

2. SOCIAL SURVEY

- 1) Result of Household Survey with Questionnaire
- 2) Preliminary Analysis Report on the Water and Sanitation Conditions in Surveyed Towns of Papua New Guinea
- 3) Questionnaire for Household Survey
- 4) Workshop Record in Mutzing
- 5) Formation of the Community Based Organizations and Training in Operation and Maintenance under the Study on Groundwater Development for Water Supply Systems in Papua New Guinea
- 6) Training Program

Result of Household Survey with Questionnaire

1. Method of Survey with Questionnaire

The nature of the study involved an investigative approach, using interviews and observations. First, the survey was conducted by interviewing selected town resident using a structured questionnaire (see Attachment 1). Second, researchers observed the general socio-economic conditions of the residents in relation to water and sanitation.

In order to assure accurate sampling, the following system was devised. Sampling units were selected at regular intervals from the sampling frame. For example, if a 10% representation was sought from the target population, every 10th household would be selected from each block.

Two (2) men and two (2) women were recruited in Port Moresby and trained. The purpose of this training was to familiarize the researchers with these fieldwork techniques and with the specific questionnaire. All surveys were conducted by the same researchers in order to maintain even quality and efficiency. However, there was difficulty in communicating with some villagers. While this could have been avoided by recruiting local people, this might have affected the accuracy of the results.

The first site survey was conducted at Kwikila, in Central Province. This involved the testing and modifying of the questionnaire, which had been prepared by JICA Study Team.

Two provincial towns — Daru in Western Province, and Popondetta in Oro Province — and six district towns — Bereina, Kwikila, and Kupiano in Central Province; Finschhafen and Mutzing in Morobe Province, and Oro Bay in Oro Province — were selected by JICA Study Team.

The survey itinerary is shown in Table 1.

Table 1: Survey Itinerary (From May 22, 2000 to August 25, 2000)

Date	Day	Activities	Date	Day	Activities
22 May	Mon	Test Survey in Kwikila	10 Jul	Mon	Survey in Popondetta
23 May	Tue	Test Survey in Kwikila	11 Jul	Tue	Survey in Oro Bay
24 May	Wed		12 Jul	Wed	Survey in Oro Bay
25 May	Thu	Started Kwikila Survey	13 Jul	Thu	Survey in Oro Bay
26 May	Fri	Survey in Kwikila	14 Jul	Fri	Departed Popondetta for Moresby
27 May	Sat	Survey in Kwikila	15 Jul	Sat	
28 May	Sun	Completed Kwikila Survey	16 Jul	Sun	
29 May	Mon		17 Jul	Mon	
30 May	Tue		18 Jul	Tue	
31 May	Wed		19 Jul	Wed	
1 Jun	Thu	Started Bereina Survey	20 Jul	Thu	
2 Jun	Fri	Survey in Bereina	21 Jul	Fri	
3 Jun	Sat	Survey in Bereina	22 Jul	Sat	
4 Jun	Sun	Completed Bereina Survey	23 Jul	Sun	Started Data Inputting – NRI
5 Jun	Mon		24 Jul	Mon	
6 Jun	Tue		25 Jul	Tue	Departed Moresby for Kupiano
7 Jun	Wed		26 Jul	Wed	Started Kupiano Survey
8 Jun	Thu		27 Jul	Thu	Survey in Kupiano
9 Jun	Fri	Departed Moresby for Lae	28 Jul	Fri	Survey in Kupiano
10 Jun	Sat	Started Finchhafen Survey	29 Jul	Sat	Completed Kupiano Survey Departed Kupiano for Moresby
11 Jun	Sun	Survey in Finchhafen	30 Jul	Sun	
12 Jun	Mon	Completed Finchhafen Survey	31 Jul	Mon	
13 Jun	Tue	Departed Finchhafen for Lae	1 Aug	Tue	
14 Jun	Wed	Started Mutzing Survey	2 Aug	Wed	
15 Jun	Thu	Survey in Mutzing	3 Aug	Thu	
16 Jun	Fri	Completed Survey in Mutzing	4 Aug	Fri	
17 Jun	Sat		5 Aug	Sat	
18 Jun	Sun		6 Aug	Sun	
19 Jun	Mon	Departed Lae for Moresby	7 Aug	Mon	
20 Jun	Thu		8 Aug	Tue	
21 Jun	Fri		9 Aug	Wed	
22 Jun	Sat	Departed Moresby for Daru	10 Aug	Thu	
23 Jun	Fri	Started Daru Survey	11 Aug	Fri	Completed Data Inputting
24 Jun	Sat	Survey in Daru			
25 Jun	Sun	Survey in Daru	25 Aug	Fri	Completed Analysis Report
26 Jun	Mon	Survey in Daru			
27 Jun	Tue	Survey in Daru			
28 Jun	Wed	Completed Daru Survey			
29 Jun	Thu	Departed Daru for Moresby			
30 Jun	Fri				
1 Jul	Sat				
2 Jul	Sun				
3 Jul	Mon				
4 Jul	Tue	Departed Moresby for Popon.			
5 Jul	Wed	Started Popondetta Survey			
6 Jul	Thu	Survey in Popondetta			
7 Jul	Fri	Survey in Popondetta			
8 Jul	Sat	Survey in Popondetta			
9 Jul	Sun	Survey in Popondetta			
10 Jul	Mon	Survey in Popondetta			

2. Sample Size

	Mutzing	Finschhafen	Oro Bay	Bereina	Kwikila	Kupiano	Daru	Popondetta
Formal Residents	35	45	0	33	38	32	59	72
Informal Residents / Villagers	14	25	50	29	15	40	41	28
Total	49	70	50	62	53	72	100	100

While the above sample size was large enough to get an understanding of each site, it would not be sufficient for analysis of individual statistics. For statistical correctness the sample size would have had to have been increased, because the actual population was larger than the expected population. A more influential factor is that the residents of most of sites are not from one homogeneous group, but are a mixture of formal residents and informal residents / villagers.¹ These mixed groups require larger sample sizes than homogeneous groups. While this may limit the application of this survey to some extent, it can still be meaningful as a baseline comparison for each site.

3. Definition of formal residents and informal residents / villagers

As mentioned above, three (3) different groups were identified at the surveyed sites. Field observation suggested that the groups were experiencing different socio-economic conditions. As an analysis of the data supported this theory, the following results have been divided by group type into formal residents and informal residents / villagers.²

The following definitions apply mainly for this JICA Study and are not appropriate for general application.

Formal residents are those having an official right, or believe they have it, to stay in planned areas within town boundaries.

Informal residents are those who live outside of planned areas within town boundaries, but have traditional rights to stay there or are allowed to stay by consent of traditional owners. In this case,

¹ Three patterns of mixture were identified as follows:

Pattern I	Pattern II	Pattern III
Formal residents	Formal residents	Villagers
Informal residents	Villagers	

The classification of each site is as follows:

Mutzing	Finschhafen	Oro Bay	Bereina	Kwikila	Kupiano	Daru	Popondetta
Pattern II	Pattern II	Pattern III	Pattern II	Pattern I	Pattern II	Pattern I	Pattern I

² As shown in the above footnote, the proportion of informal residents to villagers was not identified. Thus, it is impossible to compare socio-economic conditions between informal residents and villagers

most informal residents believe that they live on customary land and land ownership is held by informal residents or is disputed by informal residents and concerned public authorities. It would be incorrect to consider them squatters³, but their status as informal residents is rather ambiguous compared with formal residents.

Villagers are those who stay outside of town boundaries in naturally formed hamlets.

4. Result of each question

The details of Household Survey with Questionnaire are shown as follows:

4-1. General character of interviewees

4-1-1. Gender distribution

Male	Female
50%	50%

The distribution of gender is balanced. The researchers selected households which agreed to allow both adult males and female members to be interviewed together. There were some exceptional cases, however they comprised a very small portion of the overall samples.

4-1-2. Age distribution

Less than 19 years old	1%
20-29	18%
30-39	35%
40-49	26%
50-59	14%
Over 60	6%

4-1-3. Schooling

	Mutzing	Finschhafen	Oro Bay	Bereina	Kwikila	Kupiano	Daru	Popondetta
Formal residents								
No schooling	20%	12%	N/A	8%	5%	3%	2%	2%
Less than Grade 3	11%	7%	N/A	3%	3%	5%	7%	3%
Grade 4-6	23%	26%	N/A	21%	27%	23%	28%	25%
Beyond Grade 7	46%	56%	N/A	68%	65%	70%	64%	70%
Informal Residents / Villagers								
No schooling	18%	11%	2%	19%	43%	11%	1%	21%
Less than Grade 3	7%	23%	4%	14%	14%	7%	8%	12%
Grade 4-6	32%	51%	80%	42%	32%	48%	45%	40%
Beyond Grade 7	43%	15%	14%	25%	11%	34%	45%	26%

from the results of this survey.

³ It does not mean that there are no squatters in Papua New Guinea. It is recognized that the squatters on Daru Island cause friction with local authorities.

According to official statistical data⁴, 42% of males and 50% of females age 5 and above do not attend any formal education in Papua New Guinea. Although the populations relating to the above-mentioned statistics and this survey are not exactly the same, it would be reasonable to generalize that the educational level at most of the surveyed sites is higher than the national level. It is also possible to conclude that the educational level of formal residents is generally higher than that of informal residents / villagers.

4-2. Household size and housing

4-2-1. Household size

	Mutzing	Finschhafen	Oro Bay	Bereina	Kwikila	Kupiano	Daru	Popondetta
Formal residents								
Average Size	6.4	6.4	N/A	6.4	7.3	6.8	8.4	7.2
Informal Residents / Villagers								
Average Size	5.1	6.1	5.8	6.7	6.1	8.5	10.1	6.6

*Average size in Papua New Guinea is 5.7.⁵

4-2-2. Residential status

	Mutzing	Finschhafen	Oro Bay	Bereina	Kwikila	Kupiano	Daru	Popondetta
Formal residents								
Owner	0%	0%	N/A	0%	91%	3%	36%	31%
House owned by employer	63%	69%	N/A	52%	66%	84%	15%	42%
Rental house	11%	22%	N/A	45%	21%	9%	49%	28%
Customary land	17%	2%	N/A	0%	3%	3%	0%	0%
No security	9%	7%	N/A	3%	0%	0%	0%	0%
Informal Residents / Villagers								
Owner	0%	0%	0%	0%	0%	25%	0%	0%
House owned by employer	0%	0%	0%	0%	0%	0%	0%	0%
Rental house	0%	0%	0%	3%	0%	0%	0%	0%
Customary land	100%	84%	100%	97%	87%	75%	61%	68%
No security	0%	16%	0%	0%	13%	0%	39%	32%

Some households believe their residential status is not secure. In Daru, the friction between certain groups⁶ and local authorities in relation to occupying specific land is recognized. For other sites, apparent frictions in relation to land occupation have not been identified. For Papua New Guinea in general, it is better not to classify those households as squatters except in the case of Daru.

In district towns, most residents on customary land belong to landowners' groups or have some relationship with landowners' groups. Thus, it is not common for them to pay rent. In Daru, it is also

⁴ "Papua New Guinea Demographic and Health Survey 1996", National Statistic Office, 1997.

⁵ "Papua New Guinea Demographic and Health Survey 1996", op.cit.

⁶ According to those residents, most of them consider themselves temporary visitors and stay there less than one year.

not common to pay rent for occupying customary land.⁷ However, many residents of customary land pay rent to landowners⁸ in Popondetta. It seems that customary land in Popondetta has been commercialized and regulated to a certain extent compared to other sites.

4-2-3. Housing type

	Mutzing	Finschhafen	Oro Bay	Bereina	Kwikila	Kupiano	Daru	Popondetta
Formal residents								
High & Medium cost	29%	24%	N/A	15%	18%	38%	29%	32%
Low cost	31%	62%	N/A	85%	82%	63%	37%	63%
Make shift	29%	9%	N/A	0%	0%	0%	27%	4%
Traditional bush	11%	4%	N/A	0%	0%	0%	7%	1%
Informal Residents / Villagers								
High & Medium cost	7%	0%	0%	14%	0%	85%	5%	4%
Low cost	36%	4%	4%	7%	0%	15%	24%	7%
Make shift	21%	33%	16%	79%	87%	0%	39%	86%
Traditional bush	36%	63%	80%	0%	13%	0%	32%	4%

The housing conditions of formal residents are generally better than those of informal residents / villagers except in Kupiano. As shown in the previous paragraph, a large number of formal residents in district towns receive accommodation from their employers. This contributes to better housing conditions. The reasons for the exceptional case in Kupiano have not been identified. According to villagers in Kupiano, there are two (2) factors. First, a logging and sawmill company had supplied stable or temporary job opportunities to many villagers. Second, materials for building houses have been available at low prices thanks to the company.⁹

4.3 Water Sources and Uses

4-3-1. Main water source for drinking and cooking

	Mutzing	Finschhafen	Oro Bay	Bereina	Kwikila	Kupiano	Daru	Popondetta
Formal residents								
Water piped into house	60%	60%	N/A	0%	0%	3%	92%	89%
Shared water tap	17%	11%	N/A	0%	0%	0%	2%	1%
Own water tank	6%	18%	N/A	100%	89%	94%	7%	4%
Neighbor's water tank	0%	11%	N/A	0%	3%	0%	0%	0%
Public water tank	0%	0%	N/A	0%	0%	3%	0%	1%
Own well	6%	0%	N/A	0%	0%	0%	0%	0%
Neighbor's well	6%	0%	N/A	0%	0%	0%	0%	0%
Public well	0%	0%	N/A	0%	8%	0%	0%	1%
River/Creek	6%	6%	N/A	0%	0%	0%	0%	1%
Spring	0%	0%	N/A	0%	0%	0%	0%	0%
Others	0%	0%	N/A	0%	0%	0%	0%	1%

⁷ According to informal residents, previous generations paid a certain amount of money in order to be allowed to live in their present residences, however no households were found still to pay rent during this survey. Ninety-nine percent of national land is customary land and the rules and principals of customary land tenure are in accordance with native custom without any written documents. Therefore, state intervention in customary land tenure is very limited.

