Lecture/Training/Workshop 13	2013/11/8	Debriefing Session of the 2nd CP Training in Japan	3	12	1	1
Lecture/Training/Workshop 14	2013/11/22	Intensive Lecture on NRW Technical	0	7	4	2
Lecture/Training/Workshop 15	2013/11/27	The 2nd JCC	4	4	1	9
Lecture/Training/Workshop 16	2013/11/29	The 2nd Role-play	0	8	12	2
Test 1	2013/12/4	NRW Technical Test	0	7	4	1
Lecture/Training/Workshop 17	2014/2/4	Intensive Lecture on NRW Technical	0	6	9	1
Lecture/Training/Workshop 18	2014/2/7	Workshops on Workflows of GIS Database (Data	0	9	5	2

		Management)				
Lecture/Training/Workshop 19	2014/2/10	Intensive Lecture on GIS	0	7	0	1
Test 2	2014/2/10	NRW Technical Test	0	5	7	1
Lecture/Training/Workshop 20	2014/2/11	Workshops on Workflows of GIS Database (Flow of Information Sheets)	0	9	5	2
Test 3	2014/2/12	GIS	0	6	0	1
Lecture/Training/Workshop 21	2014/2/17	Intensive Lecture on NRW General	2	14	2	1
Lecture/Training/Workshop 22	2014/2/18	Intensive Lecture on NRW General	2	14	2	1
Lecture/Training/Workshop 23	2014/2/18	Intensive Lecture on Meter Reading, Billing and Customer Care	1	5	9	1
Lecture/Training/Workshop 24	2014/2/19	Workshops on Workflows of GIS Database (Forms)	0	9	5	1
Lecture/Training/Workshop 25	2014/2/20	Follow-up Lecture for Review on Meter Reading, Billing and Customer Care	0	5	9	1
Test 4	2014/2/20	Meter Reading, Billing and Customer Care	0	5	9	1
Test 5	2014/2/21	NRW General Test	0	14	1	1
Lecture/Training/Workshop 26	2014/2/24	Follow-up Lecture for Review on GIS	0	6	0	1
Lecture/Training/Workshop 27	2014/2/24	Refresher Training for SW Field Staffs	0	6	9	0
Lecture/Training/Workshop 28	2014/2/25	Follow-up Lecture for Review on NRW Technical	0	6	6	1
Lecture/Training/Workshop 29	2014/2/26	Workshops on Workflows of GIS Database (Forms)	0	9	5	1
Lecture/Training/Workshop 30	2014/2/27	Follow-up Lecture for Review on NRW General	1	10	0	1
Lecture/Training/Workshop 31	2014/7/1	Workshop: Debriefing Session of the 3rd CP Training in Japan	5	16	4	4
Lecture/Training/Workshop 32	2014/7/1	Workshop: Progress and Issues of the Project	5	16	4	4
Lecture/Training/Workshop 33	2014/7/1	Workshop: GIS Database Current/Ongoing Activities	5	16	4	4
Lecture/Training/Workshop 34	2014/7/1	Workshop: DMA Based NRW Reduction and Monitoring	5	16	4	4

