

**S13.3-4** パイロット・プロジェクトの進捗と達成  
度に係るミニ・ワークショップ



# NON REVENUE WATER REDUCTION ACTIVITIES

- Namoruka and Independence Pilot Areas

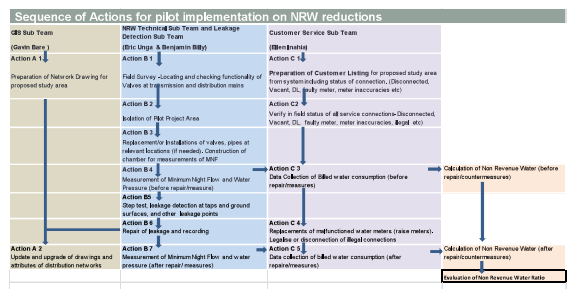
## OUTLINE OF PRESENTATION

- Process of NRW Reduction
- Outcomes/Results
- Problems encountered during countermeasures.
- Issues Learnt
- Activities to be Improved
- Others

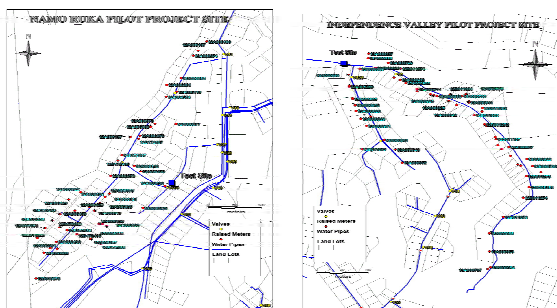
## Meet the NRW Action Team

Name	Position in the Project (Position in Solomon Water)
<b>NRW Technical Sub-Team</b>	
Mr. Benjamin BILEY	Action Team Leader 1 / Sub-Team Leader (NRW Taskforce Leader)
Mr. Anshin ATA	Deputy Sub-Team Leader (Customer Connections)
Mr. Moses RAMO	(Customer Connections)
Mr. Sias TALISUI	Deputy Sub-Team Leader (Network Maintenance & Repair)
Mr. Mathias BEBA	Pipe Repair (Network Maintenance & Repair)
Mr. Layton JACOB	Deputy Sub-Team Leader (Procurement)
Mr. Frank DAURAKA	Water Repair/Replacement (Pipe Materials Management & Procurement)
Mr. Chaz MERIKO	Deputy Sub-Team Leader (Water Resources & Treatment)
<b>Customer Service Sub-Team</b>	
Ms. Bilen NAHA	Action Team Leader 2 / Sub-Team Leader (Service Delivery Com Manager)
Ms. Beverly SAORU	Deputy Sub-Team Leader (Customer Care)
Mr. Sepha TANGO	Community Relations & Media Assistant
Ms. Diany MENSAGA	Deputy Sub-Team Leader (Meter Reading)
Mr. Mary TAPOA	Deputy Sub-Team Leader (Billing)
Mr. Lawrence ROI	Chief Accountant
<b>GIS Sub-Team</b>	
Mr. Jeffrey BOHANA	Sub-Team Leader (IT Administration)
Mr. Gavin BARE	GIS Technician
<b>Leakage Detection Sub-Team</b>	
Mr. Eric UNGA	Sub-Team Leader (Leakage)
Mr. John Chede	(Plumber-Pipefitter Leader)
Mr. Matthew MAPE	(Plumber)
Mr. David AKORASH	(Plumber)

## Process of NRW Reduction

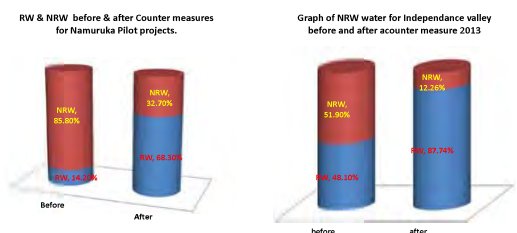


## Namoruka and Independence Pilot Sites



## Results

- Namo ruka & Independence result before and after Counter measures



## Results

- Updates of pipe lines & valves for Namoruka & Independence valley in GIS.
- All New Meter ( 50) for Numurka now in billing system & GIS
- All New Meters ( 70) For Independence valley in Billing & GIS
- All meters were raised above ground. [reading of rasied meter.JPG](#)
- People start to express good water pressure from their facet.
- Technical sub team gaining knowledge on Leakage technique & MNF setups and collection of base line data. [training on Flow meter.JPG](#)
- Acquired meter testing techniques. [test machines.jpg](#)