⁸ In many cases, the residents have to pay additional rent for utilizing land for gardens.

⁹ This company had been located in Kupiano town but closed in 1999. It seems that the surrounding residents including those in Kupiano town benefited very much from it.

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	Mutzing	Finschhafen	Oro Bay	Bereina	Kwikila	Kupiano	Daru	Popondetta
Informal Residents / Villagers								
Water piped into house	7%	16%	0%	0%	0%	0%	71%	21%
Shared water tap	0%	40%	0%	0%	0%	0%	27%	11%
Own water tank	0%	8%	4%	35%	53%	13%	0%	7%
Neighbor's water tank	0%	4%	0%	0%	13%	0%	0%	0%
Public water tank	0%	0%	0%	0%	0%	0%	0%	0%
Own well	36%	0%	0%	14%	0%	0%	0%	4%
Neighbor's well	0%	0%	0%	21%	0%	0%	2%	4%
Public well	43%	0%	0%	45%	13%	0%	0%	21%
River/Creek	14%	36%	96%	3%	20%	88%	0%	32%
Spring	0%	8%	0%	0%	0%	0%	0%	0%
Others	0%	0%	0%	0%	0%	3%	0%	0%

* Total percentage is not always 100% due to plural selection.

The PNG Water Board provides water to the provincial towns Daru and Popondetta, which most formal residents benefit from. Mutzing and Finschhafen are served with water by municipalities which the majority of formal residents benefit from. Although other sites do not have reliable water supply facilities, the majority of formal residents in the three district towns (Bereina, Kwikila, and Kupiano) are equipped with personal water tanks to harvest rain.

The majority of informal residents / villagers depend on wells and rivers/creeks for water. In contrast to formal residents, only a small percentage of informal residents benefit from public water

Table 4.3. Water sources in Papua New Guinea

Piped to household	12.9%
Piped to neighborhood	5.9%
Well in yard	1.4%
Public well	6.1%
Spring	21.1%
River/stream	32.2%
Pond/lake/dam	5.5%
Communal tank	5.0%
Rain water	8.1%
Tanker truck	0.3%
Other	1.4%

(Source: Papua New Guinea Demographic and Health Survey 1996)

supplies--even where public water is available--except in Daru and Finschhafen. Also, except in Kwikila, only a small number of informal residents have their own water tanks, thus the majority have to expend labor to fetch water. With respect to hygiene, their water sources are not always recommendable.

Considering the above-mentioned situation, the water conditions for formal residents are better than those of informal residents / villagers.

For reference general water sources in Papua New Guinea are shown in Table 4.3

4-3-2. Problems in relation to water sources

	Mutzing	Finschhafen	Oro Bay	Bereina	Kwikila	Kupiano	Daru	Popondetta
Formal residents								
No problem	3%	11%	N/A	48%	27%	16%	14%	22%
Low pressure	65%	56%	N/A	3%	0%	13%	26%	38%
Irregular or intermittent supply	47%	73%	N/A	12%	0%	38%	38%	7%
Period of no supply	38%	53%	N/A	12%	30%	41%	29%	36%
Tastes salty	3%	0%	N/A	9%	8%	0%	7%	1%
Muddy	6%	22%	N/A	0%	3%	0%	21%	10%
Dirty	85%	49%	N/A	27%	30%	31%	79%	60%
Odorous	0%	0%	N/A	0%	3%	3%	0%	3%
No working meter	0%	0%	N/A	3%	0%	0%	0%	1%
Distant location	3%	0%	N/A	0%	3%	0%	0%	1%
Cost for using water source	0%	0%	N/A	0%	0%	0%	0%	8%
Labor for carrying water	0%	0%	N/A	0%	3%	0%	0%	1%
Others	3%	4%	N/A	27%	27%	3%	10%	18%

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	Mutzing	Finschhafen	Oro Bay	Bereina	Kwikila	Kupiano	Daru	Popondetta
Informal Residents / Villagers								
No problem	7%	16%	8%	7%	20%	8%	10%	11%
Low pressure	7%	36%	0%	0%	0%	0%	22%	14%
Irregular or intermittent supply	0%	24%	16%	17%	0%	3%	51%	4%
Period of no supply	7%	32%	0%	41%	7%	3%	39%	14%
Tastes salty	0%	0%	0%	0%	13%	25%	12%	0%
Muddy	29%	48%	32%	41%	0%	35%	39%	18%
Dirty	64%	80%	56%	66%	47%	70%	78%	68%
Odorous	7%	0%	0%	17%	7%	0%	0%	0%
No working meter	0%	0%	0%	0%	0%	0%	0%	0%
Distant location	14%	28%	84%	0%	0%	88%	0%	25%
Cost for using water source	0%	0%	0%	0%	0%	0%	7%	7%
Labor for carrying water	29%	20%	48%	3%	0%	63%	2%	25%
Others	36%	20%	4%	38%	53%	0%	15%	29%

* Total percentage is not always 100% due to plural selection.

4-3-3. Suffering shortages of drinking and cooking water (volume)

	Mutzing	Finschhafen	Oro Bay	Bereina	Kwikila	Kupiano	Daru	Popondetta
Formal residents								
	3%	9%	N/A	15%	34%	41%	0%	3%
Informal Residents / Villagers								
	7%	8%	0%	10%	87%	45%	0%	0%

4-3-4. Availability of drinking and cooking water through the year

	Mutzing	Finschhafen	Oro Bay	Bereina	Kwikila	Kupiano	Daru	Popondetta
Formal residents								
	49%	42%	N/A	12%	5%	6%	81%	99%
Informal Residents / Villagers								
	79%	80%	82%	28%	27%	80%	93%	93%

4-4. Payment for Water

4-4-1. Actual monthly payment for water

	Formal Residents		Informal residents	
	Daru	Popondetta	Daru	Popondetta
Nothing	5%	18%	2%	68%
Less than K5	20%	8%	32%	21%
K5-K10	32%	14%	46%	7%
K10-K15	17%	15%	2%	4%
K15-20	10%	14%	10%	0%
K20-K25	8%	10%	5%	0%
K25-K30	2%	13%	0%	0%
More than K30	5%	8%	2%	0%

Mutzing and Finschhafen have water supply facilities which are free of charge. Kwikila, Bereina, and Kupiano have water supply facilities which have been suspended or are not reliable and service charges are not collected. There are no water supply facilities in Oro Bay.

In the above table, the raw data comprising "nothing" represent two (2) groups. One is those who are not served with water. The other is those who benefit from supplied water, yet pay nothing. In the areas served by the PNG Water Board, every water tap must belong to a certain owner and there are no

communal taps or official public taps. In actuality, many personal water taps are used as communal taps. It is common for users to share the cost, but this is not always the case, as some selfishness is not easily remedied in the context of Papua New Guinea.

4-4-2. Willingness to join water supply service

	Mutzing	Finschhafen	Oro Bay	Bereina	Kwikila	Kupiano
Formal residents						
Want to join	100%	96%	N/A	97%	97%	100%
Informal residents / Villagers						
Want to join	100%	100%	100%	100%	100%	100%

4-4-3. Willingness to pay for water piped into house

	Mutzing		Finschhafen		Oro Bay		Bereina		Kwikila		Kupiano	
		Cov.		Cov.		Cov.		Cov.		Cov.		Cov.
Formal residents												
Less than K2	6%	100%	0%	100%	N/A	N/A	0%	100%	0%	100%	0%	100%
K4	9%	94%	2%	100%	N/A	N/A	16%	100%	3%	100%	6%	100%
K6	26%	85%	26%	98%	N/A	N/A	34%	84%	43%	97%	31%	94%
K8	3%	59%	5%	72%	N/A	N/A	6%	50%	3%	54%	3%	63%
K10	44%	56%	44%	67%	N/A	N/A	28%	44%	27%	51%	47%	59%
More than K10	12%	12%	23%	23%	N/A	N/A	16%	16%	24%	24%	13%	13%
Median (K)	10.0		10.0		N/A		6.5		10.0		10.0	
Minimum (K)	2.0		3.0		N/A		2.5		3.0		4.0	
Maximum (K)	20.0		20.0		N/A		20.0		100.0		20.0	
Informal Residents / Villagers												
Less than K2	0%	100%	32%	100%	34%	100%	4%	100%	0%	100%	20%	100%
K4	7%	100%	8%	68%	14%	66%	4%	96%	7%	100%	20%	80%
K6	14%	93%	36%	60%	24%	52%	39%	93%	33%	93%	53%	60%
K8	7%	79%	4%	24%	6%	28%	0%	54%	0%	60%	0%	8%
K10	36%	71%	12%	20%	16%	22%	46%	54%	40%	60%	8%	8%
More than K10	36%	36%	8%	8%	6%	6%	7%	7%	20%	20%	0%	0%
Median (K)	10.0		5.0		5.0		10.0		10.0		5.0	
Minimum (K)	4.0		0.5		1.0		2.0		4.0		1.0	
Maximum (K)	20.0		20.0		15.0		15.0		45.0		10.0	

In the above histogram table, the column "Cov." shows the percentage of households which can afford to pay that price. For example, K8 at 59% indicates that 59% of surveyed households can afford to pay water charges ranging from K6 to K8.

It is recognized that most people are willing to pay a certain amount of money in order to improve present conditions. Even though water is free of charge in Mutzing and Finschhafen at present, the beneficiaries in both towns seem to not be satisfied with the current situation (see paragraph 4-3-2).

For formal residents, the level of willingness to pay varies little between surveyed sites, but it should be noted that the median amount residents are willing to pay in Bereina is lower than in other sites.

For informal residents / villagers, there is a higher group (Mutzing, Bereina, Kwikila) and a lower group (Finschhafen, Oro Bay, Kupiano) for willingness to pay. This topic will be covered more thoroughly in Chapter 4-10-5.

4-4-4. Willingness to pay for a communal tap

	Mutzing		Finschhafen		Oro Bay		Bereina		Kwikila		Kupiano	
Formal residents		Cov.		Cov.		Cov.		Cov.		Cov.		Cov.
Less than K1	6%	100%	5%	100%	N/A	N/A	13%	100%	5%	100%	13%	100%
K2	29%	94%	28%	95%	N/A	N/A	28%	88%	32%	95%	16%	88%
K3	18%	65%	7%	67%	N/A	N/A	16%	59%	19%	62%	13%	72%
K4	6%	47%	7%	60%	N/A	N/A	6%	44%	3%	43%	6%	59%
K5	38%	41%	44%	53%	N/A	N/A	28%	38%	35%	41%	44%	53%
More than K5	3%	3%	9%	9%	N/A	N/A	9%	9%	5%	5%	9%	9%
Median (K)		3.0		5.0		N/A		3.0		3.0		5.0
Minimum (K)		1.0		1.0		N/A		1.0		1.0		1.0
Maximum (K)		10.0		10.0		N/A		10.0		100.0		10.0
Informal Residents / Villagers												
Less than K1	0%	100%	40%	100%	50%	100%	11%	100%	0%	100%	33%	100%
K2	29%	100%	24%	60%	22%	50%	43%	89%	33%	100%	40%	68%
K3	21%	71%	12%	36%	6%	28%	14%	46%	13%	67%	18%	28%
K4	7%	50%	8%	24%	4%	22%	0%	32%	13%	53%	0%	10%
K5	21%	43%	12%	16%	14%	18%	25%	32%	27%	40%	10%	10%
More than K5	21%	21%	4%	4%	4%	4%	7%	7%	13%	13%	0%	0%
Median (K)		3.5		2.0		1.3		2.0		4.0		2.0
Minimum (K)		2.0		0.6		0.5		1.0		2.0		0.5
Maximum (K)		7.0		8.0		10.0		10.0		35.0		5.0

In the above histogram table, the column "Cov." has the same implications as histogram table 4-4-3.

It is recognized that the attitude of some formal residents in Mutzing is negative towards communal taps. At present, 60% of formal residents benefit from personal water taps. It would be impossible to convert the taps from personal use to communal use, even if present conditions were far from satisfactory. The same attitude is expected in Finschhafen also.