Lecture/Training/Workshop 35	2014/8/28	Mini-workshop: Fact Finding on Social Aspects under JICA Internship Program	4	10	1	3
Lecture/Training/Workshop 36	2014/10/8	Training for Meter Readers to Find Illegal Connections & Internal Leakage	4	11	1	2
Test 6	2015/2/4	Hydraulic Analysis Take-home Exam	0	4	0	1
Lecture/Training/Workshop 37	2015/3/13	Follow-up Lecture on the Leakage Detection Method in DMAs	0	3	0	2
Test 7	2015/3/16	NRW Technical	0	3	0	1
Lecture/Training/Workshop 38	2015/3/19	The 3rd JCC	2	6	2	9
Lecture/Training/Workshop 39	2015/3/31	Mini Workshop on Agenda of the 3rd JCC	0	15	0	1
Test 8	2015/4/2	NRW General	0	12	0	1
Lecture/Training/Workshop 40	2015/4/29	GIS Lecture	0	1	1	1
Test 9	2015/4/30	GIS	0	5	1	1
Lecture/Training/Workshop 41	2015/5/1	Lecture on Basic Planning of Water Supply and Hydraulic Analysis	0	5	0	1
Test 10	2015/5/4	Hydraulic Analysis	0	5	0	1
Lecture/Training/Workshop 42	2015/5/5	Meter Reading, Billing and Customer Care	0	8	1	1
Test 11	2015/5/6	Meter Reading, Billing and Customer Care	0	8	1	1
Lecture/Training/Workshop 43	2015/6/26	Lecture for the Basic NRW	0	5	7	1
Test 12	2015/7/2	NRW Technical	0	7	7	1
Lecture/Training/Workshop 44	2015/7/3	Lecture for the NRW Reduction in DMA	0	3	0	1
Test 13	2015/7/7	NRW Technical	0	3	0	1
Lecture/Training/Workshop 45	2015/7/20	Grid Method Survey for NRW Reduction	0	5	6	0

52

## Annex 6: List of equipment

As of 22 April 2015

(1) Equipment prepared by the JICA expert team\*

No.	Location		Item Name	Specification	Qty.		Price (JPY)	Price (Foreign)	Rate	Price equivalent (JPY)	Date
	P	A			P	A					
1	J	J	Ultrasonic flow meter	Fuji Electric Systems, Portaflow-C	1	1	1,140,000				2013/03/01
			Detector	For Portaflow-C	1	1	179,200				2013/03/01
			DC power adaptor	For Portaflow-C	1	1	49,800				2013/03/01
			Ultrasonic flow meter	Fuji Electric Systems, Portaflow-C	0	1	690,000				2015/04/22
			DC power adaptor	For Portaflow-C	0	1	22,000				2015/04/22
2	J	J	Data logger	Ashridge, Textlog II	1	1	248,000				2013/03/01
3	J	J	Water leak detector (Leak noise collector)	Fuji Tecom, LC-2500	1	1	2,805,000				2013/08/12
4	J	J	Water leak detector (Acoustic type)	Fuji Tecom, HG-10A II	1	1	496,000				2013/08/12

53

54

5	-	J	Metal locator	Fuji Tecom, F-90M	0	1	186,200					2013/08/12
6	J	J	Non-metal pipe locator	Sakei Industry Tokio Rithum	2	1	86,200					2013/08/12
7	J	J	Distance meter	Tokyo Rasonic, B-20	2	1	12,500					2013/08/12
8	J	S	Hammer drill	Hitachi Koki, DH24PC3	2	1		SBD 3,026.74	13.513		40,900	2013/07/09
9	J	S	Drill bit	Hitachi Koki, 750145	10	5		SBD 2,237.60	13.513		30,236	2013/07/09
10	J	J	Boring bar	Fuji Tecom, 1.0m	2	1	32,300					2013/08/12
11	J	S	Generator	Yamaha, EF2600FW	2	1		SBD 7,110.00	13.513		96,077	2013/07/09
12	J	J	Acoustic rod	Fuji Tecom, LSP-1.5m	2	2	48,800					2013/08/12
13	J	J	Residual chlorine analyzer	TOA-DKK, RC-31P-F	2	1	96,000					2013/08/12
14	S	S	Water flow meter	D75mm	28	0					0	
				D100mm (1st procurement)		1		AUD 530.00	100.90		53,477	2013/06/07
				D150mm (1st procurement)		1		AUD 745.00	100.90		75,170	2013/06/07
				D200mm (1st procurement)		7		AUD 6,993.00	100.90		705,593	2013/06/07

