Attachment III. Workshop Record in MUTZING

1. Background of Workshop

During the first field survey, one-day workshops have been held in Sampubangi Village and Intoap Village in Mutzing. The main objectives of these workshops were to collect qualitative information to compliment quantitative information collected through the household survey with questionnaire. Catalyzing awareness for the pilot project of improving water supply was another hidden objectives also.

The workshop in Sampubangi Village was done successfully and meaningful information was collected. The workshop in Intoap Village was held but not fully completed, because the number of participants was not enough and young people who were still single and not responsible for their households were majority of female participants.

2. Surveyed items and tools

2-1. Sampubangi Village

Items	Tools
Allocation of households, Number of households, Family number of each household, Available water source, Allocation of water source, Toilet, Other village resources and facilities	Village resource map (Mapping)
Access to and control of resources by gender	Card and mutual discussion
Labor allocation per day	Daily activity clocks
Needs for improving living conditions	Listing and voting
Hygiene awareness	Illustration* and mutual discussion

*Those illustrations are prepared by the Rural Water and Sanitation Project supported by the AusAid in Solomon Islands.

2-2. Intoap Village

Items	Tools
Allocation of households, Number of households, Family number of each household, Available water source, Allocation of water source, Toilet, Other village resources and facilities	Village resource map (Mapping)
Labor allocation per day	Daily activity clocks
Needs for improving living condition	Listing and voting

3. Date and place

June 17, 2000 in Sampubangi Village, Markhan Valley District, Morobe Province
June 18, 2000 in Intoap Village, Markhan Valley District, Morobe Province

4. Workshop record in Sampubangi Village

4-1. Session start: 9:10 AM

Bell rang and villagers started gathering. The villagers were asked to choose twenty (20) people as workshop participants. Those were ten (10) men and ten (10) women. The villagers had already chosen twenty (20) participants the previous night, first, they were requested to arrange themselves into four (4) groups. Those were two (2) men's groups and two (2) women's groups comprising of five members each. Second, the four groups were asked to choose one leader for each group. Leaders of each group were:

Group: A	Rose Keta	(female group)
Group: B	Sising Sawanga	(female group)
Group: C	Kildah Wadah	(male group)
Group: D	Billy Kiasah	(male group)

4-2. Opening remarks and introduction: 9:30 AM

JICA consultant, Mr Suginaga, greeted participants and introduced himself and Mr. Kevin, Mr. Terence, Ms. Serah and Mr. Thomas[1] who were assistants to conduct the workshop.

JICA consultant highlighted the purpose of the workshop.
Japan International Cooperation Agency (JICA) will start a project in Mutzing. That is to drill a borehole for improving water supply system. This project will start this year (2000). If adequate water is found during drilling a borehole and water quality is good for human consumption, the project would like to extent the area of water supply to surrounding villagers like Sampubangi Village. However, first priority will be given to the residents in Mutzing station. Before the pilot project will be decided to start, it is required to collect such information as health, hygiene, water condition, water usage, etc. Thus the main purpose of this workshop is to collect such information.

Questions from participants

Q: Are we (villagers) going to pay for the water if this project is established?
(by an elder from the village)

A: (JICA consultant) At this stage the answer is not sure, because the planning stage is not yet completed.

4-3. First session

The tasks for each group were allocated as follows;

Groups A and D	Listing common properties in households and discussing who can control each property
Group B	Drawing daily activity clocks
Group C	Drawing village resource map

4-4. Presentation from each group: 11:15AM

Group A (female group)
Topic: Listing common properties in households and discussing who can control each property

Women look after pigs and chickens and that is hard work. However, when they sell domestic animals, men take control of money. Women only take control of money when they earn from things that are sold at the market.
All leaders of other groups agreed on the presentation of Group A.

Group D (male group)
Topic: Listing common properties in households and discussing who can control each property

Common properties in household are classified as follows;
These are for men – garden, house, spear, pig, knife, etc.
These are for women – water container, bilum (traditional bag), clothes, etc.
After the presentation of Group D, leaders of two women groups objected that women had knives and they belonged to women. Also, women insisted that they looked after pigs.
Above two objections were agreed by all leaders and participants.

Group B (female group)
Topics: Drawing Daily Activity Clocks

Women who have no students wake up early and go to the garden directly. They return to the village around 12 o'clock at noon.
Those women who have students wake up early at 6 o'clock and prepare food for the children.

[1] Mr. Kevin is an officer of PNG Waterboard. Mr. Terence and Ms. Serah are members of National Research Institute. Mr. Thomas is an assistant employed by JICA Study Team.

Generally most women go to sleep between 9 and 10 o'clock at night.
On weekdays (Monday to Saturday) women use water for two (2) hours each day and on special day (Sunday) women use water for four (4) hours, because they stay home all day. All participants agreed that women used more water than men. Men used water half hour in the morning and also half hour in the afternoon. Men used water for only one hour.

Group C (male group)
Topics: Village Resource Map

From drawn Village Resource Map, followings are identified.
The number of household is 57 and total population is 261.
There are one hand pump and five (5) wells. Two (2) households nearby Mangiang river use river water for their daily life. Generally, villagers use river water for washing and bathing.
There are 35 toilets. Each toilet is not share with other households. Those households without toilets use bush as a toilet.
In dry season (from June to September), wells in the village and Mangiang River are dried up and villagers go to Sampubangi Creek to fetch water for drinking, washing and bathing. It takes around one hour from the village.

4-5. Second session: 12:00 PM

To identify villagers' needs for improving their living conditions, firstly each group was asked to discuss common problems in the village and select three (3) biggest problems.

Each group selected problems as follows;

Group A (female group)

Water	No good water is available for cooking, drinking and other purposes.
House	There are not enough trees to build houses. At present, villagers buy trees from other villagers.
Mosquito	There are plenty of mosquitoes.

Group B (female group)

Water	No good water is available for cooking, drinking and other purposes.
House	There are not enough trees to build houses. At present, the villagers buy trees from other villagers.
Mosquito	There are plenty of mosquitoes.

Group C (male group)

Water	Water is always dirty and not good.
Water Supply	There are only six (6) wells in the village. They are not enough for everybody to collect water.

Result of voting

Toilet	Available toilets are not enough. Therefore, some people use bush as a toilet.

Group D (male group)

Water	The villagers need good water for cooking, drinking and other purposes. The water they use is dirty and not good.
Money	They don't have enough money to meet the amount for school fees, clothes, hospital fee, etc.
House	The villagers don't have good houses because they have no bush materials like kunai grass and trees.

Secondly, similar ones were grouped together from above twelve (12) problems identified by the participants. Six (6) problems were grouped and those were;
-Money
-House
-Toilet
-Mosquito
-Water (quality)
-Water (volume)

Thirdly, all participants were asked to give the order of priority for above six (6) problems. Each participant was given three (3) stones and asked to vote on problems that were thought to be the most important in six (6) problems.

Result of voting is;

	Number of stones	Order of priority
Money	8	4
House	15	2
Toilet	6	5
Mosquito	9	3
Water (Quality)	0	6
Water (Volume)	22	1

After counting the votes, the participants were asked to reconsider whether indicated priority reflects their real needs. Finally, they agreed on the truth of above result.

4-6. Lunch break: 12:45 PM

4-7. Third session: 14:30 PM

Firstly, illustrations that show good habits and bad habits from hygienic point of view were distributed to each group. Then, they were asked to discuss with members of each group to identify good habits and bad habits. After discussion, each group reported still existing bad habits in the village.

4-8. Presentation of existing bad habits: 14:45 PM

Group A (female group)

1) Cooking outside the house and putting things on the ground.
   People still cook outside the house and left things on the ground. This habit cannot be stopped, because bush materials to build better houses are not available.
2) Toilet in the bush.
   People without toilet still use bush as a toilet. People are lazy to build pit latrines.
3) Putting rubbish in one place
   It is good to put rubbish in one place. It rarely exists in this village because they dump rubbish everywhere in the village.
4) Bathing together with human beings and pigs and fetching water from same river
   This is very bad habit. This does not happen in this village. When they see pigs in the river, they chase pigs away and water for drinking is always collected in the upper part of the river.
5) Throwing rubbish in the river.

They don't throw rubbish in their river. They know that it is wrong and is bad.

Group B (female group)

1) Throwing rubbish in the river.
   This is bad habit. The villagers don't do. Their river is rubbish free. Currently, some people who live along the upper part of the river (Mangiang) were throwing rubbish in the river, but they were warned not to do that by elders.
2) Sleeping, putting foods and eating them on same floor
   This habit still exists. People cannot stop this habit, because they don't have enough bush materials to build big houses so that they have enough spaces for each purpose.
3) Cooking outside the house
   This habit cannot be stopped, because they use clay pots for cooking and are afraid that cooking inside of houses will cause fire.
4) Toilet in the bush.
   People in this village still use bush as a toilet.


Clay Pot Cooking

Group C (male group)

1) Covering food
   People left food uncovered and flies sit on it. This causes sickness of diarrhea. It still exists, because people are lazy.
2) Toilet in the bush.
   It is hard to stop, because people cannot dig pit latrines.
3) Washing hands after toilet.
   People don't use soap to wash hands for cleaning after toilet. This habit still exists and is hard to stop.
4) Throwing rubbish in the river.
   People in the village do this. It is very bad.

Group D (male group)

1) Bathing together with human beings and pigs and fetching water from same river
   This is not safe. Diseases can be contracted easily. It is bad habit and still exists here. This cannot be stopped, because there is only one river (Mangiang) for the villagers to fetch water conveniently.
2) Throwing rubbish in the river.
   It still exists here. People including children and elders sometimes throw rubbish in the river (Mangiang).
3) Toilet in the bush.
   Some people without toilets still use bush.

Important Remark

In the process of above presentation, keen discrepancies about their recognition were identified. As for two (2) bad habits, a) Throwing rubbish in the river and b) Bathing together with human beings and pigs and fetching water from same river, women groups said that those did not exist but men groups said that those were still exist.

After debating, all the participants agreed that above two (2) bad habits did not exist, however they wanted to stop those bad habits. This conclusion was theoretically inconsistent. Some tense atmosphere was recognized between females and males during debating.

4-9. Good habits but not practiced in the village

Next, the participants were asked to discuss good habits shown in illustrations but not practiced in the village. If possible, they were asked to inquiry reasons why people were not practiced such habits as people themselves considered good.

Group D (male group)

1) Sleeping inside of a mosquito net
   Most people don't sleep inside of a mosquito net. People have money, yet they do not buy mosquito nets.
2) Keeping pigs in the fence.
   Many people don't keep pigs in the fence. They let them go around freely in the village. People are lazy to construct fence.
3) Covering food
   It is a good habit but the villagers do not practice it. They don't use nets but banana leaves instead, because they don't have enough money to buy nets.
4) Washing hands with soap and using towels for drying
   Many villagers use only water to wash hands and don't use towels to dry hands. This is simply because they don't have enough money to buy soap (and towels) all the time.

Group B (female group)

1) Washing hands after toilet
   Many villagers don't do it because they don't have water supply nearby toilets.
2) Covering food
   They don't practice, because nets are expensive for them. They use banana leaves to cover food.

Group C (male group)

1) Keeping pigs in the fence.
   The villagers let pigs out, because there is no water supply in the village and they do not want to carry water for pigs. Therefore, they let pigs free to look for water by themselves.
2) Washing hands after toilet
   Many villagers don't wash hands after toilet because plenty water is not available. Water collected from wells uses only for cooking and drinking.
3) Putting rubbish in one place
   Many villagers throw rubbish everywhere in the village. They are lazy to put rubbish in right places.

Group A (female group)

1) Covering food
   Few villagers do cover food using banana leaves. Nets for covering food are too expensive for them.
2) Putting rubbish in one place
   Most villagers don't put rubbish in rubbish bins and later dump them in one place. They throw rubbish everywhere, because they are lazy to put rubbish correctly in rubbish bins and later dump in right places.

After completing each presentation, Japanese Consultant asked the participants and other audience if they would like to change their bad habits. Everybody responded positively. Then he asked for group leaders to comment about the workshop. The participants and other audience responded that they wanted one more workshop because no one conducted such workshop previously.
Finally, he thanked the participants (villagers) for their cooperation in the workshop.

4-10. *Closing: 15: 45 PM*

5. Workshop record in Intoap Village

When JICA Study Team arrived at Intoap village, villagers were not yet ready and just start gathering. It took one hour to gather certain number of participants.

5-1. Session start: 10:00 AM

Since number of participants was not enough, only two (2) groups were formed. One is women's group comprising eight females and another is men's group comprising seven males.
Before the workshop began, Japanese Consultant, Mr. Suginaga, greeted the participants and audience and introduced himself and Mr. Kevin , Ms. Serah , Mr. Terence and Mr. Thomas who were assistants to conduct the workshop.
And he explained the purpose of the workshop same as Sampubangi Village.

Question from participants

Q: Are we (villagers) going to benefit from water supply? (By an elder)
A: (Mr. Suginaga) If it become sure that ground water is enough after drilling a borehole, it would be some possibility for surrounding villages to be benefited. JICA Study has budgetary limitations, thou it is not yet sure.

5-2. First session

The tasks for each group were allocated as follows.

Women's group	Drawing daily activity clocks
Men's group	Drawing village resource map

5-3. Presentation from each group

Women' group

Eight (8) females calculated time for using water per day and the results were;
Woman 1 --- using water for 2hours 50 minutes.
Woman 2 --- using water for 3hours.
Woman 3 --- using water for 4hours 20 minutes.
Woman 4 --- using water for 3hours.
Woman 5 --- using water for 1hour 30 minutes (this female is still a student.)
Woman 6 --- using water for 55 minutes (this female is still a student.)
Woman 7 --- using water for 5hours 50 minutes.
Woman 8 --- using water for 4hours 10 minutes.

They stated that there were following difficulties in relation to water.
1) Farming – Enough water is not available for irrigation.
2) Drinking and Cooking – It is difficult for them to collect enough water. For example, when the water level is low in the well, it takes long time to recovery the water level enough for pumping again. They also state that women use more volume of water than men.

Men's group

From Village Resource Map, followings are identified.
The number of household is 19 and total population is 120. There are 11 wells and at least two of them are equipped with hand pumps. Some of them are newly dug and equipped with generators for irrigation supported by FAO project. One water tap is extended from water supply system of Mutzing station. Most of households use wells, but three (3) households use creeks.
There are 16 pit latrines.