## Problems Encountered during Countermeasure

- Determining an effective way to deal with illegal users. Outright disconnection Verse Immediate Validation of account through payment of minimum fee requirements. This issue has dragged scheduled work for Namoruka by almost 3 months.
- Grace Periods given to illegal users was not effective. **Reasons:** Minimum fee requirement for account validation **unaffordable** for most customers. Minimum fee proposed:

Water Usage on Site	Service fee	Illegal fee	Block deposit	Fee Categories		
				Re-connection fee	Disconnection fee	Account
Running	✓	✓	✓	✓	✓	✓
Disconnected	✓	✓	✓	✓	✓	✓

- Contribution from Action teams and members not consistent. This has placed enormous burdens on other teams. (Please refer to flow chart for responsibilities) [NRW Flowchart.xlsx](#)
- Lack of pro-activeness by few team members to follow up on delegated work to meet certain deadline.

## Problems Encountered during Countermeasure

- Missing of some households in the field surveys.
- Materials (meters & fittings) not available on time prolong project durations
- Actual location of lines and valves not recorded in GIS. (depends very solely on local knowledge rather than GIS)
- Records of old features not properly kept and updated (valves & hydrants, pipe types and sizes).
- Leak sub team need to be familiarise with the procedures/ technique to collect data.( especially visible leaks)
- Customer service yet to be familiarise with different type of service connections. Review [types of service connections.pptx](#)

## Lessons Learnt

- The effectiveness of the project depends only on teamwork and commitment.
  - Good team work → good results.
  - Bad team work → bad results.
- Proper listing of customer status is very important for analysis of NRW components.
- Important to have continuous communications between sub teams. Many petty issues could have been sorted out in these meetings.
- Proper awareness of the benefits and customer responsibility will produce better and quality results and customer cooperation.
- All action sub team fully aware of their respective activities and results expected from their task will give quality data.

## Activities to be Improved

- Improve MNF preparatory works
- Improve Visible leakage measurements and documentation ( include photo graphs)
- Meter inaccuracy test and remedial activities need to carry out by team delegated ( please refer to table for NRW reduction)
- Measurement of Flow rates from direct lines & hence 24 hour running pipe with or with out faucets.
- Attendance to weekly meeting to improve with proper data and information prepared for the meetings.
- Reporting from each Sub action team to show progress progress on task ( templates).

## Conclusion

### **S13.3-5 GIS データベースの目的**



# The Project for Improvement of Non-Revenue Water Reduction Capacity for Solomon Water (SIWA)

## Purpose of the GIS Database

16 August 2013

Japan International Cooperation Agency (JICA)  
Expert Team

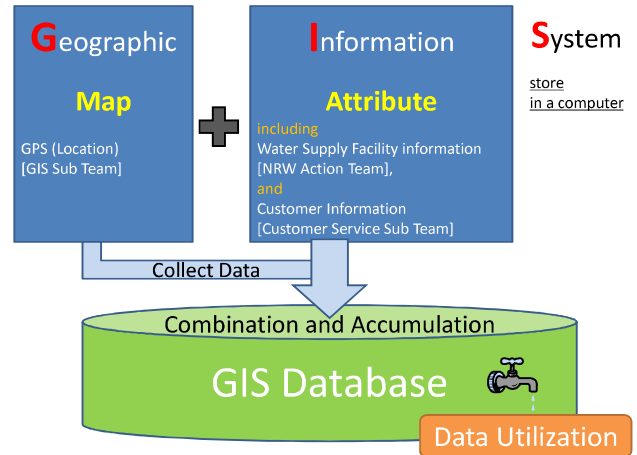
## 1. What is GIS ?

- GIS is .....
  - **G**eographic **I**nformation **S**ystem
  - [http://en.wikipedia.org/wiki/Geographic\\_information\\_system](http://en.wikipedia.org/wiki/Geographic_information_system)



## CONTENTS

- 1 What is GIS ?
- 2 Why is GIS convenient?
- 3 What are effective merits?
- 4 Purpose of the GIS Database
- 5 To Build GIS Database
- 6 Workflow of data management
- 7 Project Achievement
- 8 Structure of GIS Database
- 9 Utilization of GIS Database
- 10 Issues and challenges etc...