55

15	S	S	Gate valve	D300mm (1st procurement)		1		AUD 2,376.00	100.90		239,738	2013/06/07	
				D25mm (1st procurement)	48	1		AUD 23.60	100.90		2,381	2013/06/07	
				D50mm (1st procurement)		1		AUD 68.00	100.90		6,861	2013/06/07	
				D50mm (2nd procurement)		8		AUD 1,087.44	92.67		100,773	2014/02/03	
				D80mm (1st procurement)		5		AUD 1,600.00	100.90		161,440	2013/06/07	
				D80mm (2nd procurement)		4		AUD 886.00	92.67		82,105	2014/02/03	
				D100mm (1st procurement)		2		AUD 640.00	100.90		64,576	2013/06/07	
				D100mm (2nd procurement)		5		AUD 1,060.30	92.67		98,258	2014/02/03	
				D150mm (1st procurement)		1		AUD 550.00	100.90		55,495	2013/06/07	
				D200mm (1st procurement)		1		AUD 980.00	100.90		98,882	2013/06/07	
				D225mm (1st procurement)		1		AUD 1,785.00	100.90		180,106	2013/06/07	
				Flange adaptor	D50mm (2nd procurement)	0	16		AUD 1,060.80	92.67		98,304	2014/02/03
					D80mm (1st procurement)		10		AUD 850.00	100.90		85,765	2013/06/07

56

				D80mm (2nd procurement)		8		AUD 960.00	92.67	88,963	2014/02/03
				D100mm (1st procurement)		4		AUD 392.00	100.90	39,552	2013/06/07
				D100mm (2nd procurement)		10		AUD 692.60	92.67	64,183	2014/02/03
				D150mm (1st procurement)		2		AUD 320.00	100.90	32,288	2013/08/12
				D200mm (1st procurement)		8		AUD 1,728.00	100.90	174,355	2013/06/07
				D225mm (1st procurement)		6		AUD 1,764.00	100.90	177,987	2013/08/12
				D300mm (1st procurement)		2		AUD 774.00	100.90	78,096	2013/06/07
	-	-	S	Coupling	0	10		AUD 880.00	100.90	88,792	2013/06/07
				D80mm (2nd procurement)		4		AUD 200.00	92.67	18,534	2014/02/03
				D100mm (1st procurement)		2		AUD 195.50	100.90	19,725	2013/06/07
				D100mm (2nd procurement)		5		AUD 307.75	92.67	28,519	2014/02/03
	-	-	S	Reducer	0	6		AUD 1,812.00	100.90	182,830	2013/06/07
	-	-	S	Gasket bolt	0	16		AUD 280.00	92.67	25,947	2014/02/03

57

				D80mm (1st procurement)		10		AUD 180.00	100.90	18,162	2013/06/07
				D80mm (2nd procurement)		8		AUD 150.00	92.67	13,900	2014/02/03
				D100mm (1st procurement)		4		AUD 78.00	100.90	7,870	2013/06/07
				D100mm (2nd procurement)		10		AUD 200.00	92.67	18,534	2014/02/03
				D150mm (1st procurement)		4		AUD 138.00	100.90	13,924	2013/06/07
				D200mm (1st procurement)		16		AUD 576.00	100.90	58,118	2013/06/07
				D225mm (1st procurement)		14		AUD 532.00	100.90	53,678	2013/06/07
				D300mm (1st procurement)		2		AUD 134.00	100.90	13,520	2013/06/07
16	J	J	Test meter	Aichi Tokai Denki, TR III	1	1	200,000				2013/03/01
17	S	S	Handy terminal (Data recorder of meter reading)	Trimble, Juno 3B Handheld	6	9		AUD 8,937.00	94.45	844,099	2013/03/01
18	J	J	GPS	GeoExplorer 3000 series	2	2	1,360,000				2013/06/07
19	S	S	Personal computer	DELL, OptiPlexTM 3010MT base	3	3		SBD 43,278.00	11.803	510,810	2013/03/01