4-5. Toilets

	Mutzing	Finschhafen	Oro Bay	Bereina	Kwikila	Kupiano	Daru	Popondetta
Formal residents								
Private flush toilet	49%	44%	N/A	52%	22%	41%	32%	75%
Shared flush toilet	0%	0%	N/A	0%	0%	0%	0%	1%
Private pit latrine	54%	56%	N/A	42%	76%	81%	2%	21%
Shared pit latrine	0%	0%	N/A	6%	14%	0%	0%	3%
Private bucket toilet	0%	0%	N/A	0%	0%	0%	61%	0%
Shared bucket toilet	0%	0%	N/A	0%	0%	0%	0%	0%
No toilet	0%	7%	N/A	3%	0%	0%	8%	0%
Informal Residents / Villagers								
Private flush toilet	0%	0%	0%	0%	0%	0%	0%	0%
Shared flush toilet	0%	0%	0%	0%	0%	0%	0%	0%
Private pit latrine	93%	80%	4%	10%	40%	3%	5%	96%
Shared pit latrine	7%	8%	4%	0%	33%	0%	0%	4%
Private bucket toilet	0%	0%	0%	0%	0%	0%	61%	0%
Shared bucket toilet	0%	0%	0%	0%	0%	0%	7%	0%
No toilet	0%	12%	92%	90%	27%	98%	27%	0%

* Total percentage is not always 100% due to plural selection.

Table 4.5. Sanitation facilities

Own flush toilet	9.1%
Shared flush toilet	2.5%
Traditional pit	69.1%
Improved latrine	1.8%
Bucket system	0.5%
Closet over sea	2.8%
No facility/bush	14.1%

(Source: Papua New Guinea Demographic and Health Survey 1996)

It is not suitable to construct pit latrines on Daru Island due to its unique location and high groundwater levels, so bucket toilets are the common sanitation facilities. In the survey, two (2) issues were identified to be of concern. First, although the authority involved provides residents with waste collection through a contractor, many residents complain that services are sometimes delayed or suspended, possibly due to delays by the authorities in disbursing the budget. Second, the contractor throws collected waste directly into the sea from the coast without any treatment. Considering that more than 10,000 people live on Daru Island, attention should be given to this matter from an environmental point of view.

Sanitation conditions for formal residents are better than those of informal residents / villagers generally. In Oro Bay, Bereina, and Kupiano, informal residents / villagers are at a severe disadvantage (more than 90% of households do not have sanitation facilities).

For reference, the condition of sanitation facilities in Papua New Guinea is shown in Table 4.5.

4-6. Health Conditions

4-6-1. Boiling water for drinking and cooking

	Mutzing	Finschhafen	Oro Bay	Bereina	Kwikila	Kupiano	Daru	Popondetta
Formal residents								
Always boil water	0%	11%	N/A	27%	18%	13%	14%	8%
Sometimes boil water	24%	60%	N/A	48%	47%	59%	63%	81%
Unusual for boil water	76%	29%	N/A	24%	34%	28%	24%	11%
Informal Residents / Villagers								
Always boil water	0%	0%	0%	14%	7%	0%	10%	0%
Sometimes boil water	21%	24%	14%	48%	53%	50%	56%	36%
Unusual for boil water	79%	76%	86%	38%	40%	50%	34%	64%

The habit of boiling water is not very popular in the surveyed sites. However, considering the condition of main water sources at each site, educational programs are recommended to improve hygiene awareness.

4-6-2. Washing hands after toilet

	Mutzing	Finschhafen	Oro Bay	Bereina	Kwikila	Kupiano	Daru	Popondetta
Formal residents								
Always wash hands	25%	24%	N/A	61%	79%	34%	31%	26%
Sometimes wash hands	67%	76%	N/A	36%	21%	66%	69%	72%
Unusual for wash hands	7%	0%	N/A	3%	0%	0%	0%	1%
Informal Residents / Villagers								
Always wash hands	7%	28%	4%	17%	40%	3%	24%	0%
Sometimes wash hands	86%	72%	88%	59%	53%	93%	73%	93%
Unusual for wash hands	7%	0%	8%	24%	7%	5%	2%	7%

These results should be understood with the following in mind. Villagers in Mutzing indicate that the habit of washing hands after using the toilet is good but they do not practice it due to several

obstacles,¹⁰ mainly a shortage of water or unavailability of water near their toilets. Considering the actual circumstances at surveyed sites, it can be inferred that the above results do not express the actual situation but the residents' hopes, especially for informal residents and villagers.

4-6-3. Households with members having diarrhea during the last two weeks

	Mutzing	Finschhafen	Oro Bay	Bereina	Kwikila	Kupiano	Daru	Popondetta
Formal residents								
	16%	11%	N/A	18%	13%	13%	29%	24%
Informal Residents / Villagers								
	7%	8%	14%	24%	13%	5%	34%	29%

4-6-4. Households infected by the following sicknesses over the last twelve (12) months

	Mutzing	Finschhafen	Oro Bay	Bereina	Kwikila	Kupiano	Daru	Popondetta
Formal residents								
Diarrhea	37%	53%	N/A	27%	47%	16%	58%	61%
Malaria	97%	91%	N/A	91%	87%	97%	88%	96%
Skin disease	11%	37%	N/A	33%	29%	9%	20%	35%
Informal Residents / Villagers								
Diarrhea	57%	28%	33%	45%	60%	27%	63%	68%
Malaria	100%	100%	92%	93%	93%	100%	83%	100%
Skin disease	50%	20%	8%	31%	53%	2%	32%	21%

4-6-5. Households that believe that diarrhea is a preventable disease

	Mutzing	Finschhafen	Oro Bay	Bereina	Kwikila	Kupiano	Daru	Popondetta
Formal residents								
	91%	96%	N/A	91%	84%	100%	97%	100%
Informal Residents / Villagers								
	86%	96%	96%	62%	53%	88%	90%	82%

4-6-6. Households that have received some health and hygiene education or information in relation to water safety and sanitation

	Mutzing	Finschhafen	Oro Bay	Bereina	Kwikila	Kupiano	Daru	Popondetta
Formal residents								
	74%	71%	N/A	58%	55%	56%	56%	78%
Informal Residents / Villagers								
	71%	44%	48%	32%	20%	43%	46%	21%

¹⁰ For the details of this survey please see attachment III.

4-7. Labor allocation for fetching water

4-7-1. Household members responsible for fetching water

	Mutzing	Finschhafen	Oro Bay	Bereina	Kwikila	Kupiano	Daru	Popondetta
Formal residents								
Adult male	0%	13%	N/A	9%	24%	25%	20%	7%
Adult female	92%	98%	N/A	88%	84%	97%	95%	86%
Male children	0%	2%	N/A	0%	11%	6%	3%	0%
Female children	12%	16%	N/A	3%	11%	9%	5%	11%
Informal Residents / Villagers								
Adult male	29%	17%	32%	10%	20%	63%	22%	7%
Adult female	93%	96%	98%	90%	67%	100%	100%	93%
Male children	0%	4%	0%	7%	7%	5%	0%	0%
Female children	14%	13%	18%	14%	20%	8%	15%	25%

* Total percentage is not always 100% due to plural selections.

The responsibility for fetching water is predominantly borne by adult females. It is reasonable to assume that adult females would be the most affected group (direct beneficiaries) of a water supply project.

4-7-2. Average hours spent fetching water per day

	Mutzing	Finschhafen	Oro Bay	Bereina	Kwikila	Kupiano	Daru	Popondetta
Formal residents								
Hours	0.42	0.54	N/A	0.26	0.40	0.13	0.11	0.09
Informal Residents / Villagers								
Hours	0.29	0.95	1.50	0.68	2.74	5.80	0.15	0.18

Not every household fetches water every day. In areas such as Oro Bay and Kupiano where water sources for informal residents are located far from their residential areas, two or three times a week is common. The above numbers are the time it takes to fetch water once; frequency per week is not considered. Informal residents / villagers in Kupiano spend the longest amount of time fetching water of the surveyed sites. In addition, the water source for one village in Oro Bay is also very far from the residential area according to interviews with villagers.

4-8. Performance of water supply organization

4-8-1. Water supply: sufficient quality

	Mutzing	Finschhafen	Bereina	Kupiano	Daru	Popondetta
Formal residents						
Good	9%	4%	0%	3%	5%	10%
Average	54%	53%	21%	78%	53%	67%
Bad	20%	42%	64%	13%	42%	21%
No experience	17%	0%	15%	6%	0%	3%
Informal Residents / Villagers						
Good	0%	0%	10%	0%	0%	4%
Average	7%	40%	7%	8%	56%	30%
Bad	0%	8%	3%	3%	41%	0%
No experience	93%	52%	79%	90%	2%	67%

4-8-2. Water supply: sufficient quantity

	Mutzing	Finschhafen	Bereina	Kupiano	Daru	Popondetta
Formal residents						
Good	17%	18%	0%	25%	59%	58%
Average	51%	33%	15%	47%	31%	28%
Bad	14%	49%	70%	22%	10%	11%
No experience	17%	0%	15%	6%	0%	3%
Informal Residents / Villagers						
Good	0%	16%	10%	5%	44%	26%
Average	7%	20%	10%	3%	39%	7%
Bad	0%	12%	0%	3%	15%	0%
No experience	93%	52%	79%	90%	2%	67%

4-8-3. Reading meter

	Mutzing	Finschhafen	Bereina	Kupiano	Daru	Popondetta
Formal residents						
Good	0%	0%	0%	0%	59%	42%
Average	0%	0%	0%	0%	29%	31%
Bad	0%	0%	3%	0%	8%	18%
No experience	100%	100%	97%	100%	3%	10%
Informal Residents / Villagers						
Good	0%	0%	0%	0%	68%	26%
Average	0%	0%	0%	0%	17%	4%
Bad	0%	0%	0%	0%	12%	4%
No experience	100%	100%	100%	100%	2%	67%

4-8-4. Billing water charge

	Mutzing	Finschhafen	Bereina	Kupiano	Daru	Popondetta
Formal residents						
Good	0%	0%	0%	0%	59%	43%
Average	0%	0%	0%	0%	27%	29%
Bad	0%	0%	0%	0%	10%	18%
No experience	100%	100%	100%	100%	3%	10%
Informal Residents / Villagers						
Good	0%	0%	0%	0%	66%	30%
Average	0%	0%	0%	0%	20%	0%
Bad	0%	0%	0%	0%	12%	4%
No experience	100%	100%	100%	100%	2%	67%

4-8-5. Maintaining the system, fixing leaks

	Mutzing	Finschhafen	Bereina	Kupiano	Daru	Popondetta
Formal residents						
Good	0%	7%	6%	0%	7%	2%
Average	6%	7%	15%	3%	44%	35%
Bad	51%	76%	64%	63%	41%	54%
No experience	43%	11%	15%	34%	8%	10%
Informal Residents / Villagers						
Good	0%	0%	0%	0%	10%	4%
Average	0%	24%	0%	0%	44%	15%
Bad	0%	8%	0%	10%	41%	11%
No experience	100%	68%	100%	90%	5%	70%

4-8-6. Giving out information and advice

	Mutzing	Finschhafen	Bereina	Kupiano	Daru	Popondetta
Formal residents						
Good	0%	16%	3%	0%	10%	0%
Average	9%	22%	3%	6%	22%	24%
Bad	69%	58%	61%	78%	66%	72%
No experience	23%	4%	33%	16%	2%	4%
Informal Residents / Villagers						
Good	0%	0%	0%	3%	7%	0%
Average	0%	24%	0%	3%	32%	7%
Bad	7%	8%	0%	5%	59%	26%
No experience	93%	68%	100%	90%	2%	67%

4-8-7. Notification of water cut

	Mutzing	Finschhafen	Bereina	Kupiano	Daru	Popondetta
Formal residents						
Good	11%	29%	3%	0%	17%	10%
Average	26%	20%	9%	16%	32%	36%
Bad	46%	51%	64%	66%	49%	50%
No experience	17%	0%	24%	19%	2%	4%
Informal Residents / Villagers						
Good	0%	12%	0%	3%	10%	0%
Average	0%	24%	0%	3%	29%	15%
Bad	7%	4%	0%	5%	59%	19%
No experience	93%	60%	100%	90%	2%	67%

Results of Kwikila and Oro Bay are omitted from the above table, because most people choose "no experience" in all above items.