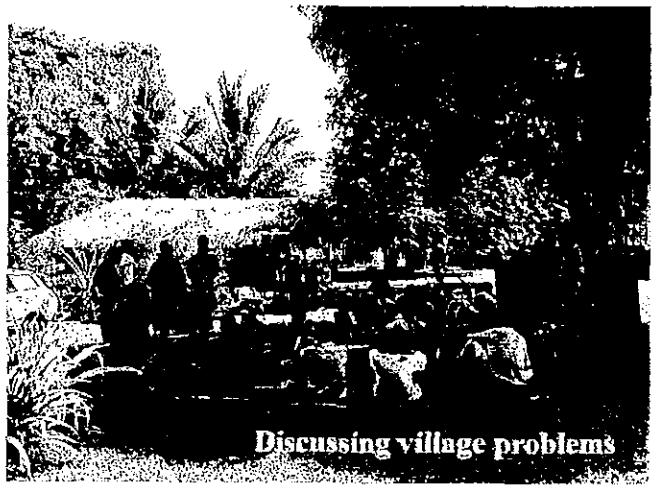
5-4. Second session

When second session commenced, additional villagers were arrived. For the new session, two (2) female groups and two (2) male groups were reorganized. Each group consisted of five (5) members. To identify participants' needs for improving their living conditions, firstly, each group was asked to discuss common problems in the village and select three (3) biggest problems.

Each group selected three (3) problems as follows;

Group A

Water	Water is always dirty when water level of wells drops down in long dry season. Also, there is not enough water to irrigate their farms.
Transport	They don't have any transportation to carry their produced vegetables to town markets (Lae).


Discussing village problems

Group B

Water	Good water is not available for cooking, drinking and bathing.
Transport	The villagers don't have cars to take them to Lae for marketing and shopping.
Money	They don't have enough money to meet rising prices for school fees, clothes and hospital fee.

Group C

Water for irrigation	Facilities for irrigation are not adequate for 58 farmers*.
Transport	There is no car in the village. Therefore, it is difficult to get their vegetables to Lae for selling in the markets, hotels and supermarkets (big stores).
Water	It is hard to pump enough water up for each household.

*This Intoap Village belongs to another bigger village. Those 58 farmers were referred from total number of one bigger village.

Group D

Water supply	Water in wells becomes milky and dirty when water level drops in dry season.
House	Enough trees are available for building houses, but kunai grass is not enough for roofing, because it is burned frequently during the dry season.
Transport	There is no transportation to help the villagers to go to markets in Lae for selling their vegetables.

Secondly, similar ones were grouped together from above eleven (11) problems identified by the participants. Five (5) problems were grouped and those were;
-Water (cooking and drinking)
-Water (irrigation)
-Money
-*Transport*
-House

Thirdly, all participants were asked to give the order of priority for above five (5) problems. Each participant was given three (3) stones and asked to vote on problems that were the most important in five (5) problems.

Result of voting is;

	Number of stones	Order of priority
Water (cooking and drinking)	24	1
Water (irrigation)	15	3
Money	1	5
Transport	17	2
House	3	4

Participants were increased and there were more than expected number of twenty (20) people at the end of second session. However, majority of female participants were still young and singles, thus those participants were not in the position of representing their households. Considering such situation, it was decided to give up additional sessions.

Finally, JICA consultant thanked the participants (villagers) for their cooperation in the workshop.

5-5. Closing: 12 :30 PM

FORMATION OF THE COMMUNITY BASED ORGANIZATIONS AND TRAINING IN OPARATION AND MAINTENANCE UNDER THE STUDY ON GROUNDWATER DEVELOPMENT FOR WATER SUPPLY SYSTEMS IN PAPUA NEW GUINEA

Contents of Final Report

I. The Summary

Papua New Guinea Water Board (PNGWB) and the Japanese International Cooperation Agency (JICA) had an agreement to conduct the study on the Development of Groundwater in the rural districts of Papua New Guinea. JICA organized a study team, (through Japan Techno, a Japanese company) known as the JICA study team. The team consisted of 12 experts from various fields related to the study.

The first phase of the study was conducted in two provincial towns, i.e.; Daru in Western Province and Popondetta in Oro province, and six districts towns, which are; Kwikila, Bereina and Kupiano in the central province, Mutzing and Finschafen in Morobe province, and Oro Bay in Oro province.

After the first phase, the findings were presented to the JICA and it was consented to implement the pilot project to see if it would work as discovered. This report covers the second phase of the study, which include the implementation of a pilot project and the findings from it.
The team selected five sites in the country as sites for the second phase for the study. The five sites were Bereina and Kwikila in Central Province, Daru and Binaturi in Western Province and Mutzing in Morobe Province.

The study team subcontracted World Vision Pacific Development Group (GDP) to give the communities a manageable order and sustainable circumstances. World Vision PDG assigned five Community Organizers, one Graduate Water Engineer and one Project Coordinator, in total, seven members to carry out the task.

For the implementation of the project, World Vision PDG has been given the terms of references by Japan Techno.

The project objectives in the five different areas were as follows;

The objectives of three project sites, Bereina, Mutzing and Kwikila District Stations, were same and the contents of works were almost same naturally. Water Management Committees were to be formed and trained to realize sustainable operation. The rules for water usage were to be established. Fees were to be collected from each household. In addition, the Community Organizers have collected village statistics/ data for the project.

As for the project in Daru Island, the objectives were to bringing quality water from the main water supply to the settlers in the many different corners on the fringe of the town. Two vendors were to be selected and they were officially authorized to operate the vending units.
Binaturi Project was different one and it was planned that facilities in the area were to be constructed by the villagers using the materials that were supplied under the project. Targeted villages in this area are as Boze, U`me 1,2 &3, Kunini, Tureture, Old Mawata, Masingara and Girigarande. In addition to above-mentioned villages, Binaturi Community School, that is a public institution, is to be benefited from this.

The followings are to narrate the process and progress of the actual project implementation and analyze those results from the beginning to the end. The problems faced in the course of the implementation and its lessons learnt would be a very valuable reference for the future. Also, a few recommendations and conclusions are drawn.

Finally, the appendix is attached so that clearer picture is captivated.

II. Main Report
1. Kwikila

This district station is located in the eastern part of the central province and about two hours drive along the Magi highway.
There are water supply facilities here but they were suspended for some years. This main part of the project is to rehabilitate and enhance the capacity of the facility. Then the system is extended to the neighboring settlers and compounds.

Three target groups are identified in this station and they are:

- Public and legal entities (District Administration, Churches schools etc.)
- Formal residents who have right to stay within the station boundary.
- Informal residents who stay out of the planned area but are allowed by the landowners or they believe they have traditional right to stay.

1-1. Preliminary result

The results of the works in Kwikila Station are as follows;

1-1-1. Accomplishments

According to the Terms of Reference, the following were achieved as planned;

a) The formation of Water Management Committees (WMC)
b) Fees collection
c) Baseline data collection.
d) Training for capacity building to establish sustainable environment
e) Making the rules for the use of water.

1-1-2. Remaining issues

The remaining issues with the Kwikila site are:

a) Signing of Memorandum of Agreement with the local governing authorities including the district administration, the LLG, PNG WB and Water Management Committee of Kwikila.
b) Opening of account. This is delayed because PNG WB has not yet completed the preparation for the water supply service at the district level. After consulting with a customer service and a regional manager, it was suggested that the WMC keep their collections until further notice. Thus, collected fees are returned to the Treasurer of the WMC and to be deposited in PNGBC account.

1-1-3. Recommendation

a) It is recommended that the effectiveness of the WMC should be checked well during Monitoring and Evaluation because it has been doubtful whether the efficiency of the WMC will be forceful from the current progress in fees collection.
b) It is strongly recommended that the vending unit system same as Daru system would be introduced to this area and it will be appropriate for this site. The current treasurer, Mr. Liga Sirua, is a very good candidate for this exercise.
c) The extension of Public facet to the other compounds is recommendable.

1-2. Actual process of implementation (in comparison with original schedule)

All implementations begun as planned but we experienced several unexpected difficulties. Those affected the process of implementation and it was forced to take different approaches. Some of these changes were;

a) The Community Organizer who was supposed to run a baseline survey by PRA was not able to conduct, so the base lining survey was done using a set of guidelines prepared by JICA Study Team.
b) The Community Organizer terminated his contract early because his daughter passed away. This affected the implementation schedule but most of the activities were done. On behalf of assigned Community Organizer, the project supervisor completed the pending activities.

1-3. Base line data
The following information is directly collected by the Community Organizer from the informal residents in Kwikila Station.

1) Total population in the target area is 101 in 2001.

Name of compound	Adult		Children under 16	Children under 3
	M	F		
Makan	16	9	13	4
Mt.Braun	2	3	5	0
Vada	11	10	18	10
Sub-total	29	22	36	14

2) Total number of household in target area is 26.

3) Infant mortality

a) Total birth in 2000 and 2001 in compound area is 7 births
b) It was not identified any infant mortality under 1 year and 3 years old in 2000 and 2001.
c) Out of the seven babies born in 2000 and 2001, five babies were delivered at Kwikila Health Center and two babies were delivered at Vada Compound.
d) All the seven babies were immunized.

4) Water source in each target area.

Wet season: About 90% of the population harvested rain water using drums and buckets and 10% got water from Well Pump located near the Salvation Army church.
Usage: Drinking and cooking
Other water source : They use Ruatoka Creek for washing clothes and bathing.

5) Workload for fetching water

	Wet Season (Hours)	Dry season (Hours)
Male	Less than one hour	Four hours to Kem Welch River
Female	Less than one hour	Four to six hours to Kem W. R.
Children	Less than one hour	Four hours to Kem W. R.
Household total	Less than one hour	Eight hours

During dry season, each household spent half of the day, about eight hours, for fetching water from Kem Welch River. It was thought that women do more work than men and the workload is higher for women than for men in all seasons.

6) Consumption of Water

	Drinking	Cooking	Washing	Bathing
Male	1L/day	3L/day	Creek	Creek
Female	1L/day	5L/day	Creek	Creek
Children (under 6)	1L/day	2L/day	Creek	Creek
Household total	5L/day	20L/day	Creek	Creek

Women use more water than men for cooking and washing clothes for babies during wet season. It is assumed that during wet season, more rain water is used for washing infant's clothes.
1-5 family members in each household, the consumption of water is about 70 liters per day.
6-15 family members in each household, the consumption of water is doubled and it is about 140 liters per day.

7) Number of full time employee

Two men were employed full time by the government agencies. One man was employed as a casual worker by the private enterprise. The rest of the residents were thought to be unemployed.

8) Source of Income

Average income from the sale of garden crops per day (common ones)

	Sweet potato	Banana	Coconut	Vegetable	Betel nut
Male	K3	K4	K2	K2	K10
Female	-	-	-	-	K10

More women participate in marketing than men an a few men sold betel nuts. The average sale of garden crops depend on their planted crops. The season is influential factor for their income. Their income is likely to be less during wet season than during the beginning of dry season. This is simply because of the timing of harvest.

9) *Expenditure*

It is estimated that an average household earns K25 for a fortnight from the sale of the garden crops and spent about 80% of it for the essential requirement of the household. The average expenditure for a household for one year would be around K500.

10) Clan or Kinship Group

Identify clan or kinship group in each target area.

2. Bereina

It is about four hours drive from Port Moresby located in the west of Port Moresby along the Hiri Tano highway towards Kerema.
The traditional structure is still vital and chief system provides leadership and governance to the people in this area.

There are water supply facilities here but their function is barely satisfactory level. Thus, the main part of the project is to rehabilitate and enhance the capacity of the facility. Then the system is extended to neighborhood villages.

Three target groups are identified in this station and they are:

- Public and legal entities (District Administration, Churches schools etc.)
- Formal residents who have right to stay within the station boundary.
- Villagers adjacent to Bereina

2-1. Preliminary result

The results of the works in Bereina Station are as follows;

2-1-1. Accomplishments

According to the Terms of Reference, the following were achieved as planned;
a) The formation of Water Management Committees:
b) Fees collection
c) Baseline data collection.
d) Training for capacity building to establish sustainable environment
e) Making the rules for the use of water.

2-1-2. Remaining issues

The remaining issues with the Bereina site are:

a) The coaching for the committees
b) Signing of Memorandum of Agreement with the local governing authorities including the district administration, the LLG and PNG WB.

2-1-3. Recommendation

2-2. Actual process of implementation (in comparison with original schedule)

All implementations begun as planned but we experienced several unexpected difficulties. Those affected the process of implementation and it was forced to take different approaches. Some of these changes were;

a) The Community Organizer who was supposed to run a baseline survey by PRA was not able to conduct, so the base lining survey was done using a set of guidelines prepared by JICA Study Team.
b) The major problem occurred was that John Yehinaka, a former Community Organizer, for Bereina did not complete most of the activities. Thus, Harry, who is a Community Organizer for Mutzing, was reallocated to complete the activities.
c) The trainings for the Water Management Committees were conducted to enhance leadership and realize sustainable project. However, because the members of the Committee were rearranged in the process of the project, additional coaching for the Committees was required.

2-3. Base line data

The major purpose of baseline information gathering in targeted villagers was to compare the situation of the communities before and after the project implementation in Bereina settlement villagers.

1) Major topics
Eight (8) topics were inquired under this survey in each target villagers. The detailed activities were;
1. Population in each communities
2. Total number of households per villagers.
3. Infant mortality rate per villagers.
4. Water sources and workload involved in fetching water
5. Weather patterns and seasonal differences in the area
6. Sources of income and expenditure and level of employment
7. Clan and chief system in the area.
8. Establishment of Water Committees etc.

2) Methods Used in Collecting Baseline Information
The method was to ask questions directly to different groups in each villager, especially the elderly men and women. The same questions were asked to different people in the same village and at least three (3) groups were interviewed to confirm the answers.

3) Why selecting elderly people to collect baseline information?
It is more appropriate to select such older and matured people in the community for collecting such information, because they have lived in the village for a long time and can provide all information that is true.

4) Gender and equality
It makes sure that there were two females at least among the interviewed group in each of the targeted village.

5) Problems faced for collecting information
The major problems faced were limited available time for the villagers. Appointment for the interview was frequently changed because the members of the Committees did not arrive on time. The villagers are very busy with their normal activities in their gardens and give a little time to the community work. Therefore, the Community Organizer needs to wait for the villagers to return from their normal activities up to afternoon. Their participation is very slow to acquire full information that is required.

6) Household number and total population
The total number of households in all the villagers is 89 and total number of population from all the targeted villages is 512 people.

NAMEOF VILLAGE	H/HOLDS	POPULATION
Torena one	14	66
Torena two	8	48
Ponepone Tap one	8	51
Ponepone Tap two	6	45
Paikua	20	115
Baukeke	7	35
Kuroapaina	8	54
Hihive one	10	52
Hihive two	8	46
	89	512

7) Infant morality
The total number of birth in 2000 was (11) eleven and in 2001 (7) seven. Paikua village has the highest birth record of four (4) babies born in 2000 and three (3) in 2001 while the rest of the villagers have less than two (2) in a year except Torena one, where there were two(2) in a year.
However, there had been no reports given by the villagers about infant morlity below the age of one or three in the year 2000 & 2001. The only deaths reported were very old people at the age of 60 and above.