20	S	S	Plotter	HP, Designjet Z5200 PostScript	1	1		SBD 125,322.00	11.803	1,479,175	2013/03/01
21	S	S	Printer	HP, Colour Laserjet CP5225n Mono	1	1		SBD 28,900.00	12.168	351,655	2013/03/01
22	S	S	Multifunction copier	Xerox, DocuCentre-IV C2263 Copier	1	1		SBD 86,635.00	11.803	1,022,552	2013/03/01
58	-	S	Shipping costs (shipped in Australia)	Handy terminal (Data recorder of meter reading)	0	1		AUD 235.00	94.45	22,195	
				1st procurement: Water flow meters, gate valves, etc.		1		AUD 660.00	100.90	66,594	
				2nd procurement: Gate valves, etc.		1		AUD 550.00	92.67	50,968	
	J	-	DC battery		1	0				0	
	J	-	Electronic acoustic rod		1	0				0	
	S	-	Water meter	D1/2	350	0				0	
				D3/4	150	0			0		
<b>Total</b>										<b>15,493,662</b>	

(2) Equipment prepared by JICA Solomon Office\*

No.	Location		Item Name	Specification	Qty.		Price (JPY)	Price (Foreign)	Rate	Price equivalent (JPY)	Date
	P	A			P	A					
J-1	S	S	Small size excavator	Fuji Electric Systems, Portaflow-C	1	1		SBD 528,000		7,367,099	
J-2	S	S	Pick-up truck	For Portaflow-C	2	2		SBD 399,000		5,567,183	
J-3	S	S	Data logger (additional)	For Portaflow-C	0	9		SBD 138,365.7		1,930,594	
<b>Total</b>										<b>14,864,877</b>	

(3) Equipment prepared by JICA Headquarters\*

No.	Location		Item Name	Specification	Qty.		Price (JPY)	Price (Foreign)	Rate	Price equivalent (JPY)	Date
	P	A			P	A					
J-4 - J-9	J,S	J,S	Water meter		0	1,000				9,538,764	
<b>Total</b>										<b>9,538,764</b>	

Note: P, A, J and S stand for "planned", "achieved", "Japan" and "Solomon Islands" respectively in this table.

**Annex 7: List of C/P members**

Name	Affiliation	Participation
<b>NRW Management Team</b>		
Mr. Richard AUSTIN	Project Director (General Manager)	11/2012 – 12/2014
Mr. Ian GOODEN		07/2015 – current
Mr. Ray ANDRESEN	Project Manager (Operation & Technical Manager)	05/2013 – current
Mr. Ronald DAVIES	(Finance & Administration Manager)	11/2012 – 06/2013
Ms. Debbie JOHNSEN		06/2013 – current
Ms. Tima KOFANA	(Human Resources Manager)	11/2012 – 08/2015
Ms. Ellen MARUAROFA*	(Service Delivery & Communications Manager)	11/2012 – 12/2014
Mr. Carlos SALIGA**		04/2013 – current
<b>NRW Action Team (Technical Sub-Team)</b>		
Mr. Benjamin BILLY	Action Team Leader 1 / Sub-Team Leader (NRW Taskforce Leader)	12/2012 – current
Mr. Austin ATA	Deputy Sub-Team Leader (Customer Connections & Manager)	12/2012 – current
Mr. Moses RAMO	(Customer Connections & Metering Management Assistant)	12/2012 – current
Mr. Silas TALOSUI	Deputy Sub-Team Leader (Network Maintenance & Repair)	12/2012 – current
Mr. Mathias BERA	Head of Pipe Repair Team (Pipe Maintenance & Repair)	12/2012 – current
Mr. Layten JACOB	Deputy Sub-Team Leader (Procurement)	12/2012 – current
Mr. Frank DAUKALIA	Head of Meter Repair / Replacement Team (Pipe Materials Management)	12/2012 – current
Mr. Chris MERIKO	Deputy Sub-Team Leader (Water Resources & Treatment)	10/2014 – current
<b>NRW Action Team (Customer Service Sub-Team)</b>		
Ms. Ellen MARUAROFA*	Action Team Leader 2 / Sub-Team Leader (Service Delivery & Communication)	11/2012 – 12/2014
Ms. Beverly SAOHU	Deputy Sub-Team Leader (Customer Care)	12/2012 – current
Mr. Carlos SALIGA**	Deputy Sub-Team Leader (Community Relations & Media)	04/2013 – current
Ms. Sophia TANGO	(Community Relations & Media Assistant)	12/2012 – current
Mr. Lawrence IROI	(Chief Accountant)	12/2012 – current
Ms. Mary TAFOA	Deputy Sub-Team Leader (Billing)	12/2012 – current
Ms. Daisy MENAGA	Deputy Sub-Team Leader (Meter Reading)	12/2012 – current