4-9. Willingness to cooperate on the water project

4-9-1 Willingness to contribute unpaid labor to improve or maintain water and sewage services

	Mutzing	Finschhafen	Oro Bay	Bereina	Kwikila	Kupiano	Daru	Popondetta
Formal residents								
	94%	91%	N/A	97%	100%	88%	100%	96%
Informal Residents / Villagers								
	100%	92%	98%	93%	93%	100%	98%	100%

4-9-2. Willingness to contribute money for the materials of water and sewage services

	Mutzing	Finschhafen	Oro Bay	Bereina	Kwikila	Kupiano	Daru	Popondetta
Formal residents								
	80%	82%	N/A	88%	92%	56%	84%	71%
Informal Residents / Villagers								
	100%	88%	98%	93%	100%	98%	93%	93%

4-9-3. Willingness to make necessary land available for the water and sewage scheme

	Mutzing	Finschhafen	Oro Bay	Bereina	Kwikila	Kupiano	Daru	Popondetta
Formal residents								
	29%	42%	N/A	67%	74%	25%	40%	44%
Informal Residents / Villagers								
	86%	68%	74%	62%	80%	75%	61%	57%

4-10. Economic Conditions

4-10-1. Average number of full-time employees per household

	Mutzing	Finschhafen	Oro Bay	Bereina	Kwikila	Kupiano	Daru	Popondetta
Formal residents								
Male	0.71	0.67	N/A	0.79	0.87	0.88	0.90	0.92
Female	0.29	0.24	N/A	0.33	0.16	0.38	0.36	0.42
Total	1.00	0.91	N/A	1.12	1.03	1.25	1.25	1.33
Informal Residents / Villagers								
Male	0.14	0.16	0.12	0.14	0.40	0.08	0.54	0.68
Female	0.14	0.04	0.02	0.00	0.00	0.00	0.20	0.11
Total	0.29	0.20	0.14	0.14	0.40	0.08	0.73	0.79

4-10-2. Average number of self-employed workers per household

	Mutzing	Finschhafen	Oro Bay	Bereina	Kwikila	Kupiano	Daru	Popondetta
Formal residents								
Male	0.14	0.11	N/A	0.03	0.03	0.13	0.25	0.10
Female	0.89	0.40	N/A	0.55	0.68	0.41	0.68	0.19
Total	1.03	0.51	N/A	0.58	0.71	0.53	0.93	0.29
Informal Residents / Villagers								
Male	0.43	0.24	0.30	0.14	0.33	0.58	0.32	0.14
Female	0.93	1.04	1.00	0.97	1.13	1.28	0.78	0.75
Total	1.36	1.28	1.30	1.10	1.47	1.85	1.10	0.89

4-10-3. Harvesting sufficient produce from gardens

	Mutzing	Finschhafen	Oro Bay	Bereina	Kwikila	Kupiano	Daru	Popondetta
Formal residents								
	46%	69%	N/A	45%	74%	69%	56%	35%
Informal Residents / Villagers								
	93%	100%	90%	93%	93%	100%	66%	86%

4-10-4. Monthly cash income per household

	Mutzing	Finschhafen	Oro Bay	Bereina	Kwikila	Kupiano	Daru	Popondetta
Formal residents								
Less than K200	3%	2%	N/A	6%	3%	3%	0%	3%
K400	11%	19%	N/A	12%	8%	13%	7%	8%
K600	20%	30%	N/A	27%	8%	25%	8%	10%
K800	20%	14%	N/A	15%	26%	16%	19%	19%
K1,000	20%	7%	N/A	18%	21%	9%	24%	13%
K1,200	14%	12%	N/A	15%	8%	13%	7%	14%
More than K1,200	11%	16%	N/A	6%	26%	22%	36%	33%
Median (K)	742.50	589.50	N/A	654.66	906.25	695.78	924.75	956.58
Average (K)	790.63	1,654.11	N/A	700.86	994.65	1,427.69	1,734.11	1,212.92
Minimum (K)	45.92	102.83	N/A	63.00	65.99	117.33	247.67	58.33
Maximum (K)	2,371.50	30,200.00	N/A	1,327.95	2,687.90	10,957.50	18,343.50	11,990.00
Informal Residents / Villagers								
Less than K200	43%	76%	52%	45%	20%	65%	2%	11%
K400	14%	16%	24%	28%	27%	20%	15%	46%
K600	14%	0%	10%	21%	27%	10%	22%	21%
K800	0%	4%	8%	0%	20%	0%	15%	11%
K1,000	0%	4%	2%	3%	0%	0%	12%	11%
K1,200	7%	0%	2%	0%	0%	5%	10%	0%
More than K1,200	21%	0%	2%	3%	7%	0%	24%	0%
Median (K)	283.50	90.00	189.59	237.50	408.33	159.75	696.50	394.65
Average (K)	797.04	176.43	337.91	349.43	486.10	236.93	928.45	432.01
Minimum (K)	64.58	0.00	22.50	28.33	33.67	27.00	135.00	105.75
Maximum (K)	3,625.00	819.81	3,375.00	2,906.68	1,867.50	1,190.00	2,538.33	923.17

4-10-5. Monthly balance after deducting main expenditures per household

	Mutzing	Finschhafen	Oro Bay	Bereina	Kwikila	Kupiano	Daru	Popondetta
Formal residents								
Less than K200	11%	40%	N/A	18%	21%	22%	14%	14%
K400	34%	19%	N/A	39%	21%	25%	15%	17%
K600	29%	12%	N/A	27%	21%	25%	24%	19%
K800	17%	9%	N/A	9%	16%	13%	19%	22%
K1,000	6%	9%	N/A	6%	11%	0%	7%	6%
K1,200	3%	2%	N/A	0%	3%	0%	7%	6%
More than K1,200	0%	9%	N/A	0%	8%	16%	15%	17%
Median (K)	465.84	262.04	N/A	364.88	454.77	406.94	593.80	600.71
Average (K)	469.51	911.83	N/A	385.30	527.58	1,070.39	1,186.30	840.17
Minimum (K)	-49.55	-80.17	N/A	-128.39	-305.33	-290.53	-135.04	-301.84
Maximum (K)	1,050.88	14,836.59	N/A	999.49	1,741.21	10,697.35	17,729.44	11,469.79
Informal Residents / Villagers								
Less than K200	57%	92%	72%	79%	53%	78%	29%	54%
K400	14%	0%	12%	17%	20%	13%	20%	25%
K600	0%	4%	12%	0%	20%	5%	15%	11%
K800	7%	4%	2%	0%	0%	0%	10%	11%
K1,000	7%	0%	0%	0%	0%	3%	7%	0%
K1,200	0%	0%	0%	0%	7%	3%	5%	0%
More than K1,200	14%	0%	2%	3%	0%	0%	15%	0%
Median (K)	157.50	31.26	84.98	81.84	181.24	75.04	436.87	182.80
Average (K)	580.34	82.70	205.08	113.77	244.84	126.94	573.56	242.15
Minimum (K)	-136.30	-153.87	-86.25	-953.75	-89.27	-250.21	-5.51	-48.27
Maximum (K)	3,393.56	686.21	3,173.84	2,691.85	1,004.68	1,015.75	1,840.90	697.48

From the tables 4-9-3 and 4-9-4¹¹ it is apparent that incomes of formal residents are higher than those of informal residents / villagers. It can be inferred that the main reason is that households of formal residents have more full-time employees than those of informal residents / villagers (see table 4-9-1). Among informal residents / villagers in surveyed sites, the average number of full-time employees per household seems to also influence income conditions (see table 4-9-1).

Economic conditions in Finschhafen were the lowest of the surveyed sites. Field observation suggested that its remote location and high transportation costs are detrimental to its income generating activities. In and around Finschhafen, there is not enough demand for garden produce or cooked food, which is a common supplementary income source in Papua New Guinea. If those residents want to market items in Lae, they must pay shipping fees which are very expensive considering their cash income levels.¹² In contrast to Finschhafen, the relatively high monthly income in Kwikila is thought to be due to its advantageous location. Kwikila is connected with Port Moresby, the national capital, by road and it takes one and a half hours in the dry season.¹³ It is easy to get public transportation and transportation costs are reasonable. Also, Kwikila is located along the main road extending to the southeast part of

¹¹ The balance is the amount remaining after deducting the following costs from monthly cash income: food, transportation, light and fuel, education, church donations, cash assistance to family, and other monthly staple expenditures.

¹² It costs 66.00 kina per round trip by ship operated by Lutheran Church (as of August 2000).

¹³ In the rainy season, road conditions become worse and it takes more than three (3) hours.

Central Province, and small businesses such as selling garden produce and cooked food to passengers are prosperous.

In paragraph 4-4-3 regarding willingness to pay for a tap in the house, informal residents / villagers' responses fell into either a higher group (Mutzing, Bereina, Kwikila) or a lower group (Finschhafen, Oro Bay, Kupiano). These two groups coincide with the lower three (3) income sites and the higher three (3) income sites.

Finally, it is necessary to acknowledge poverty and economic conditions.

According to one national survey related to poverty¹⁴, 41% of the rural population and 16% of the urban population live under the upper poverty line¹⁵ in Papua New Guinea. The majority of informal residents answered that they were able to harvest a sufficient amount of produce from their gardens in this household survey (see table 4-9-2), therefore it is impossible to classify them into poor or non-poor based on cash income alone. In other words, the above data is not complete enough to indicate relative economic conditions on a national level. According to table 4-9-4, the monthly cash balance of some informal residents and villagers is negative. Although it is impossible for any household to spend more than it earns, it can be assumed that these residents' economic conditions are very fragile. There exists a stratum of quite poor households at surveyed sites, therefore we should pay very careful attention to such households with respect to involving them in any future project.

¹⁴ "Poverty and Access to Public Services," The World Bank, 1999

¹⁵ This upper poverty line is the amount needed to cover the cost of minimum food consumption and basic non-food items for one adult for one year. The amount was K461 in 1996. For a more detailed definition, please refer to "Poverty and Access to Public Services."

Attachment I

**Preliminary Analysis Report on the Water and Sanitation
Conditions in Surveyed Towns of Papua New Guinea**

John Swei and Terence Simbiwen

A report prepared for the Japan Techno Company on behalf of the Japan International Cooperation Agency (JICA) and the PNG Waterboard in partial fulfilment of the requirements for the socioeconomic survey conducted by the Social and Environmental Studies Division of the National Research Institute

1.0 Introduction

On 4 May 2000, the Government of Japan became a signatory to an agreement between the Papua New Guinea Waterboard and the Japanese International Cooperation Agency (JICA) under the Technical Cooperation. This agreement preceded a water development study entitled, "*The Study on Groundwater Development for Water Supply Systems in Papua New Guinea*", to improve ground water development in selected towns in PNG.

The water development study contract was awarded to the Japan Techno Company, which subcontracted a consultancy to the National Research Institute to conduct a socioeconomic survey in two provincial and six district towns in PNG. The study commenced in mid-March 2000 and was completed in July 2001. The aims of the study were to assess groundwater potential, formulate groundwater development and supply plans, water supply facility design, plans for the operation, management, and maintenance of water supply systems, and to conduct public awareness programs on water quality and sanitation.

The Japan Techno Company engaged the services of the National Research Institute (NRI) to undertake the socioeconomic component of the study under the following Terms of Reference (TOR):

- (a) conduct the socioeconomic condition survey of selected provincial and district town residents in relation to water and health; and
- (b) supervise the socioeconomic condition survey and complete the required number of samples for each site.

To complete these two tasks, a structural questionnaire was prepared. Both qualitative and quantitative assessments of household socioeconomic conditions in relation to water and sanitation in the following areas were conducted:

- household composition and demography;
- type of housing;
- water services;
- sewerage and waste disposal systems (sanitation); and
- household income and expenditure.

The main objective of this preliminary analysis report is to provide firsthand information concerning the condition of water, sanitation, and health in the surveyed towns. The initial sections discuss the actual water and sanitation conditions in the surveyed sites and the influence of actual water and sanitation conditions on residents' living conditions, health, the economic condition of local town residents, and other recognised facts acquired during the survey. The following information is presented in the sequence of the itinerary for each site in which the survey was conducted.

2.0 Methodology

The nature of the study involved an investigative approach, using interviews and observations. Several methods were used. The first was to interview the selected town residents. This was achieved through a selection of house-to-house interviews, using a structured questionnaire (see Appendix). The second was for the researchers to observe the general socioeconomic conditions of the residents in relation to water and sanitation.

Four researchers were recruited and were inducted to field work survey methodology and techniques. The purpose of this training exercise was to familiarise the researchers with those field work techniques which were best suited for this type of investigative research, and to familiarise them with the specific questionnaire.

The first site survey was conducted at Kwikila, in Central Province. This involved the testing of the questionnaire, which had been prepared by the Japan Techno team, and to make the resultant modifications to the questionnaire.

Two provincial towns — Daru in Western Province, and Popondetta in Oro Province — and six district towns — Bereina, Kwikila, and Kupiano, in Central Province; Finschhafen and Mutsing in Morobe Province, and Oro Bay in Oro Province — were selected by JICA for the water development study.

The number of households has been selected to reflect the population of the surveyed towns, with a minimum of 500 samples (see Table 1). The itinerary for the survey is shown in Table 2.