## 2. Why is GIS convenient?

- It is possible to use paper maps. But ...



## 2. Why is GIS convenient?

### Before...



### If you use the GIS...



## 2. Why is GIS convenient?

### Before...



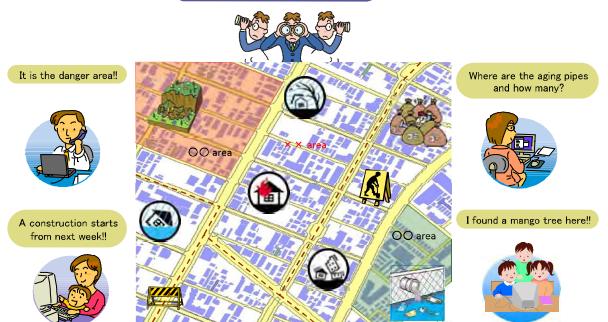
### If you use the GIS...



## 3. What are effective merits?

You will be able to widely share a variety of information by using the GIS.

When, Where, What, and How?



## 4. Purpose of the GIS Database

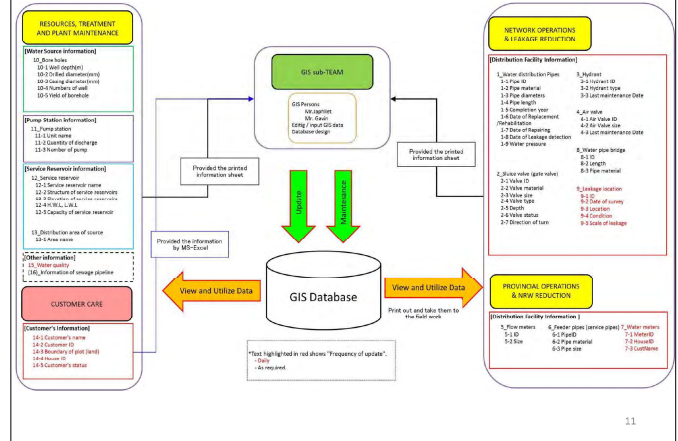


### To Achieve the purposes

It is essential to construct appropriate water supply GIS Database which can be used sustainably.

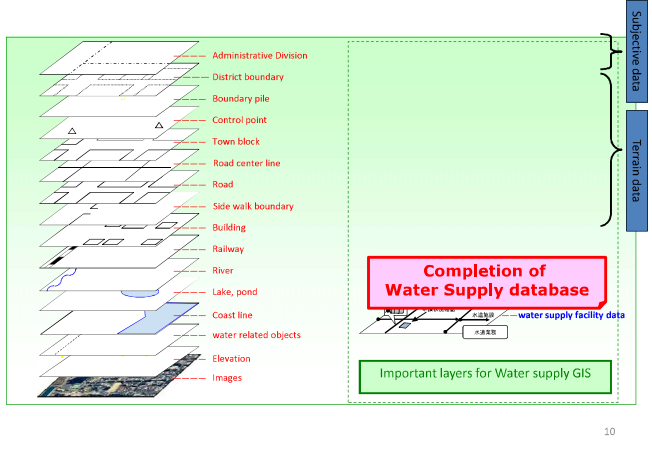
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## 5. To Build Database



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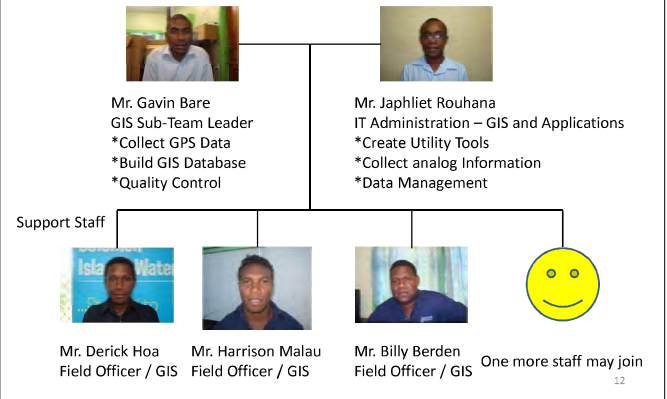
## 5. To Build Database