<b>NRW Action Team (GIS Sub-Team)</b>		
Mr. Gavin BARE	Sub-Team Leader (GIS Technician, Operations & Technical Maintenance)	01/2013 – current
Mr. Japhliet ROUHANA	(IT Administration)	12/2012 – current
<b>NRW Action Team (Leakage Detection Sub-Team)</b>		
Mr. Eric UNGA	Sub-Team Leader (Leakage Detection)	12/2012 – current
Mr. Matthew MAFE	(Plumber, Leakage Detection)	12/2012 – current
Mr. David AKOEASI	(Plumber, Leakage Detection)	12/2012 – current

\* \*\* : Concurrent

## Participants at JICA Terminal Evaluation Meeting

Name	Team / Organization
Mr. Michael MAEHAKA	Senior Hydrologist, MMERE
Mr. Ian GOODEN	General Manager, SW
Mr. Ray ANDRESEN	Operation & Technical Manager, NRW Management Team, SW
Mr. Benjamin BILLY	Action Team Leader 1 / Sub-Team Leader (NRW Taskforce Leader), Technical Sub-Team, SW
Mr. Mathias BERA	Technical Sub-Team Head of Pipe Repair Team (Pipe Maintenance & Repair), SW
Mr. Layten JACOB	Technical Sub-Team (Procurement), SW
Ms. Marista KAPINI	In-house Consultant, Technical Sub-Team, SW
Mr. Carlos SALIGA	Deputy Sub-Team Leader, Customer Care Sub-Team (Community Relation), SW
Ms. Beverly SAOHU	Deputy Sub-Team Leader (Customer Care), Customer Care Sub-Team, SW
Ms. Sophia TANGO	Customer Service Sub-Team, SW
Mr. Gavin BARE	Sub-Team Leader, GIS Sub-Team, SW
Mr. Eric UNGA	Sub-Team Leader, Leakage Detection Sub-Team, SW
Ms. Daisy MENAGA	Deputy Sub-Team Leader (Meter Reading), Leakage Detection Sub-Team, SW
Mr. Taketoshi FUJIYAMA	Leader / Water Supply Planning, O&M, JICA Expert Team
Ms. Eriko TAMURA	Director, Water Resources Team 1, Global Environment Department, JICA
Mr. Yoshiki OMURA	Senior Advisor (Water Supply Development), JICA
Ms. Momoko OTSUKA	Assistant Director, Water Resources Team 1, Global Environment Department, JICA
Dr. Makoto TANAKA	Senior Consultant, ICONS Inc.