8) Delivery place and immunization
All deliveries were done at Bereina Health Center and there is no report about the number of vaccinated babies.

9) Water sources
All villages prior to the development of the water project have fetched water from the drum wells dug by themselves. The water from the well has been used for cooking, drinking, washing clothes and even bathing.

VILLAGE	WATER SOURCE
Torena one & two	Well & rain
Hihive one	Well, river/ swamp water
Hihive two	Water pump EU funded project
Kuroaipana & Baukeke	Well at Kuroaipana
Ponepone one & two	Well & rain
Paikua village	Well & rain

Incase of severe dry season, the level of water in the well decreases and the people work harder to dig the well further and install additional drums as well as drawing fresh water. Dry season is normally from June to October and wet season is from November to May every year.

10) Workload involved in fetching water
All the work involved in fetching water from the drum well is done by woman and children in all villages. Men fetch water only for washing themselves at least twice or three times a week. Women and children use a lot of water for cooking, drinking, washing clothes and bathing.

11) Time spent on fetching water

The exact time spent on fetching water by women and children cannot be calculated accurately because the activity is done at any time of the day when they need water.
Every household fetches water from the drum well three times a day for cooking and drinking and at least once a day for washing clothes and bathing. In dry season the drum well is always crowded through the day because the demand for water use arises.

12) Water consumption
The exact volume of water consumption per household is difficult to measure at this stage. However, a large volume of water is estimated to be consumed in this area because the weather is dry throughout the year. As the result of survey, many households confirm that at least four buckets of water are used per household for drinking alone each day. More water was used for washing clothes and bathing for most of the families. Women and children use more water than men.
The villages do not know whether the drum well water is safety for human consumption or not. Any form of medical test has been not yet conducted and health authorities in the province did not take any initiatives to care about the lives of this area. Therefore, the water that people use at present is not secured from any form of water related disease.

13) Source of income
The major source of income is marketing activities. The villagers sell their products from the garden and fish caught in the neighboring rivers and swamps at their local and town markets.
The major items for sale in this area are banana, betel nut & mustard, greens, vegetables, coconuts and seafood. These crops are sold locally and in Port Moresby.
The villagers also bake scones to sell at the local markets in Bereina. Their main customers are public servants who live and work in Bereina Station.

The demand for betel nut (buai) in Port Moresby is so high that the villagers can earn high returns from the sales in Port Moresby. The supply of betel nut is generally low from September to February and they make a maximum profit from the sales of betel nut (buai) during this period.

14) Expenditure
The villagers spend most of their income on keeping their livelihood, such as school fees, store food, clothes, and health fees. Apart from those they spend on feast, marriage ceremonies and other social activities. It is impossible to provide the exact amount of their expenditure because the earning are not constant throughout the year. The villagers have some savings to prepare for the future needs.

The largest amount of family spend on children's education yearly. Many parents spend more money on their children's bride price as well as sports and other social activities. Though their expenditure for the education is quite large considering their income level, the standard of education in the villages is very low. Not so many children proceed to high school. This is because their parents do not have enough time to train their children at home.

15) Tradition, Clan, Chief System and its structure

15-1) Each village or community lives under the control of their village chief. The control related to clansmen' welfare by the chief is so common and is very active in this area. There are several chiefs and other important key persons such as knifemen and sorcerers.

Chiefs Responsibilities:

- The chief controls the community in conflict solving
- The chief make rules for the village or clan and ensures that the rules are followed
- The chief prepares and declares when the ceremony dance, feast and celebration is required.
- The chief controls over the village and acts as a supreme authority.
- The chief is inherited according to the traditional rule.
- The chief gives orders to knifemen and sorcerers to act accordingly.

Knifeman's Responsibilities:

- The knifeman takes over the chief's responsibilities if the chief is absent.
- The knifeman acts like a finance manager when wealth and other resources are distributed in the village. The knifeman serves food in the chief's house in the feast.
- He also serves food for all different chiefs from different clans at the chief meeting.

The Sorcerers Responsibilities

- The sorcerer protects the chief by the power of magic and sorcery.
- The sorcerer obeys the command from the chief to kill people who misbehave in the society.
- The sorcerer acts like a security guard for the clan from other clans' sorcerers.

15-2) Paramount Chief

Paramount Chief is the leader of the chiefs in the area. All different chiefs from each clan and village respect the Paramount Chief. The Paramount Chief is the supreme authority. The Paramount Chief in Bereina is Mr. Leo Arua stay in Paikua village.

The Paramount Chief asks the chiefs and sorcerers who are responsible for such issues and discusses among them to solve such problems in their traditional manner and method.

The Paramount Chief's house is called Malea or Patapata. This is the flat building where all the chiefs gather to have meetings.

Paramount Chief's Responsibilities:

- The Paramount Chief heads all the chiefs in the area.
- The Paramount Chief invites all chiefs in the area and holds meetings to discuss on following issues;
  -Why do the swamps dry up?
  -Why do the people die due to health problems?
  -Why do criminal activities increase in their area?
  -Why do the tribal fights increase?

DETAILED INFORMATION ABOUT CLAN AND CHIEF SYSTEM:

VILLAGE	CLAN	CHIEF	KNIFEMAN	SORCERER
Ponepone	Biorai	Joe Bare	Pekau Oa	Kime Itaro
Paikua	Haurama or Paitama one	Leo Arua		
Hihive one	Ayakupuna	Michael Aitsi	Thomas Momo from Ponepone	
Hihive two	Ere Ere	Rowana Kaupa	Peter Aitsi	Haumira
Torea one	Ayakupuna head clan	Mariano Kaipa	Thomas Momo	
Torena two	Aitsi Kupuna	Paul Aitsi	Manu Oa	
Kuroapaina	Koakupuna	John Mika & Arua Mika	Miria Tumbu	Manu Oa
Baukeke	Paifaa two	Leo arua		

3. Mutzing

This District Station is located in the south -west from Lae City along the Highlands Highway in Markham Valley. It takes about one and half hours from Lae City by car.

There are water supply facilities here and they were still working but the condition is far from the satisfactory level. Therefore, this main part of the project is to rehabilitate and enhance the capacity of the facility. Then the system is extended to the neighboring villages.

The aim of the project in Mutzing is to rehabilitate the current town water supply system and to extend the Water supply to the nearby villages. After the project is completed, it is planned to it hand over the management of the project to the beneficiaries. The water Management committees formed in the process of the project and the local district administration together with water board will play an essential function.

Three target groups are identified in this station and they are:

- Public and legal entities (District Administration, Churches schools etc.)
- Formal residents who have right to stay within the station boundary.
- Villagers adjacent to Mutzing Station

Mutzing and Sambubagin villages are located next to the town area. The water supply also serves Markham Valley High School, Mutzing Health Centre and the Mutzing Primary School.

3-1 Preliminary result

The results of the works in Mutzing District Station are as follows;

3-1-1. Accomplishments

The task has being performed very professionally and well covered by the community organizer. There were problems on the field but he managed well and completed his tasks successfully.
According to the Terms of Reference, all the major works required were accomplished and the followings were achieved as planned;

a) The formation of Water Management Committees (WMC)
b) Fees collection
c) Baseline data collection.

d) Training for capacity building to establish sustainable environment
e) Making the rules for the use of water
f) Other remarkable accomplishment
In the process of project implementation one villager, Mr. Martin Aron from Sambupagin 2 sub-village, raised land compensation issue over the project at the beginning of May 2001. After having PCM workshop and several community meetings, this issue was cleared and any other issues have not been reported since then.
It is guessed that the relationship between he and the rest of people in Sampubagin and Mutzing village is not good and he would like to jeopardize the project to claim himself as the village representative.

3-1-2. Remaining issues

a) In Sampubagin 2 sub-village, WMC is not so active and the community itself is not very responsible to contribute their time and money (K5.00 per household) for the project.

3-1-4. Recommendation

3-2. Actual process of implementation (in comparison with original schedule)

All implementations begun as planned but we experienced several unexpected difficulties. Those affected the process of implementation and it was forced to take different approaches. Some of these changes were;

a) Community organizer, Harry Gubala, had run a PCM workshop at community level. After JICA Study Team's assessment, it was decided that established plan was not to be applied. Base line survey was done using a set of guidelines prepared by JICA Study Team..
b) Harry Gubala completed everything as planed successfully and he was transferred to Bereina site to complete the remaining activities.

3-3. Base line data

The baseline information was collected in April and May 2001. The information was collected mainly through the newly formed Water Management Committees (WMC) and several villagers in Mutzing village and Sampubagin villages. The groups were two female and two elder ones.
Due to their working pattern, most of the villagers are busy in the daytime to work in their gardens and were not available to participate in the survey. Therefore, the survey has done in the evening and night or on the weekend.
The survey has done through the direct interview and mutual discussion in groups made up of 3 – 4 villagers from the target villages and sub-villages.

1) Major topics
The baseline information was collected as follow;

(a) Total population, number of households and gender balance
(b) Statistics related to health issues like water borne diseases and infant mortality rate
(c) Water sources, the workload involved in fetching water and water consumption
(d) Employment opportunities, full time employment level and other sources of income and expenditure
(e) Inter-relationships and links among the community's clans and clan-ship groups

2) Background and facts about the groups
Sampubagin and Mutzing villages are located adjacent to the town area. The town water supply will be extended to these two major villages that has a total population of 400 people.
The two big villages are all descendants from the big Raira Clan and now live next to each other and divided into smaller sub-clans.

Almost all the baseline information detailed below is the same in both villages because of their geographical close location and the same origin of their clan groups. However, there are a few differences in each community such as levels of employment, population and infant mortality rate.

3) Water consumption, the sources and workload involved in fetching water
Water is a necessity for the life and everyone in the villages consumes some liters of water everyday. The exact volume of water consumed everyday individually and per household is difficult to measure at this stage because the villagers from both villages do not supply much information. However, they estimate that at least two buckets of water are used everyday for cooking and drinking per household.
Water for cooking and drinking is fetched from the drum tanks and drum wells located under the ground in both villages. However, Mutzing villagers go to the creeks and fishpond nearby the village for bathing and washing clothes.
In case of Sampubagin village, the villagers relay on Magiang River except for drinking and cooking. They get water for both purposes from an old drum well provided by the village councilor twenty years ago.
Most of the workload involved in fetching in both villages are born by women and children (especially girls) and a little assistance is provided by men only in the dry season.

4) Source of income
The major source of income for Mutzing and Sambubagin villages is to sell cash crops in local markets. There is a small market at Mutzing Station where they sell garden products and a bigger market at Umi Bridge, that is approximately six(6) kilometers away from the villages, where they sell big quantity of foodstuff like buai (betel nut) and peanut.
All the villages in the district share Umi Market and it is known as the trading point between the highlands and the people of Markham. The bulk of betel nut and peanut is transported to the highland provinces everyday. The people of Markham depend heavily on this market for the sales of their products.
According to the interview with the villagers, Mutzing and Sambubagin also benefit a lot form Umi Market. This is their only major source of income. Apart from this, they also sell second hand clothes, small bottles of petrol, baked flour and cooked food along the road.

5) Seasonal differences

The harvest pattern of cash crops differs in seasons in this area. Around from June to December, all the villages in Markham including Mutzing and Sampubagin experience dry season. During this period the supply of food crops is decreased, therefore the price of those is increased. For example, it would be possible to happen that the price of one bag peanut increases from K30.00 to K80.00. Beetle nut is thought to be the substitute product to cover the decrease of income from garden products in August and September.
Wet season is generally from January to June and the people concentrate on making their gardens and planting during this period. They plant such as peanut, onion and vegetables.

6) Level of employment

There are not many full time employment opportunities in the villages and most of the villagers of Sambubagin and Mutzing village do not have technical skills and any experience to receive trainings. The average of education level for the villagers are below grade ten (10) qualification and the private sector is rarely invested in this area.

-Mutzing:
There are four (4) people who are full time employees. The education department employs two as a primary and elementary teacher. The other two are employed by the privates sector and one is as a carpenter and the other as a shopkeeper.

-Sampubagin:

There are six (6) employed people in various organizations. Five(5) people are employed by the education department, of which two are school teachers, one female as the secretary of the Markham Valley High School. Two others are elementary school teachers and one works at health center in the district station. Of the five (5) employees, four are men and one is a female.

7) Population and Infancy rate

The total number of population in each village was counted during the time of fee collection of K5.00 per household.

-Mutzing:
The population is132. The gender balance between female and male is 62 and 70 respectively.
The total number of birth in 2000 in this village is six (6) children and only two were born in 2001.
There were no deaths of babies under three years in these two years. Most of the delivery is done at Mutzing Sub-health Center. However, some mothers do deliver at home with the assistance of village midwives.

-Sampubagin 1 Sud-Village:
The population is 166. The gender balance between female and male is 88 and 78 respectively.
The total number of birth in this sub-village in 2000 was three and two in 2001. Death of children under three years is only one in 2001 and none in 2000.
Delivery is done in the village or at the health center.

-Sampubagin 2 Sub-Village:
The population is 124. The gender balance between female and male is 47 and 77 respectively. The total number of births in 2000 is two and in 2001 two also.
Most mothers deliver their children at the sub-health center, yet some deliver at home with the assistance of village midwives. No deaths are reported in 2000 and 2001 for the children under three years old. However, there were four (4) deaths in 1997 and this incident is thought to be related to the prolonged drought.

Summary of Population:

Village	Sex	Number	Total population
MUTZING	Male	70	132
	Female	62	
SAMBUBAGIN 1	Male	78	166
	Female	88	
SAMBUBAGIN 2	Male	77	124
	Female	47	

TOTAL: 422.

8) Household number

The total number of households in collected through the head of each family or fathers of each household. There are 19 households in Mutzing village, 34 households Sampubagin 1 sub-village and 20 Sampubagin 2 sub-village. The total is 73 households.

9) Tradtional structure like clan-ship

Mutzing and Sambubagin villagers are all from same major clan that is called Zabu clan. There are two major sub-clans called Bakabuang and Yatzing clan within Zabu clan.
Mutzing and Sambubagin village has also relationship with the people living near the station, who are decedents of Raira Clan.

The chief village leader in Mutzing is Mr. ATZUF ZUAMU and he is responsible to control the villagers and land issues in both villages.

4. Binaturi

Binaturi is the area name and seven (7) villages are identified for the target villages here. The area is located in the northwest of Daru Island and along Binaturi rive. Outboard motors are only available transportation from Daru Island to the Binaturi river system. It takes about three hours before reaching U`me 2, that is farthest one up the river.

The project includes two activities here. One is the environment survey for the Binaturi River system conducted by UNISERCH, that is local consultant firm. Basing on the complaint by the local residents, the survey has done to clarify the influence of seawater intrusion to the upper stream and the environmental impact. The other is the actual implementation to improve the living condition of local residents, in particular, water related one.