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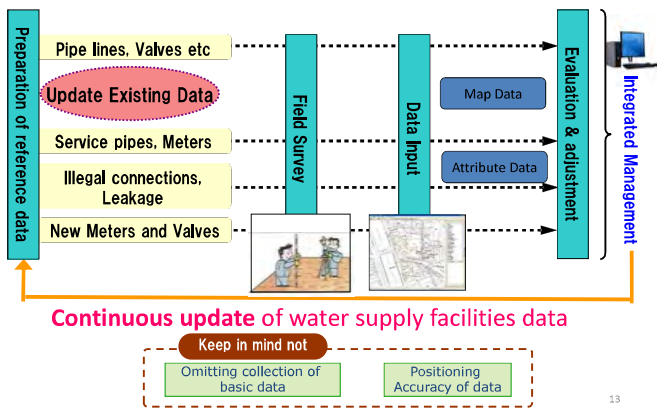
## 5. To Build Database

< GIS sub-Team Member >



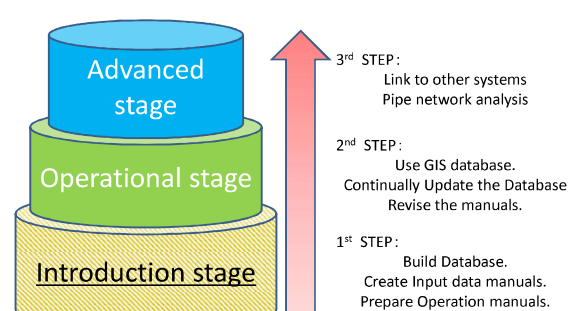
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## 6. Workflow of data management



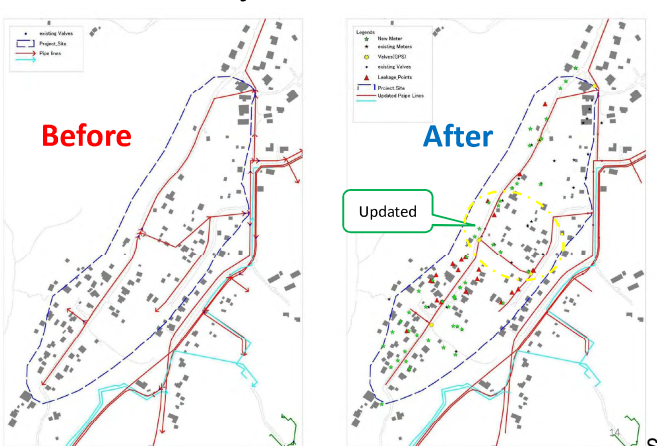
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## 8. Structure of GIS Database



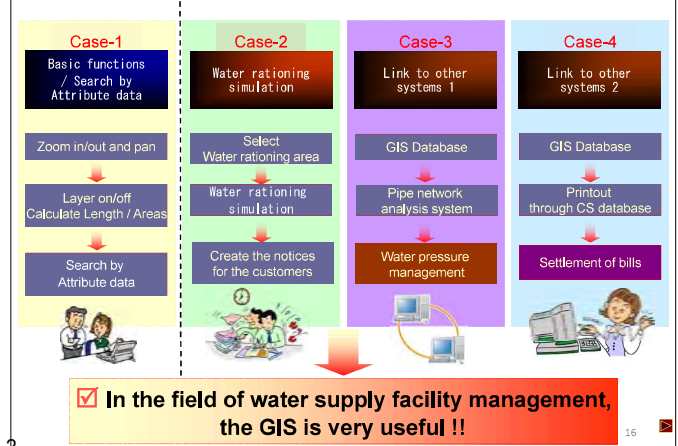
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## 7. Project Achievement



S133-5-2

## 9. Utilization of GIS Database



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## 10. Issues and challenges etc...

### ★ Issues

- Method for Link / utilization of data with JUNO-3B
- Unclear Role sharing among staff

### ★ Challenges

- More Accuracy of GPS location
- Purchase of GPS location analysis software

We are working on a cutting edge approach.  
Actively join in the project with proud !!

Let's do our best !!!

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- Thank you very much for your attention.

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## Conclusion

- GIS is a tool that enables us to combine geographic information and other information and enhances value of the data.

The followings are to be our goals;

- To manage water supply facilities information by the introduction of GIS database.
- To build a database for long term.
- To get used to using the system as a part of daily work.
- To keep updating data.