## Participants at the Fourth JCC Meeting

Name	Team / Organization
Mr. Michael MAEHAKA	Senior Hydrologist, Substitute Attendee of Mr. Issac LEKELALU, Deputy Director of Water Resources Department, MMERE
Mr. Edward SUINAO	Program Manager, DFAT of Australian Government
Mr. Ian GOODEN	Project Director / General Manager, SW
Mr. Ray ANDRESEN	Project Manager / Operations Manager, SW
Mr. Nemani WAQUANIVALU	Program Manager, SW
Mr. Carlos SALIGA	Service Delivery & Communications Manager (Acting), SW
Mr. Benjamin BILLY	Action Team Leader 1 / Sub-Team Leader (NRW Taskforce Leader), Technical Sub-Team, SW
Mr. Mathias BERA	Head of Pipe Repair Team (Pipe Maintenance & Repair), SW
Mr. Layten JACOB	Deputy Sub-Team Leader (Procurement), SW
Mr. Frank DAUKALIA	Head of Meter Repair / Replacement (Pipe Materials Management & Procurement, SW
Ms. Beverly SAOHU	Deputy Sub-Team Leader (Customer Care), SW
Ms. Daisy MENAGA	Deputy Sub-Team Leader (Meter Reading), SW
Mr. Lawrence IROI	Chief Accountant / Revenue Coordinator, SW
Ms. Rosta TINARAI	Deputy Sub-Team Leader (Debt Collection), SW
Mr. Gavin BARE	GIS Sub-Team Leader (GIS Technician), SW
Mr. Eric UNGA	Leakage Sub-Team Leader, SW
Mr. Matthew MAFE	Plumber / Leakage Detection Assistant, SW
Mr. David AKOEASI	Plumber / Leakage Detection Assistant, SW
Ms. Marista KAPINI	In-house Consultant, SW
Ms. Eriko TAMURA	The Evaluation Mission Team Leader / Director, Water Resources Management Division 1, JICA
Mr. Yoshiki OMURA	Senior Adviser (Water Supply Department), JICA
Ms. Momoko OTSUKA	Survey Planning for the Evaluation Mission / Assistant Director, Water Resources Management Division 1, JICA
Dr. Makoto TANAKA	Assessment Analysis Consultant, Evaluation Mission Team
Mr. Kyoji MIZUTANI	Resident Representative, JICA Solomon Islands Office
Mr. Yoshihiko NISHIMURA	Project Formulation Adviser, JICA Solomon Islands Office
Ms. Keiko NAKAMURA	Researcher / Adviser, Embassy of Japan
Mr. Taketoshi FUJIYAMA	Team Leader, JICA Expert Team
Mr. Akihiko OKAZAKI	Leakage Detection Technology, JICA Expert Team







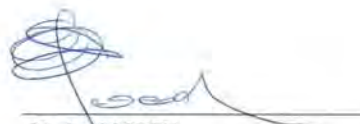
Attachment-10 Minutes on the 4<sup>th</sup> Joint Coordinating Committee

(JCC) Meeting on 26 August 2015



**MINUTES OF MEETING  
ON  
THE FIFTH JOINT COORDINATING COMMITTEE  
FOR  
THE PROJECT FOR IMPROVEMENT OF  
NON-REVENUE WATER REDUCTION CAPACITY  
FOR SIWA IN SOLOMON ISLANDS**

22<sup>nd</sup> June 2016

  
Mr. Ian GOODEN  
Project Director  
Solomon Water

  
Mr. Taketoshi FUJIYAMA  
Leader, JICA Expert Team

Witness:

  
Mr. Shitau MIURA  
Assistant Representative  
JICA Solomon Islands Office

At the end of Phase 5 of the Project for Improvement of Non-Revenue Water Reduction Capacity for SIWA in Solomon Islands (hereinafter referred to as "the Project"), the fifth meeting of Joint Coordinating Committee (hereinafter referred to as "JCC") was held on 22 June 2016.

Mr. Ray Andresen, as the Chairperson of the JCC as well as Project Manager of Solomon Water, welcomed, introduced the participants (see the Annex-1), and gave presentations over to the Project Team.

**1. Outcome of the Project**

The Project Team prepared the Draft Project Final Report of the Project. The Non-Revenue Water (NRW) Action Team of Solomon Water (hereinafter referred to as "SW") summarized the following report in the meeting.