Table 1: Survey Sites and Number of Households Interviewed

Province	Town	Number of Households
Central	Kwikila	50
	Bereina	50
	Kupiano	50
Morobe	Finchhafen	50
	Mutsing	50
Oro	Popondetta	100
	Oro Bay	50
Western	Daru	100
	Total	500

Table 2: Socioeconomic Survey Itinerary

Date	Day	Activities	Date	Day	Activities
3 May	Wed		23 Jun	Fri	
4 May	Thu		24 Jun	Sat	Departed Moresby to Daru
5 May	Fri		25 Jun	Sun	Started Daru Survey
6 May	Sat		26 Jun	Mon	Survey in Daru
6 May	Sun		27 Jun	Tue	Survey in Daru
8 May	Mon		28 Jun	Wed	Completed Daru Survey
9 May	Tue		29 Jun	Thu	Departed Daru to Moresby
10 May	Wed		30 Jun	Fri	
11 May	Thu		1 Jul	Sat	
12 May	Fri		2 Jul	Sun	
13 May	Sat		3 Jul	Mon	
14 May	Sun		4 Jul	Tue	Departed Moresby for Popon.
15 May	Mon		5 Jul	Wed	Started Popon. Survey
16 May	Tue		6 Jul	Thu	Survey in Popondetta
17 May	Wed		7 Jul	Fri	Survey in Popondetta
18 May	Thu		8 Jul	Sat	Survey in Popondetta
19 May	Fri		9 Jul	Sun	Survey in Popondetta
20 May	Sat		10 Jul	Mon	Completed Popon. Survey
21 May	Sun		11 Jul	Tue	Started Oro Bay Survey
22 May	Mon	Test Survey in Kwikila	12 Jul	Wed	Survey in Oro Bay
23 May	Tue	Test Survey in Kwikila	13 Jul	Thu	Survey in Oro Bay
					Completed Oro Bay Survey?
24 May	Wed		14 Jul	Fri	Departed Popon. for Moresby
25 May	Thu	Started Kwikila Survey	15 Jul	Sat	
26 May	Fri	Survey in Kwikila	16 Jul	Sun	
27 May	Sat	Survey in Kwikila	17 Jul	Mon	
28 May	Sun	Completed Kwikila Survey	18 Jul	Tue	
29 May	Mon		19 Jul	Wed	Departed Moresby for Kupiano
30 May	Tue		20 Jul	Thu	Started Kupiano Survey
31 May	Wed	Started Bereina Survey	21 Jul	Fri	Survey in Kupiano
1 Jun	Thu	Survey in Bereina	21 Jul	Sat	Completed Kupiano Survey
2 Jun	Fri	Survey in Bereina	22 Jul	Sun	Started Data Inputting - NRI
3 Jun	Sat	Survey in Bereina	23 Jul	Mon	Data Inputting - NRI
4 Jun	Sun	Completed Bereina Survey	24 Jul	Tue	Data Inputting - NRI
5 Jun	Mon		26 Jul	Wed	Data Inputting - NRI
6 Jun	Tue		27 Jul	Thu	Data Inputting - NRI
7 Jun	Wed		28 Jul	Fri	Data Inputting - NRI
8 Jun	Thu		29 Jul	Sat	Data Inputting - NRI
9 Jun	Fri	Departed Moresby for Lae	30 Jul	Sun	Data Inputting - NRI
10 Jun	Sat	Started Finchhafen Survey	31 Jul	Mon	Data Inputting - NRI
11 Jun	Sun	Survey in Finchhafen	1 Aug	Tue	Data Inputting - NRI
12 Jun	Mon	Completed Finchhafen Survey	2 Aug	Wed	Data Inputting - NRI
13 Jun	Tue	Departed Finchhafen for Lae	3 Aug	Thu	Data Inputting - NRI
14 Jun	Wed	Started Mutsing Survey	4 Aug	Fri	Data Inputting - NRI
15 Jun	Thu	Survey in Mutsing	5 Aug	Sat	Data Inputting - NRI
16 Jun	Fri	Completed Survey in Mutsing	6 Aug	Sun	Data Inputting - NRI
17 Jun	Sat	Mutsing Workshop	7 Aug	Mon	Data Inputting - NRI
18 Jun	Sun	Mutsing Workshop	9 Aug	Tue	Data Inputting - NRI
19 Jun	Mon	Departed Lae for Moresby	10 Aug	Wed	Data Inputting - NRI
20 Jun	Tue		11 Aug	Thu	Completed Data Inputting
21 Jun	Wed				
22 Jun	Thu		25 Aug	Friday	Completed Analysis Report

3.0 Information about Towns Surveyed

The total number of households and the gender composition of the surveyed towns are presented in Table 3.

Table 3: Household Composition and population in the Survey Sites

Province	Town	Total Number of Households	Number of Males	Number of Females	Total Population
Central	Kwikila	151	525	448	973
	Bereina	200	570	506	1076
	Kupiano	139	411	360	771
Morobe	Finchhafen	115	407	334	741
	Mutsing	66	220	204	424
Oro	Popondetta	1241	3964	3291	7255
	Oro Bay	1432	4283	3915	8198
Western	Daru	1183	4352	4149	8501

Source: National Statistical Office, 1990 National Population Census.

Daru and Popondetta are provincial towns in Western and Oro Provinces, respectively. The six other surveyed sites are district towns in Central, Morobe and Oro Provinces (see Table 3).

The majority of town residents are public servants who are employed in various government departments. The living quarters that are provided are segregated according to government departments and agencies. Villagers and settlements provide their own accommodation.

4.0 Actual Water and Sanitation Conditions

In the 1960s, during the Australian administration, the existing water supply systems were developed and installed for all the towns that were surveyed, with the exception of Oro Bay, which does not have a piped water supply system. Similarly, Kupiano does not have a piped water supply system at the moment, because of non-maintenance of the piped supply system that was developed and installed during the Australian administration.

After independence, the PNG Government through its executing agency, the Department of Works, was mandated to maintain the water supply systems and provide sanitation services. Lack of maintenance, overcrowding in residential quarters, and the attitude of residents may contribute to the poor hygiene of residents in provincial and district towns throughout the country. Lack of maintenance, inefficient service, and irregular power supply have affected the provision of good quality water to residents at all times. Also, there are no water treatment facilities in the district towns that were surveyed. The increased demand for water and sanitation services has resulted from immigrants moving into settlement areas around the townships. Furthermore, there is an increased demand for water and sanitation as a result of business development and increased household populations. The existing water supply system was not developed to cater for an increased population within the townships and settlements. This is indicated by the low water pressure which was reported by respondents during the survey. Poor water and sanitation services have contributed to poor hygiene and living conditions in the townships and settlement areas.

5.0 Household Size and Living

On average, there are six individuals per household in the surveyed towns — four children and the two parents. However, it is a common custom in PNG to provide accommodation for members of the extended family, which increases the number of individuals per household, and ultimately, the demand for water and sanitation services.

6.0 Water Sources and Uses

The location of a residential area determines the source of water for drinking and cooking. Public servants and company workers in these areas obtain water from piped water supply systems (in towns where this is available), rainwater tanks, and wells. During the dry season, most water is carted from the creeks and rivers. However, some may source water from wells.

Residents in the towns and settlements are charged for water, if it is delivered during the dry season. Employers usually pay for the water delivery service for town residents. Settlement residents have to pay for water delivery service their own or manually cart water from nearby creeks, rivers, or wells.

When it is available, water is used for cooking, household sanitation, personal hygiene, and other domestic use. Where residents have an option, they usually prefer water from tanks for drinking. Piped water sources are usually not preferred for drinking because of poor water quality.

7.0 Toilet Facilities and Waste Disposal

Town residents in Popondetta, Bereina, Kwikila, Gagindu, Mutsing, and some residential houses in Daru have flush toilets and pit latrines. The latter are used when water is not available, or when the plumbing system is blocked. In the settlements and the towns, periphery households use pit latrines. However, there are some settlement and village households who defecate in the bush and allow domestic animals to clean up after them. Residents of towns in Central Province believe in *sorcery*, which is a traditional attitude that is still hard to change to improve sanitation and health conditions in villages and settlements.

Problems associated with septic toilet systems in these towns are the unavailability of water, and blockages because of the use of materials other than toilet paper. Also, pit latrines may overflow during the wet season as the water level rises. Pit latrines that are not covered give off a waste smell and provide an environment for flies and mosquitoes to breed. These are potential vectors for certain diseases.

Household rubbish consists of food scraps, plastic bags, old newspapers, sanitary disposables, cloths, old rags, and babies faeces. There were no waste disposal systems in the towns that were surveyed. Households are responsible for their own waste disposal. Newspapers, old cloths, and rags are usually burnt, while household refuse, such as food scraps, are disposed off in dug pits or in backyard gardens. Latrines are used for the disposal of babies faeces.

People's attitudes about personal hygiene and health are still a problem. The unavailability of sanitation services to town residents may contribute to carelessness regarding the proper disposal of household wastes.

8.0 Role of Department of Works and PNG Waterboard in the Provision of Water and Sanitation Services

Following independence in 1975, the Department of Works (DOW) was established to — among other duties — maintain residential and office buildings for the Government. It was also mandated to provide and maintain water and sanitation services in provincial and district towns throughout the country. This department was also responsible of maintaining the water supply systems that were developed and installed by the Australian administration.

During the survey, many respondents did not speak highly of the DOW in relation to the provision and maintenance of the water supply and sanitation services in these towns. This is reflected in the poor maintenance of plumbing, the non-treatment of water supplies for domestic consumption, the irregular supply of water, and consequently, poor water quality and unreliable water supply systems. The DOW does not provide sanitation services, and this makes some residents careless with the proper disposal of household waste.

In some towns, the responsibility of providing sanitation and waste disposal services was transferred to the town authorities. However, this has not improved the delivery of services for town residents.

Subsequently, respondents rated the performance of DOW in providing good quality reliable water supplies and sanitation services as very poor. The performance of the PNG Waterboard in providing water supplies to residents in Daru and Popondetta was rated as average to poor.

For the settlements and those people residing on the peripheries of the town areas, their standard request was for a water supply through a communal tap.

9.0 Influence of Water and Sanitation on Residents' Living Conditions and Health

Poor water quality, the irregular supply of water, and no garbage disposal system have affected the resident's living conditions in all of the district towns that were surveyed. Respondents indicated a high incidence of water-related diseases such as diarrhoea, and skin diseases such as scabies and skin irritation.

The residents' personal hygiene habits, such as washing hands after using the toilet or before touching food, may be attributed to irregular water supplies. However, attitudes relating to personal hygiene are still a problem.

The careless or improper disposal of human waste and household refuse may contaminate water sources. The management of free-range domestic animals such as pigs may lead to faecal contamination of water sources, and the promotion of intestinal worms, if water is not treated.

The rundown state of many residential houses because of lack of funds for maintenance may affect the health of the occupants. Overcrowding and the poor attitude of residents in looking after residential quarters contribute to the poor condition of living quarters. Uncleanliness of residential quarters provides a conducive environment for cockroaches and rodents which are vectors of hygiene-related diseases.

10.0 Household Health and Health Information

The respondents have indicated a high incidence of unhygienic practices, which may be partly attributed to the availability of good quality water and sanitation services. However, this may be partly because of the attitudes of residents towards personal hygiene and health practices.

Boiling water for drinking, washing hands before touching food, and general cleanliness of household utensils and living quarters are decisions for all household members to take and uphold. Members of households need to promote good personal hygiene practices, and gender responsibilities should be shared when maintaining domestic hygiene.

“Prevention is better than cure” has always been promoted through health and hygiene education, and in information relating to water and sanitation. The educated residents may have access to personal hygiene awareness, but others may be educationally handicapped and have a poor attitude towards personal hygiene.

11.0 Economic Condition of Town Residents

Town residents in the surveyed sites are mainly employees of government departments. However, provincial towns, such as Daru and Popondetta, also accommodate private sector employees. Low-income earners may reside in settlement areas or in nearby village settlements. Members of village communities and settlement areas, and spouses of town employees who are not in employment are involved in the informal sector. With the exception of Daru, the market size for the informal sector does not contribute significantly to household income. Residents in settlement areas in Daru have access to markets to sell marine products. Marine products bring a good market price, and this may contribute significantly to household income. However, respondents indicated that households have unwise expenditure habits, and regularly spend money on luxury items such as alcohol. It was also revealed that betel nut is an important cash crop which contributes income for the informal sector employees in all the towns that were surveyed.

11.1 *Income and Expenditure*

Differences in income levels between residents employed in the formal sector are common in the towns that were surveyed. The formal sector employees' salaries vary according to the type and level of position, as either low-level, middle-level, or high-level incomes. Incomes vary between K60 per fortnight for a labourer to K800 per fortnight for a district administrator. The informal sector provides additional sources of income for households that are engaged in self-employment.

The decision on budgeting and household expenditure is the responsibility of the members of the households. Most town respondents indicated that the men are usually the ones in employment. In some households, both spouses may be employed on a full-time or part-time basis.

It was also observed that where there are opportunities, members of households become involved in the informal sector to acquire additional income. Some low-level and middle-level income earners and village settlements are engaged in growing food to supplement processed foods that are bought from the various outlets in towns and settlement areas.

However, because of freight costs, processed retail goods are expensive. Incomes may be insufficient to sustain household members. It was indicated by some respondents that some households had to apply for personal bank loans to meet educational expenses for their children.

11.2 Payment for Water

A summary of payments for water by residents in surveyed towns provided with a piped water supply is given in Table 4.

Table 4: Monthly Water Bills for Residents in the Surveyed Towns where Piped Water Supplies and Billing Services Are Being Maintained

Province	Town	Amount (Kina per Month)
Central	Kwikila	10-15
	Bereina	10-15
	Kupiano	Nil
Morobe	Finchhafen	5-10
	Mutsing	5-10
Oro	Popondetta	10-15
	Oro Bay	Nil
Western	Daru	10-15

Respondents expressed their dissatisfaction about having to pay a service fee for the use of water that is of poor quality, and not available all the time. They feel that DOW and the PNG Waterboard are overcharging for an unreliable water supply service. Many respondents have pledged their support to join a piped water supply scheme, if it becomes available. They are also willing to pay for water every month, provided that water quality is improved and available at all times.

Residents at the Braun Health Centre and nearby settlements are provided free water by the Evangelical Lutheran Church which operates and maintains the water supply facilities.

12.0 Conclusion

The following conclusions are specific for each of the towns that were surveyed.

12.1 Kwikila, Bereina, and Kupiano

- Kupiano does not have a piped water supply system, and the sanitation service is non-existent.
- In Kupiano, there is no power supply to drive the water pump to supply residents through the existing piped system.
- Residents perceived that the Department of Works has failed to provide efficient water supply and sanitation services to town residents in Kwikila and Bereina. Infrequent power interruptions also affect the availability of water for domestic use.
- Flush toilets and pit latrines are used for human waste disposal in town areas.
- Personal hygiene is a problem that may be attributed to attitude and an irregular supply of good quality water and sanitation services.
- The rundown state of public housing may be related to lack of maintenance funds, the attitude of the occupants, and overcrowding.
- Households do not belong to a water group. Respondents indicated that they would support initiatives to develop water and sanitation services.