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### **S13.3-6 ブレインストーミング**



The issues raised in the Discussion (Brainstorming) on 26<sup>th</sup> & 30<sup>th</sup> Aug. 2013

Issues-1: NRW Project Activities

Comment / Suggestion	Action
1.1 Project activities have been behind schedule, so we need to catch up delay. Our target is completion of 9 pilot projects by November.	Benjamin and Marista have supervised to ensure that the pilot projects proceed smoothly.
1.2 Work procedures on NRW should be more detailed and aided with visualized materials. We need visually-displayed materials of each activity using pictures, videos and so on.	NRW manual will be prepared and updated in the Project. JICA Experts will make it user-friendly.
1.3 We need more exercise to use leakage detection equipment (Acoustic detector), because of difficulty in distinguishing leakage or noise.	JICA Expert lectured Action Team members and some field officers about NRW reduction technologies on 29 <sup>th</sup> Aug, including acoustic detector and step test
1.4 We need short lecture of "Step Test" by JICA Expert.	Ditto
1.5 We need intervention in GIS activities due to not-well-organized teamwork.	Benjamin and Marista have facilitated a solution, and GIS team is preparing work plan and schedule for the next few months.
1.6 Is it possible to create hydraulic model in the pilot areas?	The area is small and not suitable. So, it is recommendable we create hydraulic model at the DMA level.
1.7 We should identify customers properly to avoid missing data or information for installation of new meters.	Meter Replacement Team should utilize existing meter replacement form properly.
1.8 How should we deal with the disconnected meters which are unspooled? Well-functioning meters should not be replaced but raised.	Well-functioning meters should be utilized when meter raising.
1.9 We should monitor the customers having newly-installed meter and have awareness of how to use water wisely for customers.	Customer Care Team (PR) should be in charge in bringing more awareness of water saving/conservation to customers.
1.10 We need monitoring and evaluation after completion of each pilot site.	JICA Experts, Benjamin and Marista should be in charge in producing summary of results in each pilot project including the lessons learnt.
1.11 No or not-timely response from technical team to meter readers on fault (e.g. leakage) report. And, we should make site identification easy for meter readers.	Proper coordination and communication should be ensured between technical team members and meter readers, and facilitated by Benjamin and Marista.
1.12 Documentation should be done properly for Billing Team when old meter is replaced by new one, because SW loses revenue. We need proper form for meter replacement.	Meter Replacement Team should utilize and improve existing meter replacement form properly and surely read old meter before replacement.
1.13 We need to improve poor workmanship of leakage repair work, so let workers be responsible for their own work by introducing signature of workers who have done it on the reports.	We'd like SW management to be in charge of solution in terms of quality control and staff training.
1.14 Meter raising has been done by Leakage Detection	Due to short of manpower, Leakage

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Team, but it should be included in the task of Meter Replacement Team.	Detection Team will be in charge of meter raising, but Meter Replacement Team should be a part of it preferably.
1.15 We would like to install new meters outside gates for easier reading (physical access to meters).	Due to security reason, meters should be installed inside gate/fence, but close to the gate for easy access.
1.16 Meter should be put in box especially for the one outside house gate.	Box is necessary if meter is located outside. But meter should be installed inside gate/fence, and we need clear guideline on meter installation
1.17 We have faced difficulty in procurement of materials from a supplier.	We should purchase threading equipment. Either we should order in bulk or place order as early as possible.

Issues-2: Information / knowledge sharing (related to NRW Project Management)

Comment / Suggestion	Action
2.1 Information should be shared among not only taskforce members but also field officers. Effective communication and coordination are necessary.	We will have weekly or regular meeting (mini-workshop) between taskforce members and field officers to share information.
2.2 Another weekly meeting should be held for field staff.	Ditto
2.3 We should utilize the notice board for updated-information sharing.	JICA Experts, Benjamin and Marista will prepare it.
2.4 We should create customer feedback system (form). Pamphlet or brochure of outcomes of NRW reduction activities is effective as public relation.	Customer Care Team should prepare it.
2.5 We should hold mini workshop after completion of each pilot project.	We will have mini workshop after completion of each pilot project.
2.6 We need documentation of each pilot project (completion report).	JICA Experts and Taskforce members will prepare completion report.
2.7 We should have quiz session or competition to check basic knowledge of NRW with all members, with recreational activities.	JICA Experts will prepare quiz sessions and consider recreational activities.