4-1. Preliminary result

The results of the works in Binaturi area are as follows;

4-1-1. Accomplishments
According to the Terms of Reference, all the major works required were accomplished and the followings were achieved as planned;

a) Formation of Community Water Management Committees.
b) Sub-village Committees.
c) Baseline data collection.
d) Training course for leadership, facility management / maintenance / Operation, health & hygiene and basic bookkeeping.
e) Facilities construction work together with the local residents

4-1-2. Remaining issues
The remaining issues for the Binaturi area are as follows.

a) The construction phase has not yet completed.
b) The collection of fees to maintain the facilities is not yet prepared.
c) Baseline data has been already submitted according to the Community Organizer but no copy is found.

4-1-3. Recommendation
The followings are recommended considering the tough situation we have faced for the period of project implementation in Binaturi area.

a) It should be allowed more timeframe from the planning stage to the implementation stage.
b) It was hard to facilitate the ownership for the sustainability, because the community involvement in the project planning was not considered.
c) Fee charge in this area, where cash is scarce, would force people to back to use river and wells they uses at present.
d) People do not see any difference between the water of new facilities and Binaturi river because they don't understand the risk of river water. More activities to improve their awareness will be required.
e) Materials distributed by other organization (HEBOU) made the situation very difficult for the villagers and the coordinating organization (World Vision). Next time it is better to select such organization or person that is located close to the project site.

4-2. Actual process of implementation (in comparison with original schedule)
All implementations begun as planned but we experienced several unexpected difficulties. Those affected the process of implementation and it was forced to take different approaches. Some of these changes were;

a) It was scheduled that the project started at the beginning of January 2001 but it actually begun late in March due to the delay of hiring staffs.
b) One water engineer was assigned to the area but he left without any notice.
c) The Community Organizer who was supposed to run a baseline survey by PRA was not able to conduct, so the base lining survey was done using a set of guidelines prepared by JICA Study Team.
d) The supply of materials was delayed. It was supposed to be on site by May 2001 but it arrived late in July 2001. The delivery of materials was not properly arranged also and it made the construction phase very difficult for the villagers and World Vision.

4-3.Baseline data
The project supervisor has not yet received any of the baseline data. The copy is said to be handed over to JICA Study Team according to the Community Organizer.

5. Daru

Daru is the island that is located in the southeast part of PNG mainland nearby the mouth of Fly River. Here is the provincial town of Western Province and most of the provincial administrative function is concentrated on this Island. It is also the regional center for commercial activities.

The project in Daru Town is quite different from other project sites. The water supply service is already operated by PNGWB and a main objective of this project is to extend their services to the disadvantageous people, informal residents, through the introduction of Water Vending System. It is not very unique approach in other developing countries, but this is the first time for PNG WB. One Community Organizer has sent and, firstly, the organizer has participated in the survey for the water and sanitation need and reported. Based on such baseline information, the organizer has arranged to select appropriate candidates for Water Venders together with JICA Study Team and Daru Town LLG.

5-1. Preliminary result
The results of the works in the Daru Island are as follows.

5-1-1. Accomplishments
According to the Terms of Reference, all the major works required were accomplished and the followings were achieved as planned;

a) Collection of baseline data as required for all Corners in and around the town.
b) Holding consultative meetings with interested parties
c) Selection of sites and Water Vendors
d) Signing of MOUs.
e) Training for basic bookkeeping and other required skills

5-1-2. Remaining issues
The only remaining issue for this site is that, although this is not planned, it would be better for the water vendors to encourage opening bank accounts for the water vending business.

5-1-3. Recommendations

a) Considering the result of this project, it is recommendable to expand this system to other sites. Several people have asked whether others would be set up.
b) For more capacity building, it would be recommended to follow up the project.

5-2. Actual process of implementation (in comparison with original schedule)
All process were gone through as scheduled but it was required more time than it was expected due to the lack of thorough planning.

5-3. Base line data

1) Meaning of Corner
In and around Daru town there are many corners and all these corners have names come come from their original village or group. E.g.: "**Bamu Corner**" is the place where most of the residents come from Bamu village.

2) Population
Daru town itself has the population of 10,300 people. According to the reliable source, it is estimated that 3,000 – 4,000 people stay in the corners.

3) House / Household
Two types of house are identified in the corners. The first type is modern type that is built out of board, timber and roofing iron. The other type and this is more common one is bush material house, because their materials are easy and cheap in case of repair.
In each house, there are three and more families living together.

4) Taps
Not all households in the Corners have taps. In each Corner three or more families use one tap. When monthly bills arrive, they contribute for the payment. According to the people, they cannot afford to own individual taps because the installation cost for individual taps is very expensive.

5) Sanitation facilities
In the Corners, people build their toilets out of the bush materials with few timbers and roofing irons, because it is cheap and easy to build. Many people do not have toilets because they prefer to use the bush and sea.

6) Health problems
There are health problems in all the corners such as diarrhea, dysentery and skin problem. It is guessed that the well water that is their main water source is contaminated.
It is recognized that the situation is not very different among the Corners. Small number of households have water taps and toilets and people use well water for drinking, cooking and washing regardless of the possibility of water contamination. Utilization of sea and bush as a toilet also contribute to the problems. It is thought that dense housing condition is other contributing factors to the problem.

7) Recommendation
It is recommended that the Water Vending Units would be established in these areas where the population is dense and there are not many taps as the result of this survey.

SUMMARY TABLE:

Corners	Population	Houses	House holds	Sanitation	No of Taps		Main water sources		
					W/T	Dsc/ T	Water b	Wells	Rain water.
Tureture	800	250	2-3 families	20	19	3	1	2	3
Madame	160	35	2-3 families	7	10	3	1	2	3
Wabada	90	11	2-3 families	3	8	2	1	2	3
Sepe	500	80	2-3 families	30	25	7	1	2	3
Katatai	270	40	2-3 families	10	15	5	1	2	3
Boze	70	12	2-3 families	2	5	4	1	2	3
Ipisio (1)	130	32	2-3 families	4	6	1	1	2	3
Ipisio(2)	650	130	2-3 families	5	6	1	1	2	3
Evirimapo	550	98	2-3 families	3	5	1	1	2	3
Sui	25	13	2-3 families	0	1	0	1	2	3
Iasa	100	15	2-3 families	4	2	0	1	2	3
Kiko	50	4	2-3 families	4	4	0	1	2	3
Erama	65	10	2-3 families	1	2	0	1	2	3
Romosapu	700	150	2-3 families	6	10	5	1	2	3
Elamtail	40	5	2-3 families	5	5	0	1	2	3

III. Appendix

Handout for the training program

WORLD VISION PNG – WATER DEVELOPMENT PROJECTS

TRAINING MANUAL FOR COMMUNITY BASED ORGANIZATIONS

ON

LEADERSHIP, BOOKEEPING, HEALTH & HYGENIC EDUCATION AND FACILITIES MAINTANCE SKILLS TRAINING.

TARGETTED PROJECTS:

1. BEREINA –C.P.
2. KWIKILA -C.P.
3. MUTZING – M.P.
4. DARU – WP
5. BINATURI – WP

Notes By:

James Wapa,

TRAINING MANUAL CONTENT

MODULE ONE:

LEADERSHIP TRAINING & DEVELOPMENT.

MODULE TWO:

BASIC BOOKKEEPING SKILLS.

MODULE THREE:

HEALTH & HYGENIC EDUCATION.

MODULE FOUR:

FACILITIES MAINTANCE SKILLS TRAINING.

MODULE ONE:

"LEADERSHIP DEVELOPMENT".

PART ONE: - *FUNDAMENTALS OF LEADERSHIP.*

1) *WHAT IS LEADERSHIP?*
2) *PURPOSE AND SCOPE OF LEADERSHIP WITHIN PROJECTS.*
3) *STRUCTURE AND FUCTION OF CBO LEADERS.*
4) *THE EXCUTIVE OFFICES AND DUTIES.*

PART TWO: - *LEADERSHIP AND RELATIONSHIPS*

1) *COMMUNITY RAPPORT.*
2) *CHANGES OF LEADERSHIP.*
3) *OFFICE PROCEDURES.*
4) *FURTHER DEVELOMENT & EXTENSIONS.*

"LEADERSHIP DEVELOPMENT"

PART ONE: - *FUNDAMENTALS OF LEADERSHIP.*

1. WHAT IS LEADERSHIP?

Objectives of this lessons:

1. To teach the participants on the fundamental aspects of Community leadership.
2. To distinguish the difference between Traditional leadership perspectives and Western perspective.
3. To be able to have a clear understanding on the local leadership practices.

Points for discussions:

- The Meanings of Leadership;

(a) Local meanings

(b) Outside Meanings

(c) A common understanding of leadership

- Different practices of leaders by different bodies.
- Some classic case studies.

Questions and issues:

1. Discuss the differences in the understanding of what leadership is as seen by the locals from those of the outsiders.
2. Work together in-groups to see what important areas in each perspective should the team keep.

2.PURPOSE AND SCOPE OF LEADERSHIP WITHIN PROJECTS.

Objectives of this lessons:

1. To introduce the Leaders of the newly formed CBOs on the purpose of the committee.
2. Understand their different functions in the committee.
3. What powers this committee has in relation to the WMC.

Points for discussions:

1. Explain the Purposes of the WMC and the newly formed CBOs.
    - Management of the Water facilities established by the Pilot study team and WV COs.
    - Proper use of the facilities by the people
    - Seek regular maintenance on the facilities.
    - Seek outside help as necessary.
    - Collect funds from the beneficiaries to be able to manage & maintain the Facilities.
    - The discussion making body for the Community at large.
2. Different offices and their functions in the committee.
    - Chairman.
    - Secretary.
    - Treasurer.
3. Powers of the WMC in each CBOs formed.
    - Water facilities management powers.
    - Decisions making powers.
    - Disciplining powers to vandals of facilities.

Questions and issues:

1. Discuss in-groups on the Purpose of the newly established CBOs, the WMC and how to solve problems if this fails in the course of time.
2. Why do we have a committee instead of an individual?
3. This may be a foreign imported system, thus are any other way of performing the same functions?

3. *STRUCTURE AND FUNCTION OF CBO LEADERS.*

Objectives of this lessons:

1. To understand the operational structure of the CBOs.
2. To have an informed understanding working relationship between the Members.
3. Clarify each member's function towards others served that members may easily get help.

Points for discussions:

1. CBOs operational Structure. (Refer to structure notes attached)

2. The web of relationship with the WMC in each of the locations.

   - Within the organisation,
   - With the community members,
   - Local Government Authorities (LLG),
   - Other outside agents such as Donors and NGOs.

3. Leadership responsibility to the members of the community.

   - Respect of the people
   - Keeping the community informed of the latest developments.
   - Lead by examples.
   - Honesty and transparency.
   - Gender fairness and balance.
   - People participation.

4. Others as necessary.

Questions and issues:

1. Discuss the case of a Community Based Organisation that will continue to function as the beginning.
2. Discuss the factors that contribute to mistrust amongst the members of the community and the committee members.
3.

4. THE EXCUTIVE OFFICES AND DUTIES.

Objectives of this lessons:

1. To explain and training the CBO leaders on the different offices in the executive of the organisation.
2. To discuss the details of the duties of the different offices in the organisations.
3. Being practical on the project about the lessons of the Important functions.
4. The newly formed CBOs will have to be given the dignity given in this function.

Points for discussions:

1. The different offices of the CBOs and their functions.

    (a) The chairman and his duties.
    (b) The secretary's duties and Powers.
    (c) The treasurer's Duty and Powers.

2. Practical aspect of the executive arm of the organisation.

    (a) Collection of fees and charges.
    (b) Making decisions in meeting for the beneficiaries.
    (c) Representing the whole beneficiaries.
    (d) Exploring avenues for further developments.

3. Open and transparency before each of the members of the executives.

4. Taking pride and working to give credit to the work done with Faith and action. That trusts yourself and your work.

Questions and issues:

1. Discuss how the different offices are different to each other.

2. Discuss the practical aspects and function of the offices and how they relate to each other.

PART TWO: - *LEADERSHIP AND RELATIONSHIPS*

1. COMMUNITY RAPPORT.

Objectives of this lessons:

1. Establish the essence of the Committee's public relation with the beneficiaries.
2. Communication procedures and process between the leaders and the executives.
3. Problem solution and resolution in Project matters.

Points for discussions:

1. What community rapport in community water management committees.

2. How to build rapport with the community between the WMC and the community's people as the beneficiaries.

3. Communication with understanding.

4. Work through the web of relation and identify the relationship amongst each of the community factions.

Questions and issues:

1. Discuss the case of a project chairman who does not work on building good relationship with the community.

   (a) What the likely results are.
   (b) How the WMC address such a situation.

2. If you were this Chairman, what would you do to improve on this condition?

2. CHANGES OF LEADERSHIP.

Objectives of this lessons:

1. To brief the WMC members on the importance of change for the progress from stage to stage as the project develops further.
2. To measure up to the performance on each management and see if it going in the direction and make alterations when necessary.

Points for discussions:

1. What is change?

2. Why do we need to make changes at times?

3. How can the CBOs make changes as necessary?

4. The processes of election during changes. (How changes?)

Questions and issues:

1. Discuss the likely results of a project that does not make changes over a period?
2. When is it a good timing for the project to make necessary changes?
3. Discuss any other matters that are of importance to leadership changes with the WMC for the established community Organizations.

3. OFFICE PROCEDURES.

Objectives of this lessons:

1. To introduce the WMC to the office procedures.
2. To familiarize the WMC and the executives on whom should act in certain situations.
3. Types of correspondences that an organization can write.

Points for discussions:

1. What are office procedures?

2. Important aspects of office procedures;

   (a) Calling and arranging meetings.
   (b) Collections of meeting agendas.
   (c) Running meetings.
   (d) Taking and keeping minutes.
   (e) Types of correspondences.

3. Keeping general office files;

   (a) Files and folders.
   (b) Records
   (c) Reports for the Water Management Committees.

4. Others as seen necessary.

Questions and issues:

1. Discuss the most fundamental and very important aspect of the office procedures. What if this is not thoroughly kept and followed?

2. Is there any other way the WMC can still perform this activity?

MODULE TWO:

"BASIC BOOKKEEPING SKILLS".

PART ONE: - *FUNDAMENTALS OF BOOKKEEPING.*

1. *WHAT IS BOOKKEEPING?*
2. *WHY KEEPING RECORDS?*
3. *WHO SHOULD KEEP RECORDS?*

PART TWO: - *PRINCIPLES, PRACTISES AND PROCEDURES.*

1. *TYPES OF BOOKS TO KEEP.*
2. *ENTRIES IN EACH BOOK.*
3. *REPORTING.*

PART THREE: - *RULES AND CONTROL MEASSURES.*

1. *RULES & REGULATION.*
2. *DISPLINE STANDARDS.*

"BASIC BOOKKEEPING SKILLS"

PART ONE: - *FUNDAMENTALS OF BOOKKEEPING.*

1. *WHAT IS BOOKKEEPING?*

Objectives of this lessons:

1. To introduce the WMC and the leaders of community based organisations to the meaning of book keeping.
2. To clarify the different concepts and terminology used in the field of accounting.
3. To help reconcile in the thought pattern of the members the differing confusions they may have concerning what it may mean to keep records.