- |                                                      |                                 |
|------------------------------------------------------|---------------------------------|
| - Overview of the Project                            | (Presenter: Mr. Mathias Bera)   |
| - Achievement of the Project                         | (Presenter: Mr. Benjimen Billy) |
| - Monitoring Maintenance Activities on NRW Reduction | (Presenter: Mr. Frank Daukalia) |
| - Issues and Suggestions                             | (Presenter: Ms. Marista Kapini) |

In addition to the above presentation, Mr. Fujiyama, Leader of Japan International Cooperation Agency (JICA) Expert Team (hereinafter referred to as "JET") requested SW to keep on the NRW reduction activities with the related divisions including Planning & Operation, Finance & Administration and Human Resources & Corporate Governance and to revise Strategic Implementation Plan of the activities and their manuals as necessary, after the Project would be terminated. Moreover, the Leader was confident that SW would continue the formulation of Individual Action Plan and its self-evaluation so that the staff would be motivated in their own work.

The JCC members not only approved achievement of the Project, current activities, issues & suggestions and the Draft Project Final Report but also confirmed future NRW reduction activities including monitoring & maintenance work to be carried on by SW in DMAs.

**2. Comments and Contributions**

Mr. Ian Gooden, General Manager of SW, as a Project Director, complemented issues on illegal connections and water tariff. In order to reduce illegal connections, it is very important to educate dwellers to understand that water supplied by SW is not being sold, but that SW charges fees to recover the cost of treating and pumping water and delivering it to homes and businesses. In addition, he also stressed the difficulty for SW to categorize living standards by household to determine water tariff. Moreover, it is good for low income households to have cash-water-meter, because customer can use water depending on ability-to-pay.



Mr. Isaac Lekelalu, Deputy Director, Ministry of Mines, Energy and Rural Electrification commented that reminder notice of bill arrears on the monthly bills is not enough but rather water meter readers should also assist in reminding customers on current bills and usage. This is also one means to avoid accumulation of bill arrears.

### 3. Conclusion from Project Director

Mr. Ian Gooden made a remark on conclusion at the end of the Project. Firstly, he acknowledged that the team members not only gained much skill and technique through the Project but also learned general skill on water supply service.

Secondly, he was confident that SW would maintain NRW ratio at low levels by taking ownership and responsibility for the activities and also expand NRW reduction activities to other provinces. He also acknowledged that this is the way to do things and that NRW has to be integrated into SW's daily operations and not see as a separate project. Finally he concludes that though this is an end to the Project but by no means an end to the relationship with JICA.

Finally, he appreciated JICA's technical cooperation and thanked the Embassy of Japan and JICA for their contribution to the people of Solomon Islands

### 4. Comments from JICA Solomon Islands Office

First of all, Mr. Shitau Miura, Assistant Representative on behalf of Mr. Kyoji Mizutani, Resident Representative of JICA Solomon Islands Office expressed his gratitude to the Project staff members of SW and DFAT for their good support and coordination rendered during the project period.

He emphasized that SW takes all necessary measures to keep pursuing the higher standard and finally attain the project goal agreed in the terminal evaluation and concluded that the success of project depends on the continuation of activities by the project recipient after the project closing.

Finally, Mr. Miura stated that JICA would find the positive evidence in NRW activities through the ex-post evaluation and see further development in water supply service in future.

### 5. Termination of the Project

The Project in the field activities in Solomon Islands will be terminated at the end of June 2016. JET will submit the Project Final Report to JICA headquarters by the end of July 2016.

JICA will deliver the following documents:

- Project Final Report (in English): 10 copies
- Supporting Report of Project Final Report (in English): 10 copies

- Brief Note: copies: 4 pdf files

End

### Handouts:

- Agenda
- Executive Summary
- PDM<sub>1</sub> and PO<sub>1</sub>
- Presentation Materials

### Annex:

- List of Participants

Handwritten signature and initials in blue ink. The signature is a stylized, cursive name. To the left of the signature is a circle containing the initials 'SH'. To the right of the signature is a circle containing the number '3'.