- Customary land may be conditionally made available through mutual agreement between government agencies such as the PNG Waterboard/DOW, and the local landowners.
- Residents in village settlements practise unhygienic human waste disposal. This is an attitude problem.

12.2 Finchhafen and Mutsing

- Residents perceived that the Department of Works has failed to provide an efficient water supply and sanitation service to Gagindu town residents. The DOW has failed to maintain the supply of good quality water at all times. Infrequent power interruptions also affect the availability of water for domestic use.
- Flush toilets and pit latrines are used for human waste disposal.
- Personal hygiene is a problem that may be attributed to attitude and an irregular supply of good quality water and sanitation services.
- The rundown state of public housing may be related to the lack of maintenance funds, the attitude of occupants, and overcrowding.
- Households do not belong to a water group. Respondents indicated that they would support initiatives to develop water and sanitation services.
- Customary land may be conditionally made available through mutual agreement between government agencies such as the PNG Waterboard/DOW, and the local landowners.

12.3 Daru

- Residents perceived that the PNG Waterboard is not maintaining and supplying good quality water at all times. Infrequent power interruptions also affect the availability of water for domestic use.
- Some town residents use flush toilets and pit latrines for human waste disposal. Some households in Daru still use the outdated unhygienic bucket system for the disposal of human waste.
- Personal hygiene is a problem that may be attributed to attitude and an irregular supply of good quality water and sanitation services.
- The rundown state of public housing may be related to the lack of maintenance funds, the attitude of occupants, and overcrowding.
- Households do not belong to a water group. Respondents indicated that they would support initiatives to develop water and sanitation services.
- Customary land may be conditionally made available through mutual agreement between government agencies such as the PNG Waterboard/DOW, and the local landowners.

12.4 Popondetta

- Residents perceived that the PNG Waterboard/DOW is not maintaining and supplying good quality water at all times. Infrequent power interruptions also affect the availability of water for domestic use.
- Households do not belong to a water group. Respondents indicated that they would support initiatives to develop water and sanitation services.
- Customary land may be conditionally made available through mutual agreement between government agencies such as the PNG Waterboard/DOW, and the local landowners.

12.5 Oro Bay

- There is no piped water supply system for residents in Oro Bay. The main source of water for domestic consumption is from the Kosisi and Kunjeje Creeks, and from Eroro and Beama Rivers.
- There is no sanitation service for residents in Oro Bay.
- Households do not belong to a water group. Respondents indicated that they would support initiatives to develop water and sanitation services.
- Customary land may be conditionally made available through mutual agreement between government agencies such as the PNG Waterboard/DOW, and the local landowners.

Attachment II

Questionnaire for Household Survey

[English Version]

1. Interview Details

1-1 Serial Number -

1-2 Date of interview;
 1st ___ / ___ / ___ 2nd ___ / ___ / ___ 3rd ___ / ___ / ___

Memo for next visit date and time

1st _____

 2nd _____

 3rd _____

1-3 Name of interviewer
 1st _____ 2nd _____ 3rd _____

1-4 Location of interviewed household
 Town _____ Suburb/Settlement _____

2. Details about the Person Interviewed

2-1 Name of the person interviewed

2-1-1 Main respondent _____
a) 0. male / 1. female b) Age _____
c) Schooling 0. No schooling 1. Less than grade 3 2. Less than grade 6 3. More than grade 7
2-1-2 Attending families(1) _____
a) 0. male / 1. female b) Age _____
c) Schooling 0. No schooling 1. Less than grade 3 2. Less than grade 6 3. More than grade 7
2-1-3 Attending families(2) _____
a) 0. male / 1. female b) Age _____
c) Schooling 0. No schooling 1. Less than grade 3 2. Less than grade 6 3. More than grade 7

2-2 Main respondent is;
0. the head of household / 1. the spouse of the head of household / 99. others

3. Household Size and Living

3-1 How many people usually live in the household?

3-1-1	adult male	
3-1-2	adult female	
3-1-3	children (less than 18 years old)	
3-1-4	Baby (less than 5 years old)	

3-2 Your household;

- | |
|---|
| 0. owns or has a mortgage on the house
1. lives in a house owned by government or employer
2. rents the house/living quarters
3. lives in your customary land
4. does not have any security for your house
99. other (specify) |
|---|

3-3 What is the type of housing for this household?

- | |
|---|
| 0. high and medium cost housing
1. low cost housing
2. makeshift (squatter/unplanned/informal) housing
3. traditional bush materials housing |
|---|

3-4 Does the house have; (tick any that apply)

- | |
|--|
| 0. corrugated iron roof with guttering
1. corrugated iron roof without guttering
2. bush materials roof
3. water tanks
99. other (specify) |
|--|

3-5 How long has your household lived in this house?

_____ years

4. Water Sources and Uses at Present

4-1 The main source of water for drinking and cooking is;

- | |
|---|
| 0. public water supply piped into house
1. shared public tap
2. roof collection / rain water tank owned by household
3. roof collection / rain water tank owned by neighbors
4. roof collection / rain water tank owned by community
5. well owned by household
6. well owned by neighbors
7. well owned by community
8. river or creek
9. spring
10. water cart / tanker delivery
99. other (specify) |
|---|

4-2 If main water source is shared by several households, how many households are sharing?

_____ households

4-3 What problems have you had with your main water source? (tick any that apply)

0. no problem	6. dirty
1. low pressure	7. smelling
2. irregular or intermittent supply	8. meter not working
3. periods of no supply	9. distance in location
4. taste like salty	10. cost for using water source
5. muddy	11. labor for carrying water
99. other (specify) _____	

4-4 Where is the source of water for the following purposes?

4-4-1 bathing		0. public water supply piped into house 1. shared public tap 2. roof collection / rain water tank 3. river / creek / sea 4. well 5. spring 6. water cart / tanker delivery 99. Other (specify)
4-4-2 washing clothes		
4-4-3 washing dishes		
4-4-4 small business activities		
4-4-5 garden / irrigation		

4-5 Do you have enough water for drinking and cooking?

0. Yes 1. No

4-6 Is the main source for drinking and cooking available all year around?

0. Yes 1. No

4-7 Where do you get water, when your main source of water for drinking and cooking is not available? (in case of droughts or other occasions)

0. shared public tap
1. roof collection / rain water tank owned by household
2. roof collection / rain water tank owned by neighbors
3. roof collection / rain water tank owned by community
4. well owned by household
5. well owned by neighbors
6. well owned by community
7. river or creek
8. spring
9. water cart / tanker delivery
10. vendor / shop
99. other (specify)

5. Payment for Water

5-1 How much does your household pay for water each month constantly?

0. no payment	----->	Go to question 5-3
1. less than K5	} ----->	Go to question 5-2
2. between K5 and K10		
3. between K10 and K15		
4. between K15 and K20		
5. between K20 and K25		
6. between K25 and K30		
7. more than K30		

5-2 Above amount is:

0. cheap 1. fair 2. expensive 3. no idea

5-3 Did your household ever buy water in case of a drought or other special occasion?

0. Yes -----> Go to question 5-4

1. No -----> Go to question 5-9

99. Others(specify) -----> Go to question 5-4

5-4 What kind of container was used to buy water?

0. drum (44gallons=200L)
1. large screw top plastic container (10 gallons=45L)
2. jerry can (4gallons=18L)
3. bucket (1.5gallons=7L)
4. hired truck (gallons= L)
99. other (specify) (gallons= L)

5-5 How much does your household pay for one container (or hired truck) of water in above case? K _____

5-6 How many containers does your household buy per week in above case?

 containers

5-7 When did your household buy water last time and why did your household need to buy water?

5-8 How long (how many months) did your household continue buying water last time?

_____ Months

5-9 If piped water supply scheme will become available, would your household join the scheme?

0. Yes -----> Go to question 5-10
 1. No -----> Go to question 6

5-10 How much would your household pay every month for clean, good pressure public water, available 24 hours a day, pipd into your home to your own taps?

K every month

5-11 How much would your household pay every month for clean, good pressure public water, available 24 hours a day, pipd to a public standpipe or taps shared with other households?

K every month

6 Toilet facilities and Waste Disposal

6-1 What type of toilet does your household use?

0. flush toilet inside the house
1. flush toilet shared with others
2. private pit latrine
3. pit latrine shared with others
4. private bucket toilet
5. bucket toilet shared with others
6. other (specify)
99.no toilet -----> Go to question 6-1-a

6-1-a Where do the adults (male/female) and children of your household usually go to the toilet?		
a-1 adult male		0. house yard 1. bush 2. river 3. sea or beach 99.other(specify)
a-2 adult female		
a-3 children		

----->go to question 6-3

6-2 What problems have you had with your toilet?

(tick any that apply)

0. no problem	3. smell
1. water availability	4. blockage
2. insects	5. waste level (going up about to top)
99. other (specify)	

6-3 Does your household have a septic tank?

0. Yes 1. No

6-4 Where does your household dispose the rubbish?

6-4-1	food scraps		0. rubbish bin
6-4-2	plastic bags		1. toilet
6-4-3	old newspaper		2. garden/buried
6-4-4	sanitary pads/cloths		3. burned
6-4-5	old clothes / rags		4. sea/river
6-4-6	baby faces		5. bush
			99. Other (specify)

7. Household Health and Health Information

7-1 Does your household boil water used for drinking?

0. always 1. sometimes 2. unusual

7-2 Is the drinking /cooking water treated in any other way?

0. always 1. sometimes 2. unusual

Please describe any other treatment of water for drinking and cooking.

.....

7-3 Does everyone in your household wash their hands after going to the toilet?

0. always 1. sometimes 2. unusual

7-4 Does everyone in your household wash their hands before cooking?

0. always 1. sometimes 2. unusual

7-5 During last two weeks, did any member of your household have diarrhea?

0. Yes -----> Go to question 7-6
 1. No -----> Go to question 7-8
 2. No idea -----> Go to question 7-8

7-6 Who had it? (fill the number of persons)

0. adult male	Number ()
1. adult female	()
2. children	()
4. baby (less than 3 years old)	()

7-7 In above case, where did you seek advice or treatment?

0. hospital	4. chemist / drug store
1. health center	5. private doctor / clinic
2. aid post	6. traditional practitioner
3. health worker	7. self treatment
99. other (specify)	8. nothing

7-8 Do you think a person can protect themselves from getting diarrhea?

0. Yes 1. No 2. No idea

7-9 Thinking back over the last 12 months, did your household member get the following sick?

- | |
|-----------------|
| 1. diarrhea |
| 2. malaria |
| 3. skin disease |

7-10 Has anyone in your household (including children) received any health and hygiene education or information relating to safety water and sanitation?

0. Yes -----▶ Go to question 7-11
 1. No -----▶ Go to question 8
 2. No idea -----▶ Go to question 8

7-11 Where did this information or education come from?

(tick any that apply)

- | | |
|---------------------|-----------------------------|
| 0. hospital/clinic | 5. television/radio program |
| 1. health center | 6. school |
| 2. aid post | 7. church or mission |
| 3. health worker | 8. family or friends |
| 4. women's group | 9. newspaper |
| 99. other (specify) | |

8. Labor and Responsibility

8-1 Who is the most responsible for collecting water in your household?

- | |
|--------------------|
| 0. adult male |
| 1. adult female |
| 2. male children |
| 3. female children |
| 99. no idea |

8-2 How long hours/minutes your household members work for collecting water everyday?

Main person 1 times [] h/m X [] times per day = [] h/m

Others (1) 1 times [] h/m X [] times per day = [] h/m

Others (2) 1 times [] h/m X [] times per day = [] h/m

Total _____ h/m

8-3 When you keep carried water, are the containers (reservoirs) always covered to prevent any contamination from outside?

0. Yes 1. No 2. No idea

8-4 Who is responsible for paying household bills, including any water bills?

0. adult male 1. adult female 99. no idea

8-5 Who is responsible for maintenance of any taps, tanks, water containers, etc.?

0. adult male 1. adult female 2. male children 3. female children 99. no idea

8-6 Who is responsible for keeping toilets or latrines clean (if your household has) ?

0. adult male 1. adult female 2. male children 3. female children 99. no idea

9. The Role of Agencies in Providing Water and Sanitation

9-1 From your experience, how would you rate the performance of the organization that is responsible for water supply and sanitation in following areas;

9-1-1	supplying water : sufficient quality 0. Good / 1. Average / 2. Bad / 99. No experience
9-1-2	supplying water : sufficient quantity 0. Good / 1. Average / 2. Bad / 99. No experience
9-1-3	disposing of sewage 0. Good / 1. Average / 2. Bad / 99. No experience
9-1-4	reading meter 0. Good / 1. Average / 2. Bad / 99. No experience
9-1-5	billing 0. Good / 1. Average / 2. Bad / 99. No experience
9-1-6	maintaining the system, fixing leaks 0. Good / 1. Average / 2. Bad / 99. No experience
9-1-7	giving out the information and advice 0. Good / 1. Average / 2. Bad / 99. No experience
9-1-8	notifying about water cuts 0. Good / 1. Average / 2. Bad / 99. No experience

9-2 Please make any other comments on the performance and services of the organization that is responsible for water supply and sanitation.

.....
.....
.....

9-3 Has any agency, other than above mentioned organization, helped to provide a water supply or sanitation facility to your household?