Points for discussion

1. The meaning of book keeping?

- Own Meaning _____
_____
_____

- Simplified meaning: _____
_____
_____

2. The differences of terminology?

    - Bookkeeping.
    - Accounting.

3. The basic reasons for keeping money records.
    -

Questions and issues:

1. What does mean to keep books or book keeping? Discuss how this can relate to the water project we are working on how bookkeeping can be practiced in the projects.

2. *WHY KEEPING RECORDS?*

Objectives of this lessons:

1. To introduce the fundamental reasons for keeping records in projects.
2. To help the participants an informed knowledge on the problems that they may face if no proper records.
3. Prepare the treasurers of the WMC for the work of maintaining the financial records of the organization.

Points for discussion

1. The basic reasons for keeping good financial records for the WMC.

   - Proper money records will help to know what money is coming and how this it is used. On project purposes.
   - It will help in finding out recording mistakes.
   - Provides security for person keeping records from misunderstandings or misuse claims.
   - It will help to keep monies from theft or misuse by people who may be tempted to do so.
   - Provide good grounds for keeping outside trust.

2. Likely problems project and CBOs may face if no proper records.

   - People will not contribute if they understand that no proper records are being maintained and kept.
   - When people do not contribute it will be difficult for Water taps and facilities to be maintained.
   - It will be hard to convince outside help if there is no good proof of your work, especially with handling money.

3. Other reasons that the leaders may see it as necessary.
   i. _____
   _____
   _____

Questions and issues:

1. Discuss the reasons for keeping good financial records and work on other reasons that the leaders may see it necessary.
2. List the major reasons for each of their areas or projects.

3. *WHO SHOULD KEEP RECORDS?*

Objectives of this lessons:

1. To teach the usability of the principles in other areas of life, apart from the project purposes.
2. The WMC of the project should also be encouraged to keep own records to reconcile and check with the official record.
3. Highlighting the entries by the treasurer of the WMC.

Points for discussion

1. Other uses of keeping good records.

    - Family or personal money.
    - Small sales businesses.
    - Church finances.
    - Women's Group
    - Youths group fundraising endeavors.

2. Why all committee members should keep their own records for the project matters.

3. Every member of the committee member representing a group of people should keep their own record rather than relying on the treasurer's main records.

4. Some of the essential functions of the treasurer during the time of recording.

    - Remember the date when money is given.
    - State the reason why it was paid.
    - The amount of how much was paid.
    - Signature of person doing payment.
    - State the balance after this recording.

5. What the treasurer should do at every meeting (Update the committee)

Questions and issues:

1. Which is the most important reason for keeping money records? Why? Explain your reason for your thoughts.
2. Discuss the case where there is a missing of records and the treasurer does not know the details of the missing.

PART TWO: - *PRINCIPLES, PRACTISES AND PROCEDURES.*

1. *TYPES OF BOOKS TO KEEP.*

Objectives of this lessons:

1. Introduce to the WMC the basic types of recording needed for this project purpose.
2. To provide examples of entries needed for this project.
3. Hands on practice for making entry by exercises.

Points for discussion

1. The basic types of books for the project.

   - The book to record the collection per family or household.
   - The book to record all transaction of the project.
   - Book to record the meetings minutes / Resolution (Secretary's entries)

2. Examples of entries:

   - Book 1- Family/ Household collection record.

     (Refer to separate format attached)

   - Book 2 – Monthly collection and payment Transactions

     (Refer to separate format attached)

3. Practical exercises.

Try doing the exercises given in separate sheets of paper.

Questions and issues:

1. Discuss the most difficult of the books explained and given the reasons why it is all that difficulty.
2. How can the project implementing organisation help with furthering this use in this project?

2. *ENTRIES IN EACH BOOK.*

Objectives of this lessons:

1. To familiarize with the type of entries in the books kept for the project purpose.
2. Further learning on the kind of entries that are usable for the project purpose.
3. Explore the different ways this can be done in one book from the other.

Points for discussion

1. The different types of entries that can be made in each of the books.

Book 1 - Family/ Household collection record.

- Dates column
- Purpose Column
- Amounts column
- Balance column

Book 2 – Monthly collection & Payment transactions.

- Date column
- Purpose / Reason column
- Ref/ Index of Household/ Family column.
- Amounts column
- Balance column
- Person receiving payment Column.
- Remarks column

2. Examples of entries.

(Work together on the board for each of the books 1 & 2)

3. Explain the differences of the two books.

Questions and issues:

1. Do further exercises on the topic. Give as groups assignments.
2. How will you as the treasurer explain to someone from the outside who want get more information about you records?

3. *REPORTING.*

Objectives of this lessons:

1. To teach the WMC on the format of reporting from the treasurer so that they are aware of the updates of the project.
2. So that the treasurer is trained on the way of preparing the financial reports for the WMC and other interested parties.
3. To understand the importance of reporting for sustainability, transparency and trustfulness.

Points for discussion

1. The basic reasons for preparing financial reports;
   - Satisfaction of accomplishment.
   - Provides avenue for making good decision.
   - Helps to learn from experiences.
   - Catches outside interests.
2. Ways of preparing reports.
   - Format.
   - Structure.
   - Contents.
3. What reporting helps the project in terms of rapport with communities' among the WMC and the beneficiaries.

Questions and issues:

1. What are some of the main reason for preparing good reports and what are the consequences if these are ignored?
2. There are many types of reports, can you report on the case of a fund used in the area of a women's fund raising activity.
3. Discuss the main ways in preparing financial reports.

PART THREE: - *RULES AND CONTROL MEASSURES.*

1. *RULES & REGULATION.*

Objectives of this lessons:

1. To set guidelines as to how funds can be used on project purposes.
2. To help the WMC to be prepared to set their own thinking in line with setting priorities where money should be spent and where it should not be spent.
3. Help to work through with them in setting some control measures in locally raised funds.

Points for discussion

1. Why projects and CBOs need pre set guidelines or parameters on locally raised funds by the people.

2. Setting the priority areas for each of the projects and how they can use the limited resource to obtain maximum benefit from it.

3. Setting examples of guidelines and bringing them through to doing it actually by themselves.

Questions and issues:

1. Discuss with the participants the issues that could be avoided and solved when a projects sets financial guidelines according to its project priority of goals.
2. If this case is not addressed what is the likely result that we may see and come up within the WMC?

2. *DISPLINE STANDARDS.*

Objectives of this lessons:

1. To help the WMC to be prepared for the worse in the event that something unexpected happens.
2. The WMC will be able to understand the importance of taking immediate action when thing do not seem to work well.
3. To make members of the WMC to be accountable to each other and they keep each other's trust without betraying it.

Points for discussion

1. Why it is important to set the action to take when something happens which is not for the good of the project goal

2. How each could approach the problem.

3. Many different approaches can be taken, but first the Melanesian way of conflict resolution.

4. Who will be responsible to bring such a case and what local authorities can be used.

Questions and issues:

1. Discuss the issues that could be avoided and solved when a project sets discipline standards for those who could not abide to its project priorities.
2. If this case is not addressed what is the likely result that we may see and come up within the WMC?

MODULE THREE:

HEALTH & HYGENE EDUCATION

WATER

1. GENERAL CHARACTERISTICS

Practically all the water that appear in Public, or private supplies has been exposed to pollution while falling as rain, running over the ground surface or in streams, or percolating through the soil.
As population grows, there is the increase in the demand of water, whether it be the use of streams or other bodies of surface water. At the same time, there is the increasing concern about safe water supplies since the amount available in any area may be fixed by rainfall, geography, topography, and geographical boundaries.

IMPURITIES OF WATER:

Pure water is not found in nature. As rain or snow falls toward the earth it absorbs dust and such gases as carbon dioxide and oxygen. After reaching the ground surface, it is exposed to pollution by organic matter, including human excreta in populated areas.

At the ground surface, the water absorbs more carbon dioxide from vegetation as well as nitrogenous and other material from decomposed organic matter, and it runs off into a stream, it takes with it a considerable amount of material in suspension, such as silt, clay, and sand.

The water which seeps into the ground is filtered as it proceeds to the zone of saturation, but it may or may not receive sufficient filtration to remove impurities. As it percolates through soil or rock, it dissolves and carries with it various minerals, the amount depending upon the distance of percolation and the mineral composition of it's environment. As percolation continues, the original suspended impurities, including microorganisms, tend to disappear, until the water which is obtained from deep wells may be expected to be free from all impurities except those dissolved.

Common Impurities of Water:

1. *Entrained gases*

Examples of these are carbon dioxide, organic compounds, hydrogen, sulfide, methane, oxygen and nitrogenous gas.

2. *Dissolved minerals:*

Examples of these are calcium, magnesium sodium, iron, and manganese and their carbonates, bicarbonates, hydroxides, chlorides, sulfates, fluorides, nitrates, and silicates, alkyl benzene sulphonate from detergents and synthetic organic from insecticides and pesticides.

3. *Suspended and colloidal materials:*

Such as Bacteria, algae, fungi, protozoa, silt, and colloidal matter causing water to be acid or have colour.

4. *Radio active materials:*

These are radio activity imparted by contact with radiation sources, by entrainment of radioactive substances from mining or processing of ores or by waste from industrial use of radio activity.

The type of treatment facilities needed to render water palatable and satisfactory for it's intended uses is determined by the types of impurities present and their concentrations.

2. WATER AND DISEASES

Water Related Disease and the mode by which the diseases are spread. There are four (4) main categories:

1. *Infections spread through water supplies:* These are the true water - borne diseases.
2. *Diseases due to lack of water for personal hygiene:* These are described here as water - washed diseases.
3. *Infections transmitted through and aquatic animal:* Water - based diseases.

4. *Infections spread by insects that depend on water:* Referred to as diseases with water - related insect vectors.

Water - borne Diseases

These diseases are carried by water that is polluted with human or animal faeces. The most important of the water - borne diseases are those of the intestinal tract, they include ***typhoid fever***, the ***paratyphoids***, ***dysentery***, ***infectious hepatitis*** and ***cholera***. A few parasitic worms may also be disseminated by water. All are due to organisms which are found in the intestinal discharges of patients or carriers and which have found their way into water by some means.

Public health literature records many water - borne typhoid fever epidemics caused by the entrance of intestinal discharges from persons having typhoid fever or from carriers of the disease into surface sources of supply, shallow wells, or springs and wells penetrating limestone formations.

Brief Summary of the Diseases

1. **Typhoid Fever:**

How typhoid fever is spread

Excreta from	Fingers		
patients		Foods, milk	Mouths
or	Flies	vegetables	of well
carriers		Oysters etc	persons
	Water		

2. **Paratyphoid Fever:**

These are 3 varieties of paratyphoid known as the A, B, and C types according to the causative organism (salmonella paratyphi, s. schottmuelleri, and s. hirschfeldi, respectively).

Symptoms are that to typhoid, although much milder in their effects.

Epidemics occur because of infected water, milk and other foods, and carriers are also involved.

Preventative and investigative methods are similar to those of typhoid.

3. **Dysentery:**

There are 2 types of dysentery

a. Bacillary dysentery

b. Amoeba dysentery

A. Bacillary dysentery:

This is caused by bacilli of the shigella genus. It occurs widely and often epidemic. Bacilli appears in excreta for several weeks after apparent recovery, but there appear to be no permanent carriers, no immunisation by attack of the disease or by vaccination.

Methods of transmission and control are similar to those of typhoid fever.

B. Amoebic Dysentery:

Entamoeba histolytica forms cyst, which are present in human waste. In the cyst form, the amoeba exists outside the body until it dies or is swallowed by a susceptible animal or person. The cysts are particularly resistant, emphasising the importance of sanitary measures in preventing the spread of the disease. Adequate sewage disposal, water treatment, fly control, personal hygiene of food handlers. The cysts are removed from water by the standard treatment, coagulation, filtration, and disinfection. There is no immunisation.

4. **Hookworm Disease (Ancylostomiasis)**

There are several species, however 2 most important ones that infect man are, Ancylostoma duodenale, and Necator americanus. The adults live in the intestines, fastening themselves to the walls by means of their strong mouth parts. The biting injures the walls and causes loss of blood. In addition, there are toxins liberated which are responsible for anaemia.

The adult worm lives for 6 to 8 years, spending all its adult life in the intestines. The female worms produce large numbers of eggs that leaves the host in the faeces. The eggs hatch within 24 hours if temperature and moisture conditions are favorable. The larva is able to move about to a limited extend and feeds on the excrement. It molts once, and 4 to 5 days after hatching, it molts fro the second time, but remains within the loose skin from which it has detached itself. During this period, the larva becomes infective and is able to enter a victim at the first opportunity. It may exist in this stage for as long as 6 weeks, although in general it's life is not so long.

Should a bare footed person step on soil in which the larva is present, the larva clings to the skin and starts to bore its way in. The larva makes it's way into the lymph vessels and veins and is carried

with the blood to the heart and finally to the lungs. It leaves the blood vessels of the lungs and penetrates to the air passages, thus obtaining a clear route up the bronchial tubes and windpipe to the throat. From the throat it is swallowed, going to the stomach and intestines. This journey requires about 10 days, and during the process, the worm becomes sexually mature.

While the great majority of infestations are obtained through the barefoot, the worms may also enter through other parts of the body. In the mines, infestation is frequently obtained through contact of the hands with infected soil or with ladders that have received infective material from shoes. It also is possible to become infected through the mouth by eating vegetables which have been grown in fields fertilised by human excreta, and possibly by drinking infected water.

5. Infectious Hepatitis (Jaundice)

Infectious Hepatitis is caused by a virus. The virus is present in the blood and faeces of an infected person. Infectious hepatitis is clinically indistinguishable from serum hepatitis, which is transmitted by the inoculation of infected human blood plasma, serum, or thrombin or by use of syringes contaminated with the blood of an infected person.

Infectious Hepatitis is world wide in distribution, appearing sporadically and in epidemics. It is most common in rural areas and among children and young adults. Lifetime immunity is believed to be conferred. The gastro-intestinal route of infection and that by blood contamination have been proved, and epidemics have been related to contaminated water, milk and food, including shellfish. The presence of the virus in nose and throat discharges is possible.

WATER-BORNE diseases are those carried by water that is polluted with human or animal faeces. If those who pollute the water are suffering from intestinal infections, (incl. Cholera and typhoid), those who drink the water will ingest the organisms causing these infections, and may become ill. Control of such infections depends on improving water QUALITY.