Handwritten signature and initials in blue ink. The signature is a stylized, cursive name. To the left of the signature is a circle containing the initials 'SH'. To the right of the signature is a circle containing the number '3'.

Annex

**List of Participants**

<b>Ministry of Mine, Energy and Electrification</b>	
Mr. Isaac Lekelalu,	Deputy Director
<b>DFAT</b>	
Mr. Simon Downing	Second Secretary
<b>Embassy of Japan</b>	
Ms. Keiko NAKAMURA	Researcher/Advisor, Embassy of Japan in Solomon Islands
<b>JICA Solomon Islands</b>	
Mr. Shitau MIURA	Assistant Representative, JICA Solomon Islands Office
<b>[Solomon Water]</b>	
Mr. Ian GOODEN	Project Director, General Manager, Solomon Water
Mr. Ray Andresen	Project Manager, Strategic Planning Manager (Former Operations & Technical Manager), Solomon Water
Mr. Seravin TONGL	Operations Manager, Solomon Water
Mr. Nemani WAQANIVALU	Program Manager, Solomon Water
Mr. Benjamin Billy	NRW Taskforce Leader, Solomon Water
Mr. Mathias Bera	Network Pipe Maintenance & Repair, Solomon Water
Mr. Frank Daukalia	Meter Repair/Replacement, Solomon Water
Mr. Austin Ata	Deputy Sub-Team Leader (Customer Connections), Solomon Water
Mr. Lawrence IROI	Accountant, Solomon Water
Mr. Japhliet ROUHANA	IT Technician, Solomon Water
Ms. Sophia Tango	PR, Solomon Water
Ms. Mary Pidoke	Customer Care Officer, Solomon Water
Ms. Mary Tafoa	Deputy Sub-Team leader, (Billing), Billing Team Leader, Solomon Water
Ms. Rosta Tinarai	Deputy Sub-Team leader, (Debt Collection), Debt Collection Team Leader, Solomon Water
Ms. Marista Kapini	In-house Consultant, Solomon Water
<b>[JICA Expert Team]</b>	
Mr. Taketoshi Fujiyama	Leader / Water Supply Planning, Operation and Management

Handwritten initials 'SK' in a circle, a signature, and a circled 'D'.



Attachment-11 Minutes on the 5<sup>th</sup> Joint Coordinating Committee

(JCC) Meeting on 22 June 2016





**MINUTES OF MEETING  
ON  
FOLLOW-UP OF  
THE THIRD JOINT COORDINATING COMMITTEE  
FOR  
THE PROJECT FOR IMPROVEMENT OF  
NON-REVENUE WATER REDUCTION CAPACITY  
FOR SIWA IN SOLOMON ISLANDS**

27<sup>th</sup> March 2015

As a follow-up of the third meeting of Joint Coordinating Committee (hereinafter referred to as "JCC") on the Project for Improvement of Non-Revenue Water Reduction Capacity for SIWA in Solomon Islands (hereinafter referred to as "the Project"), which was held on 19 March 2015, this minutes of meeting was taken by Solomon Water and the Japan International Cooperation Agency (JICA) Expert Team.

In the third meeting of JCC, regarding the request by the JICA Expert Team for a commitment of procurement (e.g. flow meters, valves, fittings and chambers) and its schedule from Solomon Water, the JCC members accepted the suggestion by a Director of Solomon Water Board to bring it up for discussion in the Board meeting.

As a result of discussion in the Board meeting on 27 March 2015, there were no objections from the Board members. So, Mr. Ray Andresen, Acting General Manager of Solomon Water (Project Director) committed the procurement and its schedule by Solomon Water (see the Annex-1).

**Annex:**

Annex-1 Schedule of Procurement for Equipment and Chamber by Solomon Water (with Pressure Control)

End



Mr. Ray Andresen  
Project Director  
Solomon Water



Mr. Taketoshi Fujiyama  
Leader, JICA Expert Team