- 0. Yes -----> Go to question 9-4
- 1. No -----> Go to question 10

9-4 What the name of that agency or organization?

.....

9-5 When and what did they provide?

.....
.....
.....

9-6 Is the facility still working?

- 0. Yes 1. No
- 99.other (specify)

.....

9-7 Please comment on how you are satisfied with the performance of this agency.

.....
.....
.....

10. Household and community participation

10-1 Does your household belong to a water user group?

- 0. Yes 1. No
- 99.other (specify)

.....

10-2 Would you be willing to contribute some unpaid labor for improving or maintaining your water or sewerage services?

0. Yes 1. No 3. No idea

99.other (specify)

.....
 10-3 Would you be willing to contribute some money for the cost of materials for your water or sewerage services?

0. Yes 1. No 3. No idea

99.other (specify)

.....
 10-4 Would you be willing to make your land available for a water or sanitation scheme, eg. for reservoirs, pump station or pipes for community purpose?

0. Yes 1. No 3. No idea

99.other (specify)

11. Income and expenditure

11-1 How many members in your household are employed?

	Number in full time employment	Number in part time employment	Number in self-employment
Male			
Female			

11-2 Please think over all the sources of cash income which come into your household, and indicate what is the average/usual income for following category?

11-2-1 wage/salary

Employer	amount	unit
	K	per fortnight
	K	per fortnight
	K	per fortnight
	K	per fortnight
Sub-total(A)	K	per fortnight

11-2-2 business activities / sales / collecting cans / subsistence farming sales

Activity	amount	unit
	K	per
	K	per
	K	per
	K	per
Sub-total (B)	K	per month

11-2-3 gift or grants

K	per year	(C)
---	----------	-----

11-2-4 NPF / POSF advance

K	per year	(D)
---	----------	-----

11-2-5 rent from property or land

Description	amount	unit
	K	per
	K	per
	K	per
	K	per
Sub-total (E)	K	per month

11-2-6 other

Description	amount	unit
	K	per
	K	per
	K	per
	K	per
Sub-total (F)	K	per month

G-total

$$(A)/2*4.5+(B)+(C)/12+(D)/12+(E)+(F)$$

$$= \text{K} \quad \text{per month}$$

11-3 Does your household have any gardens enough for harvesting your staple food?

0. Yes 1. No 3. No idea

99.other (specify)

.....

11-4 Please list main five food stuff coming from gardening, hunting or fishing.

1.
 2.
 3.
 4.
 5.

11-5 Please think about all your expenditure for food and list them. And indicate how much your household spends per each item.

Food Stuff	Expenditure	unit
	K	per
	K	per
	K	per
	K	per
	K	per
	K	per
	K	per
	K	per
	K	per
	K	per
	K	per
	K	per
	K	per
	K	per
	K	per
Total	K	per month

11-6 How much does your household spend on transport, PMV fares (go and back), taxi fares each certain unit?

K	per
---	-----

11-7 How much does your household usually spend each month/year on the following items?

Stuff	Expenditure	unit
clothes	K	per
electricity	K	per
fuel	K	per
rent or mortgage	K	per
telephone	K	per
loan payment for electricity good, furniture etc.	K	per
bank loan	K	per
vehicle including maintenance, fuel loan payment etc.	K	per
Others	K	per
Total	K	per month

11-8 How many students are there in your household?

11-8-1	Primary school	
11-8-2	Secondary School	
11-8-3	Higher than secondary school	

11-9 How much does your household spend each term on education expenses such as school fees, books, uniforms, etc?

11-9-1 School Fee	Primary school per one K per year
	Secondary School per one K per year
	Higher than secondary school per one K per year
	K per year

11-9-2 Books/ Uniform	Primary school per one K per year
	Secondary School per one K per year
	Higher than secondary school per one K per year
	K per year

11-9-3 Other	Primary school per one K per year
	Secondary School per one K per year
	Higher than secondary school per one K per year
	K per year

G-total

K per year

11-10 Do you think how much is average/usual amount per year as cash gift or cash donation to your relatives, friends and church?

K per year

For Supervisor

12-1 Supervisor's name _____

12-2 Date of checking the result of questionnaire survey

1st ____ / ____ / ____ 2nd ____ / ____ / ____ 3rd ____ / ____ / ____

12-3 Result

1st _____ 2nd _____ 3rd _____

0. Completed

1. Visit again

2. No household member / No competent respondent at home

3. Refused

4. Suspended

[Pijin Version]

1. Intaviu Detels: (Olgeta man or meri husat i mekim dispela interview mas bekim dispela askim).

- 1-1 Serial Number
- 1-2 Day intaviu
- 1-3 Nem blong man/meri i wokim intaviu
- 1-4 Ples: Taun.....Liklik hap ples long taun.....

2. Ol detels bilong man/meri i bekim ol askim

2-1 Nem bilong man/meri yu toktok long ol:

2-1-1 Nem:.....
a) Em man or meri? 0. man /1. meri b) Hamas krismas bilong dispela man/meri?..... c) Em skul tu? Sapos em bin skul, em go mak long wanem gred? 0. Skul istap yet 1.Nogat skul 2. Skul inap gred 3 3.Skul inap gred 6 4.Skul abrusim gred 7
2-1-2 Nem:.....
a) Em man or meri? 0. man /1. meri b) Hamas krismas bilong dispela man/meri?..... c) Em skul tu? Sapos em bin skul, em go mak long wanem gred? 0. Skul istap yet 1.Nogat skul 2. Skul inap gred 3 3.Skul inap gred 6 4.Skul abrusim gred
2-1-3 Nem:.....
a) Em man or meri? 0. man /1. meri b) Hamas krismas bilong dispela man/meri?..... c) Em skul tu? Sapos em bin skul, em go mak long wanem gred? 0. Skul istap yet 1.Nogat skul 2. Skul inap gred 3 3.Skul inap gred 6 4.Skul abrusim gred

2-2 Dispela man/meri i bekim toktok em:

0. papa blong haus / 1. Meri pikinini blong papa blong haus / 99. ol narapela

3.Sais blong haus na stap blong yupela

3-1 Hamas man/meri save stap long dispela haus olgeta time?

3-1-1 Ol man 19 pela krismas na antap	
3-1-2 Ol meri 19 pela krismas na antap	
3-1-3 Ol pikinini (tamblo long 18 pela krismas)	
3-1-4 Bebi (tamblo long 5 pela krismas)	

3-2 Haus blong yu olsem wanem; (makim wanpela)

0.blong yu yet o yu baim wantaim benk dinau 1.stap long haus blong gavman o kampani 2.rentim haus o liklik ples 3.stap long graun blong yu yet 4.nogat sekuriti long haus blong yu 99.narapela(wanem kain stret).....
--

3-3 Wanem kain haus blong yu?

- | |
|--|
| 0.hai o midium cost haus
1.lou cost haus
2.yu yet i wokim long ol hap diwai na kapa nambaut
3.saksak, bus, kunai haus |
|--|

3-4 Haus blong yu i gat (makim wanpela)

- | |
|---|
| 0.kapa wantaim gata long ren wara
1.kapa tasol
2.saksak / kunai antap
3.tenk wara
99. narapela (wanem kain stret) |
|---|

3-5 Hamas krismas yupela stap long dispela haus?

_____krismas

4. Long wanem hap wara isave kam, na hau yupela save yusim wara long haus

4-1 Yupela isave kisim wara blong dring na kuk olgeta taim long wanem hap stret?

- | |
|--|
| 0.taun saplai igo insait long haus
1.taun wara ikam long wanpela tep, blong serim
2.long tenk, ikam long renwara em yupela long haus yet yusim
3.long tenk, ikam long renwara em yupela isave kisim long ol haus klostu
4.long tenk, ikam long renwara em olgeta komuniti i papa long en
5.hul wara long graun em yupela long haus yet igat
6.hul wara long graun em ol haus klostu igat
7.hul wara long graun em olgeta komuniti i papa long en
8.bikpela wara
9.ol liklik wara i kalap ikam long ston
10.ol wara kar isave kisim ikam
99.narapela (wanem kain stret)..... |
|--|

4-2 Hamaspela narapela haus wantaim yupela isave bung long usim dispela wara?.....

4-3 Wanem kain ol rong na hevi yupela isave gat wantaim wara blong yupela? (tickim wanempla yu ting olsem yu save igat)

- | | |
|--|---|
| 0.nogat rong/wari
1.wara inosave kam strong long tep
2.sampla taim wara ino save kam
3.sampla taim nogat wara
4.wara isave teste olsem sol antap
5.wara i deti olsem graun
99.ol narapela wari (wanem kain)..... | 6. wara i deti
7.wara isave smel
8.mita blong wara ino wok gut
9.wara blong kisim istap longwe
10.pei blong usim wara i
11.bikpela hatwok blong karim wara |
|--|---|

4-4 Makim namba long box, wanem hap yupela save kisim wara blong wokim kainkain wok?

4-4-1 waswas		0.taun wara insait long tep
4-4-2 wasim klos		1.pablik tep
4-4-3 wasim plet, sospen		2.renwara tenk
4-4-4 liklik bisnis		3.bikpela wara
4-4-5 givim wara long gaden		4.hulwara long graun
		5.ol liklik wara i kalap ikam long ston
		6.wara kar i kisim ikam
		99.ol narapela (wanem kain stret).....

4-5 Yupela igat inap wara blong dring, kuk na waswas or nogat? (makim wanpela)

0. Yes 1. Nogat

4-6 Dispela hap yupela isave kisim wara, em save i gat wara olgeta taim blong yia o nogat?

0. Yes 1. Nogat

4-7 Wanem hap yu save kisim wara, taim hap yu save kisim wara blong dring na kuk long en olgeta taim i pinis? (sapos long taim blong san or long narapela taim)

0. taun wara ikam long wanpela tep, blong serim
1. long tenk, ikam long renwara em yupela long haus yet yusim
2. long tenk, ikam long renwara em yupela isave kisim long ol haus klostu
3. long tenk, ikam long renwara em olgeta komuniti i papa long en
4. hul wara long graun em yupela long haus yet igat
5. hul wara long graun em ol haus klostu igat
6. hul wara long graun em olgeta komuniti i papa long en
7. bikpela wara
8. ol liklik wara i kalap ikam long ston
9. ol wara kar isave kisim ikam
10. baim long stua
99. narapela (wanem kain stret).....

5. Baim Wara

5-1 Insait long wan wan mun, yupela isave baim wara long hamas moni tru? (makim wanpela).

0. ino save baim	→	go long kwesten 5-3
1. aninit long K5.00	}	go long kwesten 5-2
2. namel long K5.00 na K10.00		
3. namel long K10.00 na K15.00		
4. namel long K15.00 na K20.00		
5. namel long K20.00 na K25.00		
6. namel long K25.00 na K30.00		
7. antap moa long K30.00		

5-2 Wanem tingting blong yu long dispela moni yu save lusim long baim wara:

0. liklik tumas 1. Em iorait liklik 2. bikpela tumas 3. mi ino save

5-3 Haus blong yu baim wara long taim blong biksan o ol narapela taim tu o nogat?

0. Yes → Go long kwesten 5-4

1. Nogat → Go long kwesten 5-9

99. narapela (wanem kain stret) → Go long kwesten 5-4

5-4 Taim blong pain wara, wanem kain konteina em yupela save yusim?

0.44 galon drum (200 litas)
 1. bikpela plastik wantaim lid (10 gallons = 45 litas)
 2. jeri can (4 gallons = 45 litas)
 3. baket (1.5 gallons = 7 litas)
 4. hirim kar
 99. ol narapela (wanem kain stret).....(gallons =
 litas)

5-5 Hamas yupela baim wara long wanpela blong ol konteina antap?

K _____

5-6 Insait long wan wan wik, hamas plastik konteina wara em yupela save baim long taim blong san na wara isot?

_____ konteina

5-7 Wanem taim em yupela baim wara las taim na wai na yupela ibin baim wara?

5-8 Hamas mun em yupela sukurim long baim wara las taim?

_____ mun

5-9 Sapos paip wara saplai ikamap, yupela bai joinim tu o nogat?

0. Yes → Go long kwesten 5-10

1. Nogat → Go long kwesten 6

5-10 Yu ting hamas moni tru yu ken yusim long baim wara insait long wan mun sapos mipela ipulim wara igo insait long haus bilong yu, long givim yu klin wara olgeta taim.

K _____ long wan wan mun

5-11 Sapos mipela ipulim wara saplai ikam long givim klin wara olgeta taim long public tep or narapela kain tep we planti man iken yusim, hamas moni bai yu inap long baim long wan wan mun?

K _____ long wan wan mun

6. Ples blong pispis/pekpek

6-1 Wanem kain toilet em yupela gat? (makim wanpela)

0. Wara toilet insait long haus
1. Wara toilet ol planti narapela man meri bung long en
2. Hul toilet bilong yu yet
3. Hul toilet bilong we planti lain save yusim
4. Privet baket toilet
5. Bucket toilet serim wantem narapela lain
6. Ol narapela kain toilet.....
99. nogat toilet → go long kwesten 6-1-a

6-1a Sapos nogat, wanem hap tru em ol bikpela (man/meri) na pikinini long haus blong yu save go toilet?

a-1 bikpela man	0. arere long haus
a-2 bikpela meri	1. bus
a-3 ol mangi	2. wara (bikpela)
	3. solwara o nambis
	99. ol narapela (wanem hap)

→ go long kwesten 6-3

6-2 Wanem kain wari/bagarap yupela isave gat wantem toilet bilong yupela?