Water-Washed Diseases

These are diseases due to personal hygiene. If people have very little water, either because there is extremely little water available or because it is to far away and cannot be carried home in quantity, then it may be impossible to maintain reasonable personal hygiene. There may be too little water for washing oneself, or food utensils or clothes. Remaining unwashed not only allows skin infections to

develop unchecked but also makes it easier for intestinal infections to spread from one person to another on dirty fingers-indeed, all intestinal infections already described as "water-borne" may also be spread this way. In practice, these are an important group of diseases in the tropics and may be called the WATER-WASHED infections as they result from lack of water for washing or personal hygiene. Clearly their prevention depends on availability, access to, and QUANTITY of domestic water rather than it's quality.

Water-Based Infections

In the tropics there are some infections that are not spread passively from person to person in the water. The parasite eggs or larvae which reach water are not directly infective to man, but are infective to specific invertebrate water animals, chiefly snails and crustaceans. Development takes place within these intermediate hosts from which, after a period of days or weeks, further larvae mature and may be shed into the water. These larvae are infective to people drinking or having contact with the water. Such worms may be called WATER-BASED infections, and special measures to remove the water snails or other hosts from the water, or other special action is needed to make the water safe.

Water-Related Insect Vectors

There are many tropical infections spread by biting insects. Most of these, notably the mosquitoes, breed in pools or other open water, and sometimes even in household domestic water containers. Tsetse flies are active near to water, so the most vulnerable people are those who, lacking piped supplies, must visit the water source very frequently. These WATER-RELATED INSECT VECTORS may sometimes be affected by improvements in domestic water supplies.

Classification of infective diseases in relation to water supply

Category	Examples	Relevant water improvements
1. Water-Borne Infections:		Improve Quality
a. Classical	• Typhoid • Cholera • Bacillary Dysentery • Amoebic Dysentery	Aim for maximum microbiological quality of water
b. Non-Classical	*Infective hepatitis *Gastroenteritis	Improve microbiological quality of water
2. Water-Washed Infections:		Improve Quantity
a. Skin and Eyes	• Skin sepsis and ulcers • Conjunctivitis • Scabies • Yaws • Leprosy	Provide a greater volume of water, facilitate access and encourage it's use.
b. Diarrhoeal Diseases	• Bacillary Dysentery • Amoebic Dysentery • Infective Hepatitis • Gastroenteritis	
3. Water-Based Infections:		Specific Measures:
a. Penetrating Skin	Schistosomiasis	Reduce contact with infested water
b. Ingested	Guinea-Worm	Protect water source
4. Infections with Water-Related Insect Vectors:		
a. Biting near water b. Breeding in water	• Sleeping sickness • Onchocerciasis	Clear vegetation Avoid need to visit source Provide reliable supply
	• Yellow fever	
5. *Infections Primarily of* Defective Sanitation:	• Hookworm (to some extent, most diseases in previous categories also)	Provide sanitary faecal disposal

- These diseases may be spread by any process which allows material from human faeces to be ingested, i.e. they may spread *either* as water-borne or as water-washed infections.

(Municipal and Rural Sanitation - Ehlers and Steel -6th ED)

3.USE OF WATER AND IMPROVEMENT OF HEALTH

Objective/Goals of Water:

1. Improvement of Health
2. Saving in time and energy which would result from people having water nearer their homes, so that the work load involved in carrying water home would be reduced.

Technical Interventions

A. *Household Water and Storage*

The principal health risk associated with household water storage is the case of re-contamination during transport and storage, particularly where the members of a family or community do not all follow good hygiene practice. Good hygienic measures include the following.

- Careful storage of household water and regular cleaning of all household water storage facilities.
- Construction, proper use, maintenance of latrines
- Regular hand washing, especially after defecation and before eating or preparing food.
- Careful storage and preparation of food.

Water that is clean from the supply or has been treated in the household needs to be protected from re-contamination. The following precautions and considerations are important.

1. Location of Storage Vessel

The storage vessel should be placed above ground level to restrict access by children and animals. It should be preferably be placed in a shaded position to keep the water cool, and should be accessible to users and for refilling.

2. Design of Storage Vessel

The storage vessel should be designed to reduce the risk of contamination, it should have a secure, tight-fitting lid, be robust enough to withstand rough handling without cracking, and be easy to lift from the ground and carry back to the storage point after filling. Stored water may be kept cool by using earthen ware jars or pots. These allow some water to evaporate, which has a cooling effect. Containers should be easy to fill and clean, so that contact with hands is minimised.

3. Removal of Water

It should be possible to remove water from the container hygienically, with no contact between hands and the water. Water is commonly withdrawn by means of a cup. This may be acceptable where the cup is not used for any other purposes, is cleaned regularly, and is stored where contamination cannot occur. This cup can be used to transfer water to another cup for drinking.

The most elements of water storage can be summarised as follows:

1. Use a clean water source or treat the water either at home or in a storage tank.
2. Store water in an earthenware or plastic container with a lid.
3. Store the water container at a height that puts it beyond the reach of children and animals.
4. Fit a tap to the container for drawing clean water in order to prevent contamination by dirty cups, ladles, or hands.

(Guidelines for Drinking-Water Quality 2nd Ed Vol 3

Surveillance and Control of Community Supplies (WHO)

4 .Practical Actions To Protect Water Sources From Contamination (Catchment)

1. Fencing off catchment area from animals, by keeping animals out.
2. Make sure potential sources of pollution, such as defecation fields or trench latrines, are located at least 20-50 meters away and downhill for water sources.
3. Protect catchment areas or springs by building protective fences.
4. Protect surface water by stopping people using the bank or shore for defecation-cut down vegetation cover, appoint water guards or display picture signs.
5. Create 'distinct use zones' upstream for water collection for drinking, down stream for bathing, washing clothes and utensils, and further downstream for watering animals.

6. Appoint a rota of people to take charge of keeping water sources well maintained.

5. Sanitation

Prevention

These diseases are still common in almost all parts of PNG, as untreated surface water supplies or individual wells are still used without consideration to sources of contamination. In order to contribute to the decline of these diseases, there has to be the increase knowledge of water treatment and recognition of the need for protection of water supplies.

Other factors may include improvement of waste disposal. This is the most important factor in the control of the diseases as this eliminates soil pollution by provision of proper toilet facilities. Hookworm eggs may survive as long as 5 months in the soil. Defecation fields/toilets should be 20-50 meters away for water sources or shelters, but near enough to be easily reached, especially by children.Other prevention and control measures are the development and proper immunisation techniques and their application during epidemics or when the sources of water become suspect. Sanitation of water supplies cannot be neglected.Substances such as petrol, diesel, fuel, pesticides and solvents should not be stored or used near water facilities (sources, catchments, storage tanks etc).

Containers that have been used for the storage, transport, or handling of these substances should not subsequently be used to store water intended for human consumption, even after thorough cleaning. Prevent mosquitoes from breeding by avoiding collection of stagnant water around the source. Wash regularly to avoid any form of water-washed infections as they result from lack of water for washing or personal hygiene. It the quantity of water is available, personal hygiene should be encouraged.

Note:

* Community participation is very vital

* Build up Knowledge of the ways in which water-related diseases might be spread in the local conditions with existing behavior patterns.

TRAINING PROGRAM

Training progression notes

SESSION ONE: FUNDAMENTALS OF LEADERSHIP.

Topic 1: **What is Leadership?**

Duration: **30 minutes.**

Materials: Sheet of Butcher paper, 5 Stick on pads, Markers, sticking tapes and chalk boards with Duster.

Process: **Wanem em lidasip o wanem minin bilong lidasip?**

(Explain the question and ask participants to respond in their own understanding of the meaning of leadership)

- Askim ol long raitim long stick on pad na kam putim long butcher pepa / Blak bod.
- Olgeta lain i putim pinis, yu wantaim ol lain ikam wantain na putim igo long grup olsem; Famili, sios na Komuniti (Gov. LLG, Viles o wantok) minins.
- Toktok moa long minin bilong ol ples lain. (Stress and facilitate further discussion on the Local meanings of Leadership)
- Pasim toktok long wanpela minin bilong lidaship.
- **Possible answers;**
  - Save toktok igo pas, helpim planti lain, tingting long olgeta lain, inonap kirapim hevi, em save tingting long ol arapela lain moa long em yet, em fren bilong olgeta lain

- **SUMMARY:**

• "LIDA EM WANPELA MAN O MERI WE OL PIPEL IGAT BIKPELA RISPEK (RESPECT) LONG EN. EM ISAVE GO PAS LONG OL ARAPELA LONG TOKTOK NA SAVE TINGTING GUT BIPO LONG EM I TROMOI TOK, NA EM IGAT BEL NA LAIK LONG HELPIM OL ARAPELA".

(Brukim olgeta long grup na discuss)

Discussion

Questions: Sapos ol pipel i lukim wanpela man save tok bikmaus tasol em i busi long olgeta de long work bilong en yet, maski em bisi long wok bilong em yet tasol ol pipel makim em. Wanem kain kaikai bai kamap long dispela kain lida?

Feedback: Askim olgeta wanwan grup tokaut long discision bilong ol.

Closing remarks: (Facilitator to make remarks)

What is Leadership?

Leadership may mean different to different people but the basic and generalized meaning for a simple layman to understand is depicted by *the word* itself. That is to "Lead". What scope this cover and how it is done may vary from society to society but the fundamental meaning remains as *to lead.*

A Christian church may see leadership as leading followers of Christ in the way of the Lord Jesus' truths, principles and practices.
For profit-making companies, it may mean leading a team towards earning better returns after a period of business.
To the Government, it may mean different to that of leading a small group of people. Family Leadership may be different to what it means to run a public organisation.

When considering the realities of working with Melanesian villages or communities, some informal structure exists that govern the communities and how they help the society to function the way they do. This kind of leadership varies from society to society. How they practice in providing leadership may vary as well.

Thus, it is important for facilitators who run leadership training workshops to begin by facilitation a discussion to extract or bring to clear conscience the communities' own understanding of what Leadership mean and how it is practiced.
Their reasons for thinking in this way must be analysed well to know and to provide a good platform for facilitating a well-defined understanding of leadership in the Local people's thought patterns.

If one is to cause a people to change, their way of doing things it is important to work towards changing their way of thinking. Practice is a reflection of the way one thinks therefore, it is important to understand the practice. Looking at the possibilities of enhancing or building towards an informed and analysed way of doing things can be by working at the people's thought patterns.

When we talk about sustainability of projects, such as the water supply project. We are faced with the realities of creating an avenue for the people to take on the leadership role over time when the outside development agents have left. In such case local leadership may be a need. For that to happen development workers could not just go out and train the local, in most cases illiterate leaders, with a concept that is foreign to their thinking. This takes us back to the importance of facilitating the process of local leadership principles. Building them from what they Know and how this local meaning be used to provide leadership in the project such as a Public water taps / facets.

Topic 2: **Purposes of WMC and its Leadership marks in this project?**

Duration: **30 minutes.**

Materials: Sheet of Butcher paper, 5 Stick on pads, Markers, sticking tapes and chalk boards with Duster.

Process: **Bilong wanem as na yumi ibin kamapim dispela Wara Manegmen Committee (WMC)? Wanem wok bilong yupela ol i stap long WMC?**

(Explain the question and ask participants to respond in their own understanding of the purpose WMC and their involvement in it)

- Askim ol long bekim long tingting bilong ol na raitim igo daun long blak Bod.
- Purposes:
  - Lukautim na ronim wara dispela projek putim.
  - Tokim ol manmeri na pikinini long usim gut wara na no ken westim nabaut.
  - Painim helpim long ol arapela lain autsait.
  - Bungim moni bilong baim wara bill na tu bilong stretim hevi sapos i kamap long wara.
  - Makim maus bilong ol manmeri. (Lapun, pikinini, yangpela, meri, ai pas, maus pas na moa yet).

— Wok bilong executive bilong Komiti. (Askim olgeta yet long toktok long dispela ol wok bilong ol)

- Chairman
- Secretary na
- Treasurer.

— Wanem kain pawa ol dispela lain igat insait long dispela komiti?

- Pawa bilong mekim toktok bilong olgeta lain long Compound.
- Ol iken mekim descision long ol manmeri i bihainim.
- Ol igat pawa long kisim ol husait lain i laik bakarapim samting igo long Kot.

Discussion **(Go long grup na toktok)**

Question: **Toktok long hao Komiti bai stretim hevi sapos hevi I kamap namel long kominiti long wara?**

Pasim toktok: (Facilitator to close with remarks)

Topic 3: **The Structure of WMC Leadership?**

Duration: **30 minutes.**

Materials: Sheet of Butcher paper, 5 Stick on pads, Markers, sticking tapes and chalk boards with Duster.

Process: **Wanem kain lidasip structure WMC igat?**

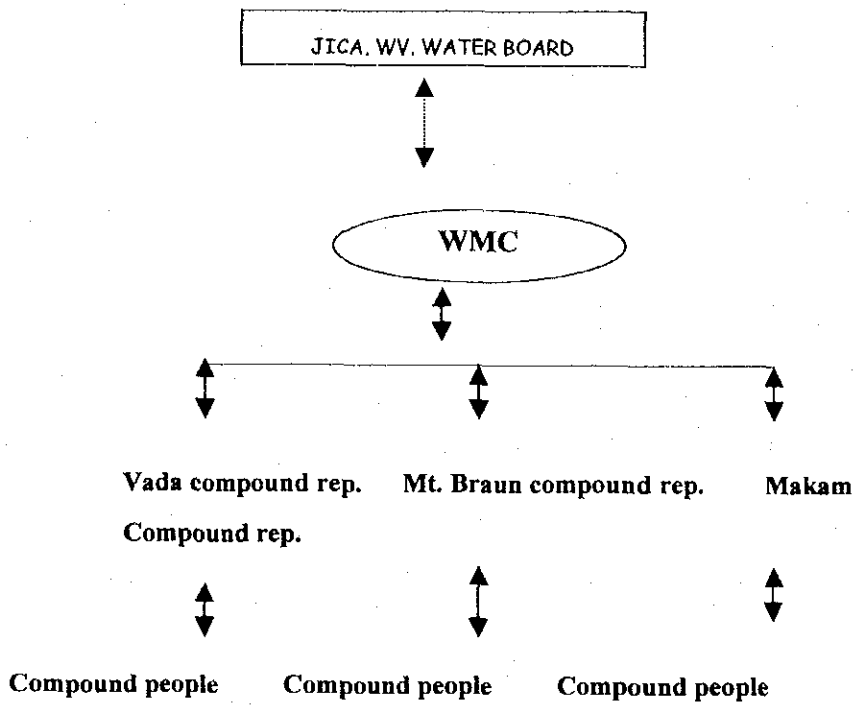
(Explain the question and ask participants to respond in their own understanding of the structure of the WMC)

— Askim ol long raitim long stick on pad na kam putim long butcher pepa / Blak bod.