Issues-3: Approach for eliminating Illegal Connections

Comment / Suggestion	Action
3.1 Illegal re-connection or new-connection after pilot project implementation may happen. A case came out in Namo-Ruka. We should consider long-term approach for illegal connections.	This issue should be solved by not only NRW Action Team but also Management Team, so Benjamin, Marista and JICA Experts will keep discussing.
3.2 We should take legal action to continuous illegal users.	Ditto
3.3 Monitoring system for illegal users after disconnection is weak.	Ditto

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3.4 We should increase number of staff for monitoring.	Ditto
3.5 We need more staff for Customer Connection Team.	Ditto
3.6 We need the manual for working on illegal connections.	JICA Experts will prepare NRW manual, but a part of manual on illegal connections should be based on our experience and lessons learnt through trial and error.
3.7 We should review the validating process of account.	This issue should be solved by not only NRW Action Team but also Management Team, so Benjamin, Marista and JICA Experts will keep discussing.
3.8 We should review the fee for reconnection.	Ditto
3.9 We should restructure revenue collection.	Ditto

Issues-4: General

Comment / Suggestion	Action
4.1 We need to improve water supply service level.	That is an overall goal of the NRW project.
4.2 Service pipes should be installed properly, because the pipes are exposed on the ground.	Clear guideline is necessary, and we'd like SW management to be in charge of solution in terms of quality control and staff training.
4.3 We should get rid of existing meters in gallon so as to prevent misreading.	We have already started replace them.
4.4 We suspect accuracy of meters if water flows very little or because of sedimentation.	We need to make sure of proper operation of the facilities and optimum design of pipeline with hydraulic analysis.
4.5 We should use right materials.	Procurement and technical leaders should pay attention to this comment.
4.6 Telephone line of CS is always busy.	We should determine the cause of it and address it.
4.7 We need clear procedures or guideline for communication with customers and decision making by CS to make sure of customer satisfaction.	We'd like SW management to be aware of this and improve the situation.
4.8 Logistics and office space for CS	Ditto

Attachment: Attendance List

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Attendance List

Purpose: Discussion (Brainstorming) about the NRW Reduction Project  
Venue: SW Conference Room  
Time & Date: 11:00-13:00, 26<sup>th</sup> August, 2013

No.	Given Name	Surname	Position at NRW Project
1	Richard	Austin	GM of SW
2	Benjamin	Bulao	Taskforce Leader
3	Marista	Kapini	Consultant
4	Frank	Daukalia	Head of Meter Repair/Replacement Team
5	Mathias	Bera	Head of Pipe Repair Team
6	Austin	Ata	NRW Sub-Team Leader (Customer Connection & Metering Management)
7	Gavin	Bare	GIS Sub-Team Leader (Meter Reading)
8	Eric	Unga	Leakage Detection Sub-Team Leader
9	Daisy	Menaga	CS Sub-Team Leader
10	Sophia	Tango	Community Relations & Media Assistant
11	Beverly	Saohu	CS Sub-Team Leader (Customer Care)
12	Carlos	Saliga	CC&C Assistant Manager
13	Mary	Pidoke	Customer Care Assistant
14	Lincoln	Niva	Billing Clerk
15	Joseph	Gado	Meter Reader
16	Stanley	Sade	Meter Reader
17	Akinori	Miyoshi	Deputy Leader of JICA Expert Team
18	Emi	Akita	Facilitator of JICA Expert Team

### Attendance List

Purpose: Discussion (Brainstorming) about the NRW Reduction Project

Venue: SW Conference Room

Time & Date: 11:00-12:00, 30<sup>th</sup> August, 2013

No.	Given Name	Surname	Position at NRW Project
1	Ray	Andresen	Project Manager
2	Benjamin	Bulao	Taskforce Leader
3	Marista	Kapini	Consultant
4	Mathias	Bera	Head of Pipe Repair Team
5	Austin	Ata	NRW Sub-Team Leader (Customer Connections and Metering Management)
6	Frank	Daukalia	Head of Meter Repair/Replacement Team
7	Layten	Jacob	NRW Sub-Team Leader (Procurement)
8	Daisy	Menaga	Customer Service Sub-Team Leader (Meter Reading)
9	Beverly	Saohu	Customer Service Sub-Team Leader (Customer Care)
10	Eric	Unga	Leakage Detection Sub-Team Leader
11	Gavin	Bare	GIS Sub-Team Leader
12	Stanley	Sade	Meter Reader
13	Akinori	Miyoshi	Deputy Leader of JICA Expert Team
14	Akihiko	Okazaki	Leakage Detection Specialist of JICA Expert Team