(makim long ol ansa tamblo)

0. nogat wari	3. isave smel
1. wara ino save stap	4. toilet blok
2. planti lung na ol binatang nambaut	5. pekpek save pulap
99. ol narapela rong (plis tokaut)	

6-3 Dispela haus igat septic tenk o nogat?

0. Yes 1. Nogat

6-4 Wanem hap tru yupela isave putim ol dispela rabis blong haus?

6-4-1 pipia blong kaikai	0. rabis bin
6-4-2 plastic beg	1. toilet
6-4-3 olupela nuspepa	2. gaden na planim
6-4-4 modess na kain klos	3. kukim long paia
6-4-5 olupela klos na hap laplap	4. solwara/bikpla wara
6-4-6 pekpek blong bebi	99. ol narapela we (wanem kain wei)

7. Gutpela Sindaun Blong Haus na Helt Toksave

7-1 Yupela isave boilim wara blong dring tu?

0. olgeta taim 1. sampela taim tasol 2. nogat tru
 7-2 Dispela wara blong dring na kuk em yupela isave traim klinim tu?
 0. olgeta taim 1. sampela taim tasol 2. nogat tru
 Plis inap yu tok klia long ol wei yupela isave traim klinim wara blong kuk na
 dring.

.....

 7-3 Yupela olgeta isave wasim han bihain long yupela go long toilet?
 0. olgeta taim 1. sampela taim tasol 2. nogat tru

7-4 Yupela olgeta isave wasim han pastaim long kukim kaikai?
 0. olgeta taim 1. sampela taim tasol 2. nogat tru

7-5 Long las tupela wik igo pinis, igat wanpela long haus ikisim pekpek wara tu?
 0. Yes —————→ Go long kwesten 7-6
 1. Nogat —————→ Go long kwesten 7-8
 2. Mi no save —————→ Go long kwesten 7-8

7-6 Huset ibin gat? (putim hamas man/meri)

0. bikpela man	Namba ()
1. bikpela meri	()
2. ol mangi	()
3. ol bebi (tamblo long 3 krismas)	()

7-7 Long dispela as, yu kisim ol edvais or marasin long we?

0. hausik	4. stoa blong marasin
1. helt senta	5. praivet dokta o klinic
2. aid post	6. dokta blong ples
3. ol wokman blong helt	7. yu yet kisim marasin
99. ol narapela (tok aut)	8. ino bin kisim

7-8 Yu ting wanem, ol man inap lukautim ol yet long noken kisim pekpek wara?
 0. Yes 1. Nogat 2. Mi no save

7-9 Tingim igo bek long las 12 mun, igat wanpela man o meri long haus ikisim ol
 dispela sik tu?

1. pekpek wara	
2. malaria	
3. skin disis	

7-10 Insait long haus blong yu, igat sampela lain ol isave kisim gutpela toktok na
 toksave bilong gutpela helt na wara saplai tu?
 0. Yes —————→ Go long kwesten 7-11
 1. Nogat —————→ Go long kwesten 8

2. Mi no save

Go long kwesten 8

7-11 Ol bin kisim dispela toksave/toktok long wanem hap?

(makim ol ansa)

- | | |
|---------------------------|------------------------------------|
| 0. hausik/klinik | 5. long televisin na redio program |
| 1. helt senta | 6. skul |
| 2. aid post | 7. haus lotu o mission |
| 3. ol wok man bilong helt | 8. femli o pren nambaut |
| 4. ol mama grup | 9. long niuspepa |
| 99. ol narapela (tok aut) | |

8. Wok Bilong Ol Wan Wan Man Meri

8-1 Husat isave kisim wara bilong haus? (makim ol ansa)

- | |
|-----------------|
| 0. bikpela man |
| 1. bikpela meri |
| 2. liklik mangi |
| 4. liklik meri |
| 99. mi no save |

8-2 Hamas haua ol lain long haus isave wok long kisim wara olgeta dei?

Man o meri [] taims [] haua X [] taim long de = [] haua

Ol arapela (1) [] taims [] haua X [] taim long de = [] haua

Ol arapela (2) [] taims [] haua X [] taim long de = [] haua

Totol _____ hauas

8-3 Taim yu karim wara ikam long haus, yu save karamapim tu blong stopim ol samting inoken ibagarapim wara?

0. Yes 1. Nogat 2. Mi no save

8-4 Huset man isave baim ol bil blong haus, kain olsem wara bil? (makim ol ansa)

- | |
|-----------------|
| 0. bikpela man |
| 1. bikpela meri |
| 2. mi ino save |

8-5 Huset isave stretim na fixim ol tep blong wara, tenk? (makim ol ansa)

- | |
|-----------------|
| 0. bikpela man |
| 1. bikpela meri |
| 2. liklik mangi |
| 3. liklik meri |
| 99. mi ino save |

8-6 Huset man isave was na klinim ol toilet (sapos haus blong yupela igat)?

- | |
|-----------------|
| 0. bikpela man |
| 1. bikpela meri |
| 2. liklik mangi |
| 3. liklik meri |
| 99. mi ino save |

9. Ol Lain Huset Isave Givim Wara

9-1 Long lukluk blong yu, long wok blong ol oganaisesen long saplaim wara na rausim toilet pipia, yu ting olsem wanem stret long ol long:

9-1-1 saplaim wara: gutpela klinpela wara 0. Gutpela / 1. Iorait / 2. Nogut / 99. Ino bin experiensim
9-1-2 saplaim wara: planti wara 0. Gutpela / 1. Iorait / 2. Nogut / 99. Ino bin experiensim
9-1-3 rausim pekpek na rabis 0. Gutpela / 1. Iorait / 2. Nogut / 99. Ino bin experiensim
9-1-4 ridim mita 0. Gutpela / 1. Iorait / 2. Nogut / 99. Ino bin experiensim
9-1-5 toksave blong bil 0. Gutpela / 1. Iorait / 2. Nogut / 99. Ino bin experiensim
9-1-6 stretim, fixim tep 0. Gutpela / 1. Iorait / 2. Nogut / 99. Ino bin experiensim
9-1-7 givim toksave na advais 0. Gutpela / 1. Iorait / 2. Nogut / 99. Ino bin experiensim
9-1-8 toksave long stopim wara 0. Gutpela / 1. Iorait / 2. Nogut / 99. Ino bin experiensim

9-2 Inap yu givim sampela tingting blong yu long wok blong dispela oganaisesen isave saplaim wara na rausim pekpek na pipia?

.....

9-3 Igat ol sampela narapela lain husat isave saplaim wara na rausim pekpek na pipia long haus blong yu tu?

0. Yes \longrightarrow Go long kwesten 9-4
 1. Nogat \longrightarrow Go long kwesten 10

9-4 Inap yu givim nem blong ol dispela lain?

.....

9-5 Ol i helpim long wanem samting, na long wanem taim stret?

.....

9-6 Ol samting ol wokim iwok yet ?

0. Yes 1. Nogat

99. Ol narapela (tok aut)

.....

9-7 Plis toksave long wanem kain tingting yu gat long ol dispela lain.

.....

10. Haus na Wok Bung Wantaim Komuniti

10-1 Haus blong yu em memba bilong wanpela group blong usim wara tu?

0. Yes 1. Nogat

99. ol narapela (wanem kain)

.....

10-2 Sapos igat wok blong wara na suridg, yu ting yu inap long givim liklik wok halivim?

0. Yes 1. No 2. Mi ino save

99. Ol narapela (wanem kain)

.....

10-3 Yu ting yu inap long tromoi sampela mani igo long baim ol samting blong mekim wok blong wara na sewerage or nogat?

0. Yes 1. Nogat 2. Mi ino save

99. Ol narapela (wanem kain)

.....

10-4 Sapos igat komuniti wok blong wara saplai na sanitesin ikamap, yu ting yu ken givim sampla hap graun blong yu long wokim dam, pamp stesin o ol paip blong komuniti?

0. Yes 1. Nogat 2. Mi ino save

99. ol narapela (wanem kain)

.....

11. Moni Blong Yu na Wei Yu Save Yusim

11-1 Hamas man-meri long haus i save wok mani?

	Wok olgeta taim	Wok long wanwan taim tasol	Wok em yet
Bikpela man			
Bikpela meri			

11-2 Plis yu tingim olgeta rot yu save kisim moni ikam long haus blong yu, na

toksave hamas moni yu save kisim?

11-2-1 fotnait moni

Ol lain yu wok wantaim	hamas yu save kisim	(yunit) –fotnait
	K	olgeta fotnait
	K	olgeta fotnait
	K	olgeta fotnait
	K	olgeta fotnait
Sab-total (A)	K	olgeta fotnait

11-2-2 Bisnis long buai, smok, botols, kaikai, salim ol gaden kaikai

Ol kain liklik wok	Hamas yu save kisim	(yunit)-de, wik, fotnait o mun
	K	olgeta
	K	olgeta
	K	olgeta
	K	olgeta
Sab – total (B)	K	olgeta mun

11-2-3 Halivim long wantok o poro

(C)

K	olgeta yia
---	------------

11-2-4 NPF/ POSF moni

(D)

K	olgeta yia
---	------------

11-2-5 Moni yu kisim olsem rent long man i yusim ol samting blong yu o long graun

Wanem kain stret	hamas	(yunit) – de, wik, fotnait o mun
	K	olgeta
	K	olgeta
	K	olgeta
	K	olgeta
Sab-total (E)	K	Olgeta mun

11-2-6 ol narapela rot

Wanem kain stret	hamas	(yunit) – de, wik, fotnait o mun
	K	olgeta
	K	olgeta
	K	olgeta
	K	olgeta
Sab-total (F)	K	olgeta mun

Gren-total

(A)/2*4.5+(B)+(C)/12+(D)/12+(E)+(F)

= K _____ olgeta mun

11-3 Haus blong yu igat inap gaden kaikai?
 0. Yes 1. Nogat 2. Mi no save
 99. Ol narapela (wanem kain stret)

11-4 Plis givim nem blong faivpela kaikai yu save kisim long gaden, kisim long bus or wara

- 1.....
- 2.....
- 3.....
- 4.....
- 5.....

11-5 Plis tingim olgeta kaikai yu save baim na tokim mi hamas yu save yusim long baim wan wan kaikai.

Ol kain kaikai	Hamas mani yu yusim	(yunit)- dei, wik, fotnait o mun
	K	olgeta
	K	olgeta
	K	olgeta
	K	olgeta
	K	olgeta
	K	olgeta
	K	olgeta
	K	olgeta
	K	olgeta
	K	olgeta
	K	olgeta
	K	olgeta
	K	olgeta
	K	olgeta
Totol	K	olgeta mun

11-6 Hamas mani yu save yusim long transpot, PMV, kar long wan wan wik?

K	olgeta wik
---	------------

11-7 Hamas mani yupela save yusim olgeta mun/krisimas long ol dispela samting?

Ol samting	Hamas mani yu yusim	(yunit) – dei, wik, fotnait, mun
kolos	K	olgeta
pawa	K	olgeta
(fuel)	K	olgeta

petrol/disil/kerosin		
rent/bekim dinau blong haus	K	olgeta
telefon	K	olgeta
bekim dinau, long frids,televisin, sia, tebol, skul fi	K	olgeta
benk dinau	K	olgeta
kar wantaim mentenens, bekim fuel dinau	K	olgeta
ol narapela samting	K	olgeta
Total	K	olgeta mun

11-8 Long haus blong yu, hamas skul pikinini istap?

11-8-1 Praimeri skul	
11-8-2 Hai skul	
11-8-3 Nesinol Hai Skul/Univesiti/Kolidg	

11-9 Hamas mani haus blong yu save yusim long baim skul fi, buks, yunifom na ol narapela samting long wan wan tem?

11-9-1 Skul fi	Praimeri/komuniti skul long wanpela pikinini
	K olgeta krismas
	Hai skul long wanpela pikinini
	K olgeta krismas
	Nesinol hai skul, univesiti, kolidg
	K olgeta krismas
	K olgeta krismas

11-9-2 Buks/yunifom	Praimeri/komuniti skul long wanpela pikinini
	K olgeta krismas
	Hai skul long wanpela pikinini
	K olgeta krismas
	Nesinol hai, univesiti, kolidg long wanpela pikinini
	K olgeta krismas
	K olgeta krismas

11-9-3 Ol narapela	Praimeri/komuniti skul long wanpela pikinini
	K olgeta krismas

	Hai skul long wanpela pikinini K _____ olgeta krismas
	Nesinol hai, univesiti, kolidg long wanpela pikinini K _____ olgeta krismas
	K _____ olgeta krismas

Gren-total K _____ olgeta krismas

11-10 Hamas mani yupela save givim long ol wantok o givim long sios wok, putim
pei blong baim meri, long taim ol man idai? (long wan wan krismas)

K _____ olgeta krismas

Dispela em blong Supavaisa			
12-1	Nem blong Supavaisa _____		
12-2	Det blong sekim risalt blong dispela kwestenea sevei		
	1 st 00/ / _____	2 nd 00/ / _____	3 rd 00/ / _____
12-3	Risalt		
	1 st _____	2 nd _____	3 rd _____
	0. Pinis		
	1. Nogat man long haus / Nogat gutpela man blong ansa long kwesten		
	2. Surukim taim		
	3. Em les		
	4. Kenselim		