— Olgeta lain i putim pinis, yu wantaim ol lain ikam wantain na paitim toktok long en.

— Toktok moa long minin bilong ol ples lain. (Stress and facilitate further discussion on the understanding of the structure)

— Pasim toktok long wanpela tingting tasol long structure.



(Brukim olgeta long grup na discuss)

Discussion

Questions: How bai yumi helpim ol nupela lain i save olsem dispela kain structure i stap long ples na i rominim dispela wara saplai?

Feedback: Askim olgeta wanwan grup tokaut long discision bilong ol.

Closing remarks: (Facilitator to make remarks)

Topic 4: **Executive office and its duties.**

Duration: **30 minutes.**

Materials: *Sheet of Butcher paper, 5 Stick on pads, Markers, sticking tapes and chalk boards with Duster.*

Process: **Wanem em executive office na wanem wok bilong ol?**

(Explain the question and ask participants to respond in their own understanding on the meaning and the duties of the executive arm of the WMC.)

Sampela tingting ol inap kamapim:

- Go pas long actionim ol tingting bilong WMC
- Signim ol pepa bilong makim maus bilong WMC,
- Go long ol mitin we olgeta lain long komiti nonap long go.
- Toktok wantaim ol kainkain office nambaut (Olsem Member, NGO o D/A o elcom o business haus o villes finance)
- Putim long pepa olgeta tingting bilong WMC insait long mitin.
- Raitim pas igo long ol kainkain office nabaut.
- Pasim tok long nupela projects (Eg: Trade store bilong WMC)
- Ol bai igat wok long toksave long olgeta wok bilong WMC.
- Putim repot long miting bilong wok igo long WMC na pipel.

(Brukim olgeta long grup na discuss)

Discussion

Questions: Wanem wanpela nem we yumi inap givim long dispela bodi?
Mi ting olsem dispela nem, executive em bikpela tumas na ol lain long ples bai hat long tingim minin bilong en.

Feedback: Askim olgeta wanwan grup tokaut long discussion bilong ol.

Closing remarks: (Facilitator to make remarks)

Topic 1: **What kinds of relationship are important?**

Duration: **30 minutes.**

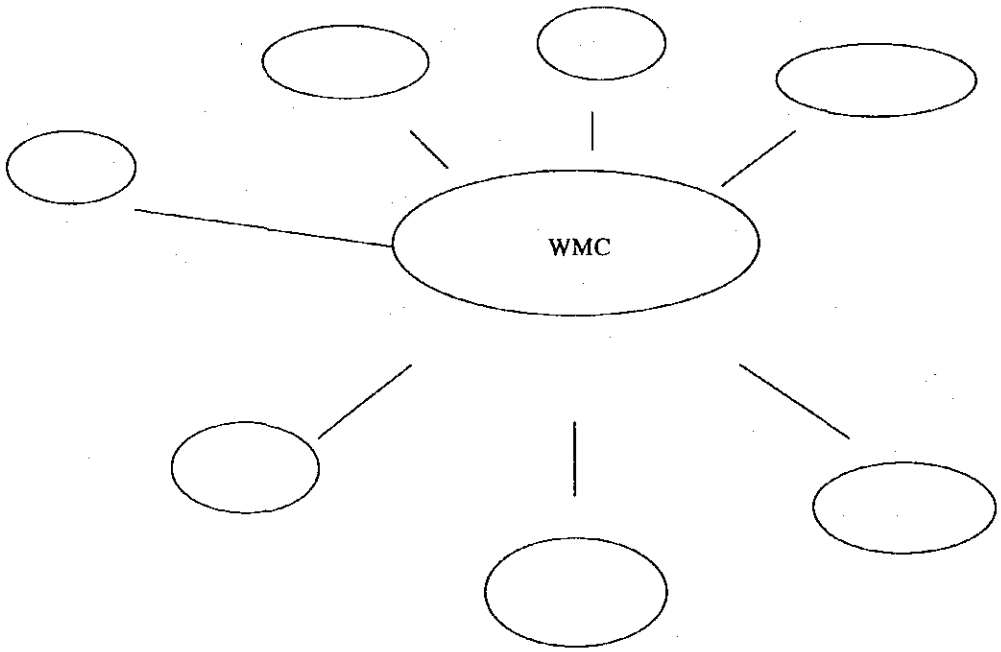
Materials: Sheet of Butcher paper, 5 Stick on pads, Markers, sticking tapes and chalk boards with Duster.

Process: **Wanem kain relationsip o wok bung wantaim WMC mas kamapim?**

(Explain the question and ask participants to respond in their own understanding of the meaning of leadership)

- Askim ol long raitim long stick on pad na kam putim long butcher pepa / Blak bod.
- Olgeta lain i putim pinis, yu wantaim ol lain ikam wantain na putim igo long "web of relationships".
- Toktok moa long minin bilong ol ples lain. (Stress and facilitate further discussion on the relations of Local Leadership)

WEB OF RELATIONSHIP:



(Brukim olgeta long grup na discuss)

Discussion

Questions: **Bilong wanem yumi mas buildim gutpela relatioship?**

Feedback: Askim olgeta wanwan grup tokaut long discision bilong ol.

Closing remarks: (Facilitator to make remarks)

Topic 5: **What is Book keeping?**

Duration: **30 minutes.**

Materials: Sheet of Butcher paper, 5 Stick on pads, Markers, sticking tapes and chalk boards with Duster.

Process: **Askim ol manmeri long tokaut long ol experience bilong ol na wanem save ol igat long asin bilong lukautim moni.**

(Explain and ask participants to respond in their own understanding of book keeping)

- Askim ol long raitim long stick on pad na kam putim long butcher pepa / Blak bod.
- Olgeta lain i putim pinis, yu wantaim ol lain ikam wantaim na toktok long dispela ol tingting bilong ol.
- Toktok moa long ol gutpela sait bilong lukautim moni.
  - Em i save helpim long tingim bek long ol samting yu mekim.
  - Em iken soim ol husait i save baim wara na husait ino baim.
  - Dispela bai helpim olgeta long igat trust namel long yumi yet.
  - Rekod bai soim wanem moni ikam insait na wanem moni igo aut.
  - Em tu bai soim was as na dispela moni i kam na bilong wanem em i go aut.
  - Em i olsem sekiriti bilong yu husait i lukautim moni bilong publik.

(Brukim olgeta long grup na discuss)

Discussion

Questions: Dispela kain we long putim ol samting igo daun long pepa em I gutpela pasin olsem na yupela ting husait ol arapela lain inap long bihainim ol dispela pasin?

Feedback: Askim olgeta wanwan grup tokaut long discision bilong ol.

Closing remarks: (Facilitator to make remarks)

What is Bookkeeping?

Bookkeeping & accounting play the same function in the field of keeping records on financial usage over certain periods.

Businesses, organisations and individuals all keep some types of records to remind them of what they actually did using their money that may be available. In this way people can know whether or not they are making use of their available normally limited resources.
Therefore, when we use the term "bookkeeping" we are not talking about keeping a big Library in Boze or Daru. Bookkeeping is about keeping good record of money entrusted to you, the WMCs and how those were used. The communities trust you thus, you will have to do the work and show them that you actually are worth their trust by maintaining good records.

Discussing Basic Bookkeeping principles and practices will open the water management committees to the wide world of record keeping. We discuss this topic in the workshop because you will have to manage the funds for the sustainability of the water project that are built.

The best way to have a conscious mind on the subject is to bring to one common understanding the experiences and knowledge in our own individual lives. We must reconcile our own understandings with those others about the subject.

When we have reconciled our thoughts with those of the others now we can begin with a definition that is acceptable for all in this workshop.

Bookkeeping

Is keeping proper records of finance both that are coming into the organisation and those that are going out as expenses.

Topic 6: **What types of books to keeping?**

Duration: **30 minutes.**

Materials: Sheet of Butcher paper, 5 Stick on pads, Markers, sticking tapes and chalk boards with Duster.

Process: **Insait long dispela projek yupela ting mipela mas putim hamas book rekod? (Basically two kinds of records)**

(Explain and ask participants to respond in their own understanding of book keeping)

i. Record bilong wanwan famili fi long wara projek.
ii. Rekod bilong olgeta moni kam na moni igo aut long wok bilong wara.

— Toktok moa long tupela kain.

— Tupela bai igat wanem ol kain samting bai stap insait long rekod?

• Rekod bilong ol famili fi;

• Nem bilong famili,

• Namba bilong ol manmeri na pikinini olgeta.

• Compound we ol istap.

• Haus namba.

• Det.

• Toksave / details.

• Moni in

• Moni Aut

• Total/ balance

• Mak mak o signature.

Lukluk long eksable daun bilo.

Nem bilong famili:

Namba bilong ol famili member:

Compound nem:

Haus namba:

Deit	Toksave / details	Moni namba		Total balance	Mak mak o signature
		Kam in	Igo aut		

• Rekod soim moni go aut na kam insait long wanpela mun

• Soim wanem mun bilong yia.

• Deit,

• Toksave / details.

• Moni in

• Moni Aut

- Total/ balance
- Mak mak o signature.

Lukluk long eksable daun bilo.

Mun bilong yia: _____

Deit	Toksave / details	Moni namba		Total balance	Mak mak o signature
		Kam in	Igo aut		

(Brukim olgeta long grup na discuss)

Discussion

Questions: Dispela kain we long putim ol samting igo daun long pepa em I gutpela pasin olsem na yupela ting husait ol arapela lain inap long bihainim ol dispela pasin?

Feedback: Askim olgeta wanwan grup tokaut long discision bilong ol.

WATER MANAGEMENT COMMITTEE (WMC)

REKOD BILONG FI MONI KAM LONG OL FAMILI

Nem bilong famili: _____

Namba bilong ol famili member: _____

Ples nem: _____

Deit	Toksave / details	Moni namba		Total balance	Mak mak o signature
		Kam in	Igo aut		

WATER MANAGEMENT COMMITTEE (WMC)

REKOD BILONG FI MONI KAM LONG WANWAN MUN.

Mun bilong yia: _____

Treasurer:_____

Deit	Toksave / details	Moni namba		Total balance	Mak mak o signature
		Kam in	Igo aut		

EXERCISES ON BASIC BOOK KEEPING.

Putim ol dispela long wanem hap we ol dispela i ken igo long en. Dispela wok bai kirapim yupela long save long wanem kain samting i wok long lainim.

General moni record bilong WMC:

1. Long de 12/4/01, Manabe i kisim K5.00 long Siowa olsem securiti money.
2. Long seim taim tasol em i kisim K3,00 long maraga, keni i salim K2.00 na wilson famili i salim K5.00.
3. Ol arapela lain long kompaon tu i givim K12.00 long en. Nem bilong ol lain i olsem; Kevin, awanga na kauri. Wanwan i givim K4.00.
4. Long de 19/4/01 komiti i kisim wanpela moni kam long Council member olsem K200.00 na ol i putim igo long wara project.
5. Pinis long mun hamas moni em givim long treasurer?
6. Tony i givim K2.30 long fi moni.
7. Long de 20/4/01, Manabe i kisim K5.00 long James Ona fi money.
8. Long de 21/4/01, Treasurer i kisim K5.00 long Gadei Manama olsem securiti money.
9. Long de 12/4/01, Manabe i kisim K5.00 long Boby Wari olsem fi money.
10. Long de 12/4/01, Manabe i kisim K3.00 long Sama Aisa olsem fi money.
11. Peter Boli i givim K4.30 long fi moni.
12. Gaharu Maru i givim K2.30 long fi moni.

13. Komiti i wanbel long baim wanpela tap, ol i usim K12.00 long baim wanpela. Na K10.00 em i usim long bas fi.
14. Wara bill long Mun April I olsem K20.00.
15. Ol lain long Mt. Braun compound I bungim moni na kisim K15.00. wanwan I kisim K5.00 long de 12/5/01.

EXERCISES ON BASIC BOOK KEEPING

Putim ol dispela long wanem hap we ol dispela i ken igo long en. Dispela wok bai kirapim yupela long save long wanem kain samting yumi lainim.

Moni record bilong ol Wanwan Famili:

1. Mr. Manabe na famili i kisim K37.50 fi moni bilong wara.
   Ol details igo olsem;
   Det 12/4/01 ol i kisim K5.00;
   long det 12/5/01 ol i kisim K8.00 bilong baim wara bill;
   long det 12/6/01 ol i kisim K13.00 bilong baim wara bill;
   long det 12/7/01 ol i kisim K8.00 bilong baim wara bill na narapela K3.50 long helpim wara bill.

2. Famili bilong Maine Koru i kisim K20.50 fi moni bilong wara.
   Ol details igo olsem;
   Det 12/4/01 ol i kisim K3.00;
   Det 15/4/01 ol i kisim K2.00;
   long det 11/5/01 ol i kisim K4.50 bilong baim wara bill;
   long det 13/5/01 ol i kisim K2.00 bilong baim wara bill;
   long det 12/6/01 ol i kisim K1.00 bilong baim wara bill;
   long det 12/7/01 ol i kisim K8.00 bilong baim wara bill;

3. Famili bilong Thomas Misiri i kisim K36.45 fi moni bilong wara.
   Ol details igo olsem;
   Det 12/4/01 ol i kisim K4.00;
   Det 15/4/01 ol i kisim K3.50;

long det 11/5/01 ol i kisim K5.65 bilong baim wara bill;

long det 13/5/01 ol i kisim K9.00 bilong baim wara bill;

long det 12/6/01 ol i kisim K6.40 bilong baim wara bill;

long det 12/7/01 ol i kisim K8.00 bilong baim wara bill;

Details lessons on basic bookkeeping

The word "book keeping" simplifies what it means for a layman to understand what this study is all about. It involves recording of how and why money comes and how and why money goes out. In other words, it is a track record of money.

In this targeted training for you, the leaders of the locally established CBOs we will look into keeping two kinds of Money records that can be maintained by the treasurer of each of the villages. As discussed earlier on we will have to make the choice of you can decide who to keep the records later on but as for the training all of you will be involved. This is for the following reasons:

- It is good training for your own benefits whether it is in family bookkeeping or in small businesses or even if you become a treasurer of a church or youth group. These principles could be used any whether.
- Knowing how it is done will help you to check out the records and finds out where mistakes are and make corrections to it.
- If you are a member of the committee and if the report is served to you, it will be read without any problems since these lessons will help you

3. PILOT PROJECT WATER SUPPLY

1) Certificate of Completion

2) Memorandum on Handing-Over of the Facilities Constructed Under the Pilot Project : Bereina

3) Memorandum on Handing-Over of the Facilities Constructed Under the Pilot Project : Kwikila

4) Memorandum on Handing-Over of the Facilities Constructed Under the Pilot Project : Mutzing

5) Memorandum on Handing-Over of the Facilities Constructed Under the Pilot Project : Daru

6) The Construction Works of the Water Supply Facilities, AS-BUILT DRAWINGS, Extract

7) Operation & Maintenance Manual for Water Supply System – Bereina

8) Guide for Hand-dug Well Construction & Handpump Installation

JAPAN TECHNO CO., LTD.
SANSEIDO SHINJUKU BLDG., NISHI-SHINJUKU 4-15-3,
SHINJUKU-KU, TOKYO 160-0023, JAPAN
TEL:+81+3-5350-1451, FAX: 5350-1458, E-mail:jat-tyo@jat.co.jp

20th August 2001

CERTIFICATE OF COMPLETION

This is the Certificate of Completion for Construction of the Water Supply Facilities under the Study on Groundwater Development for Water Supply Systems in Papua New Guinea as requested by the Contractor dated 28th July 2001.

The construction works were implemented in the following four (4) sites and the works were duly completed on the 20th August 2001 to the satisfactory of the JICA Study Team/Japan Techno Co., Ltd working together with the Papua New Guinea Waterboard. The Contractor, Hebou Construction (PNG) Limited and Dai Nippon Construction Joint Venture, shall therefore warrant and guarantee the works for a period of one (1) year from this date of the completion under the Agreement dated 22nd January 2001.

1. Construction Sites (Date of Handing Over/Completion):
   1) Bereina , Central Province, 3rd August 2001
   2) Kwikila, Central Province, 2nd August 2001
   3) Mutzing, Morobe Province, 20th August 2001
   4) Daru, Western Province, 31st July 2001
2. Warranty Period: One (1) year from the above date of completion
3. The Contractor: Hebou Construction (PNG) Limited and Dai Nippon Construction Joint Venture

Approved by the Client

Shigeyoshi Kagawa

Team Leader of JICA Study Team

Japan Techno Co., Ltd.,

C.C. Papua New Guinea Waterboard, Port Moresby, PNG

MEMORANDUM ON HANDING-OVER OF THE FACILITIES CONSTRUCTED UNDER THE PILOT PROJECT

Date: 3 August 2001

Place: BEREINA

Facility for the handing-over:

It is confirmed that the construction of the above-mentioned facility under the Pilot Project was completed. As it was agreed in the "Minutes of Discussion on the Progress Report (2)" between the Papua New Guinea Waterboard (PNGWB) and the Study Team, the facility was handed over from Hebou Construction & Dai Nippon Construction Joint Venture (the Contractor) to Japan Techno Co., Ltd. (the Study Team) and consequently to the PNGWB on this date of ~~July 2~~ August 3 2001.

It is also confirmed that the facilities has a 12 months warranty from the date of hand-over from the Contractor to the Study Team. The Study Team shall ensure the Contractor remedies at his own cost any defects against which the work is guaranteed by making all necessary repairs or replacement immediately except in the case where such defects result from negligence or failure of the PNGWB.

The Study Team	The Papua New Guinea Waterboard
Mr. Nobuyuki Ishii	Mr. Ukatha Otiwani
The Study Team Facilities Design & Water Supply	Executive Manager, Customer Services

3/8/2001.

THE CONSTRUCTION OF THE WATER SUPPLY FACILITIES
The Study on Groundwater Development for Water Supply Systems in Pupa New Guinea

Handing Over (Bereina Works)

Japan Techno Co.,Ltd (the Client) and Hebou and Dai Nippon Construction Joint Venture (the Contractor) herewith confirm that the Items of the Construction works listed as below are completed by the Contractor and handed over to the Client as of this date 3rd August 2001 in accordance with the Contract Documents (The Construction Works of the Water Supply Facilities, Volume II, TECHNICAL SPECIFICATIONS) which were made between the two parties on 22 January, 2001.

Bereina Works

The items of the construction works:

- **-Installation of submersible pump with control panel and pump pit**
- **-Solar power generation system with inverter for above pump**
- **-Pumping House with inside plumbing & electric works**
- **-Fence with gate**
- **-Water Storage Tank (80m3)**
- **-Tank Stand (15m)**
- **-Pipe bedding**
- **-Valves with Chamber**
- **-Public Faucet**
- **-Diesel Engine Generator**

The quantity of above-mentioned items is in accordance with the Contract Documents.

The Client

Mr. N.Ishii
JICA STUDY TEAM JAPAN TECHNO CO.,LTD

The Contractor

Mr. T.YAMADA
Project Manager
Hebou and Dai Nippon Construction Joint Venture

FINAL INSPECTION

Inspection Date : 2001 Site : BEREINA Inspector : Nobuyuki Ishii JICA Study Team

1. Inspection Results

No.	Item	Condition	Judgment
1	Installation of submersible pump with control panel and pump pit		✓ Passed · Rejected
2	Solar power generation system with inverter for above pump		✓ Passed · Rejected
3	Pumping House (30m2) with inside plumbing & electric work		✓ Passed · Rejected
4	Fence with gate		✓ Passed · Rejected
5	Water storage Tank (80m3)		✓ Passed · Rejected
	Tank stand (15m)		✓ Passed · Rejected
6	Pipe bedding		✓ Passed · Rejected
7	Valves with Chamber		✓ Passed · Rejected
8	Public Faucet		✓ Passed · Rejected
9	Diesel Engine Generator		✓ Passed · Rejected

2. Comment (by inspector)

Consultant (Inspector)	Contractor	Witness
3 (d) 8 (m) 2001(y)	3 (d) 8 (m) 2001(y)	3 (d) 8 (m) 2001(y)

MEMORANDUM ON HANDING-OVER OF THE FACILITIES CONSTRUCTED UNDER THE PILOT PROJECT

Date: 2 August 2001
Place: KWIKILA
Facility for the handing-over:

It is confirmed that the construction of the above-mentioned facility under the Pilot Project was completed. As it was agreed in the "Minutes of Discussion on the Progress Report (2)" between the Papua New Guinea Waterboard (PNGWB) and the Study Team, the facility was handed over from Hebou Construction & Dai Nippon Construction Joint Venture (the Contractor) to Japan Techno Co., Ltd. (the Study Team) and consequently to the PNGWB on this date of August 2, 2001.

It is also confirmed that the facilities has a 12 months warranty from the date of hand-over from the Contractor to the Study Team. The Study Team shall ensure the Contractor remedies at his own cost any defects against which the work is guaranteed by making all necessary repairs or replacement immediately except in the case where such defects result from negligence or failure of the PNGWB.

The Study Team	The Papua New Guinea Waterboard
Mr. Nobuyuki Ishii	Mr. Ukatha Otiwani
The Study Team Facilities Design & Water Supply	Executive Manager, Customer Services

THE CONSTRUCTION OF THE WATER SUPPLY FACILITIES
The Study on Groundwater Development for Water Supply Systems in Pupa New Guinea

Handing Over (Kwikila Works)

Japan Techno Co.,Ltd (the Client) and Hebou and Dai Nippon Construction Joint Venture (the Contractor) herewith confirm that the Items of the Construction works listed as below are completed by the Contractor and handed over to the Client as of this date 2nd August ,2001 in accordance with the Contract Documents (The Construction Works of the Water Supply Facilities, Volume II, TECHNICAL SPECIFICATIONS) which were made between the two parties on 22 January, 2001.

Kwikila Works

The items of the construction works:

- **-Installation of submersible pump with control panel and pump pit**
- **-Wiring ELECOM power line**
- **-Pumping House with inside plumbing & electric works**
- **-Fence with gate**
- **-Water Storage Tank (60m3)**
- **-Foundation of Water Storage Tank**
- **-Demolition of Existing Tank**
- **-Pipe bedding**
- **-Valves with Chamber**
- **-Public Faucet**
- **-Rehabilitation of Existing Pipeline**

The quantity of above-mentioned items is in accordance with the Contract Documents.

The Client

Mr. N.Ishii
JICA STUDY TEAM JAPAN TECHNO CO.,LTD

The Contractor

Mr. T.YAMADA
Project Manager
Hebou and Dai Nippon Construction Joint Venture

FINAL INSPECTION

Inspection Date : 2001 Site : KWIKILA Inspector : Nobuyuki Ishii

1. Inspection Results

No.	Item	Condition	Judgment
1	Installation of submersible pump with control panel and pump pit		✓ Passed · Rejected
2	Wiring ELECOM power line		✓ Passed · Rejected
3	Pumping House (30m2) with inside plumbing & electric work		✓ Passed · Rejected
4	Fence with gate		✓ Passed · Rejected
5	Water storage Tank (60m3)		✓ Passed · Rejected
	Foundation of Water Storage Tank		✓ Passed · Rejected
	Demolition of Existing Tank		✓ Passed · Rejected
6	Pipe bedding		✓ Passed · Rejected
7	Valves with Chamber		✓ Passed · Rejected
8	Public Faucet		✓ Passed · Rejected
9	Rehabilitation of Existing Pipeline		✓ Passed · Rejected

2. Comment (by inspector)

Consultant (Inspector)	Contractor	Witness
2 (d) 7 (m) 2001(y)	2 (d) 7 (m) 2001(y)	2 (d) 8 (m) 2001(y)

MEMORANDUM ON HANDING-OVER OF THE FACILITIES CONSTRUCTED UNDER THE PILOT PROJECT

Date: 30 July 2001
Place: MUTZING
Facility for the handing-over:

It is confirmed that the construction of the above-mentioned facility under the Pilot Project was completed. As it was agreed in the "Minutes of Discussion on the Progress Report (2)" between the Papua New Guinea Waterboard (PNGWB) and the Study Team, the facility was handed over from Hebou Construction & Dai Nippon Construction Joint Venture (the Contractor) to Japan Techno Co., Ltd. (the Study Team) and consequently to the PNGWB on this date of July 30, 2001.

It is also confirmed that the facilities has a 12 months warranty from the date of hand-over from the Contractor to the Study Team. The Study Team shall ensure the Contractor remedies at his own cost any defects against which the work is guaranteed by making all necessary repairs or replacement immediately except in the case where such defects result from negligence or failure of the PNGWB.

The Study Team	The Papua New Guinea Waterboard
Mr. Nobuyuki Ishii	Mr. Ukatha Otiwani
The Study Team Facilities Design & Water Supply	Executive Manager, Customer Services

THE CONSTRUCTION OF THE WATER SUPPLY FACILITIES
The Study on Groundwater Development for Water Supply Systems in Pupa New Guinea

Handing Over (Mutzing Works)

Japan Techno Co.,Ltd (the Client) and Hebou and Dai Nippon Construction Joint Venture (the Contractor) herewith confirm that the Items of the Construction works listed as below are completed by the Contractor and handed over to the Client as of this date 30th July ,2001 in accordance with the Contract Documents (The Construction Works of the Water Supply Facilities, Volume II, TECHNICAL SPECIFICATIONS) which were made between the two parties on 22 January, 2001.

Mutzing Works

The items of the construction works:

- **-Installation of submersible pump with control panel and pump pit**
- **-Pumping House with inside plumbing & electric works**
- **-Fence with gate**
- **-Water Storage Tank (80m3)**
- **-Tank Stand (15m)**
- **-Pipe bedding**
- **-Valves with Chamber**
- **-Public Faucet**

The quantity of above-mentioned items is in accordance with the Contract Documents.

The Client

for Mr. N.Ishii
JICA STUDY TEAM JAPAN TECHNO CO.,LTD

The Contractor

Mr. T.YAMADA
Project Manager
Hebou and Dai Nippon Construction Joint Venture

FINAL INSPECTION

Inspection Date : 30 July 2001 Site : MUTZING Inspector : Hideaki Matsuoka

1. Inspection Results

No.	Item	Condition	Judgment
1	Installation of submersible pump with control panel and pump pit		✓Passed · Rejected
3	Pumping House (30m2) with inside plumbing & electric work		✓Passed · Rejected
4	Fence with gate		✓Passed · Rejected
5	Water storage Tank (80m3)		✓Passed · Rejected
	Tank Stand (15m)		✓Passed · Rejected
6	Pipe bedding		✓Passed · Rejected
7	Valves with Chamber		✓Passed · Rejected
8	Public Faucet		✓Passed · Rejected

2. Comment (by inspector)

There are still some work remaining.
(refer to the list of remaining work)

Consultant (Inspector)	Contractor	Witness
30 (d) 07 (m) 2001(y)	30 (d) 07 (m) 2001(y)	30 (d) 07 (m) 2001(y)

MEMORANDUM ON HANDING-OVER OF THE FACILITIES CONSTRUCTED UNDER THE PILOT PROJECT

Date: 4 August 2001

Place: DARU

Facility for the handing-over:

It is confirmed that the construction of the above-mentioned facility under the Pilot Project was completed. As it was agreed in the "Minutes of Discussion on the Progress Report (2)" between the Papua New Guinea Waterboard (PNGWB) and the Study Team, the facility was handed over from Hebou Construction & Dai Nippon Construction Joint Venture (the Contractor) to Japan Techno Co., Ltd. (the Study Team) and consequently to the PNGWB on this date of ~~July 31~~ August 4, 2001.

It is also confirmed that the facilities has a 12 months warranty from the date of hand-over from the Contractor to the Study Team. The Study Team shall ensure the Contractor remedies at his own cost any defects against which the work is guaranteed by making all necessary repairs or replacement immediately except in the case where such defects result from negligence or failure of the PNGWB.

The Study Team	The Papua New Guinea Waterboard
Mr. Nobuyuki Ishii	Mr. Ukatha Otiwani
The Study Team Facilities Design & Water Supply	Executive Manager, Customer Services

FINAL INSPECTION

Inspection Date : 31st July 2001 Site : DARU Inspector : J. MASUDA

1.Inspection Results

No.	Item	Condition	Judgment
1	Water Vending Unit		(Passed) · Rejected
2	Procurement of the materials		(Passed) · Rejected

2.Comment (by inspector)

Consultant (Inspector)	Contractor	Witness
31 (d) 07 (m) 2001(y)	31 (d) 7 (m) 2001(y)	31 (d) 7 (m) 2001(y)

THE CONSTRUCTION OF THE WATER SUPPLY FACILITIES
The Study on Groundwater Development for Water Supply Systems in Pupa New Guinea

Handing Over (Daru Works)

Japan Techno Co.,Ltd (the Client) and Hebou and Dai Nippon Construction Joint Venture (the Contractor) herewith confirm that the Items of the Construction works listed as below are completed by the Contractor and handed over to the Client as of this date 31st July ,2001 in accordance with the Contract Documents (The Construction Works of the Water Supply Facilities, Volume II, TECHNICAL SPECIFICATIONS) which were made between the two parties on 22 January, 2001.

Daru Works

- **Water Vending Unit (Public Faucet)** **2 lots**
- **Supply of all required Materials to the villages along the Binaturi River** **1 lot**

The Client

Mr. N.Ishii
JICA STUDY TEAM JAPAN TECHNO CO.,LTD

The Contractor Date 31/7/01

Mr. T.YAMADA
Project Manager
Hebou and Dai Nippon Construction Joint Venture