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Appropriate technology options for managing drainage flows from low cost peri urban settlements in South Africa.

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B2. SURVEY QUESTIONNAIRE

Introduction

My name is .....……., and I am carrying out a survey on the water use and waste water disposal characteristics of the residents of Alexandra. The survey is aimed at gathering necessary background information for the design of appropriate excreta, wastewater disposal and drainage systems for Alexandra.

We have been granted permission right from the Johannesburg Municipality authorities to talk to people about issues related to water and sanitation in this community. I would particularly like to have a discussion with the head of the household or his spouse.

Your answers will be kept confidential and used only for the purpose of this study. If there is anything you wish to ask, please feel free to do so and we will discuss it.

No.	Question	Valid Responses	
1. Identification			
1.1	**Precinct region**		
1.2	**Status of Respondent**	1.Head of Household 2.Care-taking 3.Family Member 4.Visitor 5.Other	
1.3	**Location (West/East bank)**		
1.4	**Interviewer Code**		
1.5	**Date of Interview**		
1.6	**Result of Interview**	1 Completed 2 Not completed	
2 Demographic Parameters			
2.1 Head of Household			
2.1.1	**Are you the Head of this household?**	1. Yes 2. No	☐ ☐
2.1.2	**What is the sex of the head of this household?**	1. Male 2.Female	☐ ☐
2.1.3	**How long has the head lived in this area?**	1.Less than 1 yr 2.1 to 5 yrs 3.6 to 10 yrs 4.More than 10 yrs 5.Don't Know	☐ ☐ ☐ ☐ ☐
2.1.4	**Under what arrangement is the family staying in this house**	1.Ownership 2.Rental 3.Employment 4.Care-taking	☐ ☐ ☐ ☐

No.	Question	Valid Responses	
2.1.6	**What is the occupation of the head of household?**	1.Trader 2. Professional 3. Artisan 4. Labourer 5.Don't Know 6.Others (Specify)	☐ ☐ ☐ ☐ ☐ ☐
2.2 Composition of Household			
2.2.1	**How many people are there in this household?**		
2.2.2	**How many of the people in this household are aged:**	1. Under 1 yr 2. 1 to 4 yrs 3. 5 to 14 yrs 4. 15 to 49 yrs 5. More than 50 yrs	☐ ☐ ☐ ☐ ☐
2.3 Household Economy			
2.3.1	**What is the monthly expenditure of this household on each of the following items?**	1.Health 2.Water 3.Food 4.Transport 5.Rental 6.Education 7.Other	
3 Sector Questions			
3.1 Water Supply			
3.1.1	**Where do you get your water?**	1.Community tap 2.Tap on plot 3.Tap inside dwelling 4.Other (specify).	☐ ☐ ☐ ☐

No.	Question	Valid Responses	
3.1.2	**How much time does it take to and from the source? (min)**	1. <10 2.10-30 3. > 30	☐ ☐ ☐
3.1.3	**How much water do you use per day? Write down number of 20-25 litre containers**		
3.1.4	**Do you get enough water for the Household needs?**	1. Yes 2. No	☐ ☐
3.1.5	**What, if any problems do you encounter with this water source?**	1.Low pressure 2.Queuing 3.None 4.Others (specify)	☐ ☐ ☐ ☐
3.1.6	**Do you pay for the water?**	1. Yes 2. No	☐ ☐
3.1.7	**If you are paying for the water, how much does your household pay per month**		
3.1.8	**Who do you pay for the water?**	1.Municipality 2.Service provider 3.Vendor 4.Other	☐ ☐ ☐ ☐
4. Sanitation			
4.1 Disposal of excrement and waste water			
4.1.1	**Does your household have excreta and wastewater disposal facilities?**	1. Yes 2. No	☐ ☐

No.	Question	Valid Responses	
4.1.2	**What is the nature/type of the facilities your household uses?**	1.Chemical toilet 2.Flush inside dwelling 3.Flush outside 4.Pit latrine 5.Bucket 6.Bush	☐ ☐ ☐ ☐ ☐ ☐
4.1.3	**How do you dispose of:**		
	Wash water from cooking, washing, bathing etc…(grey water)	1. Alleys/streets 2. Storm water culverts 3.Jukskei River 4. Other	☐ ☐ ☐ ☐
4.1.4	**Do you share these facilities with other households?**	1.Yes 2. No	☐ ☐
4.1.5	**If yes, with how many households?**		

Observation

1.0 Dwelling unit

1. Shack
2. Hostel
3. Formal brick houses
4. Flats

2.0 Distance from water supply tap to household if, in the area i.e. not on plot or inside dwelling.

3.0 Comments on sanitary condition of excreta and/or waste disposal facilities, if any that is, smell, hand wash facilities, privacy, flies etc…

4.0 Distance between excreta and/or wastewater disposal facilities and household

1. Less than 10 metres
2. More than 10 metres

5.0 Bath shelter and drainage provision

1. Present
2. Not present

B2. Alexandra Demographic Survey Report

Primary Data Analysis:

1. Introduction

198 questionnaires were issued and out of these, Malcolm Mthethwa interviewed about 195 respondents. The following are the important findings based on the recorded responses.

1.1 Demographic Information

Householder occupation:

Type	Number
Labourers	101
Self employed	36
Unemployed	32
Pensioners	15

Duration of Residence

Most households interviewed have been residents for between 6 – 10 years or more than 10 years. The duration of residence appears to have an effect on the accessibility to services, as is discussed below.

Use Rights

Most householders are tenants: a total of about 114 out of 195 householders pay rent.

Age bracket

The common or most populated age group lies between 15 – 49 years.

Disposable Income

The estimated household income averages at R 1,283.13 per month. However deducting outliers gives a monthly average of about R 1,200 per family. Dividing the monthly income by the average family size gives R250.78 per head.

Household population

The total population for the interviewed households is 920 people, with an average of about 5 people in each household.

1.2 Water Supply and Consumption

Access to Water

Out of 190 respondents, 31% use a community tap, 41.57% use a tap on nearby erven and 27.36% have a portable water source in the home.

Out of 191 respondents 112 households (about 58.6%) have a nearby access to water and go to and from the water source in less than 10 minutes. 189 respondents answered the question on problems with the water source: 128 or 67.7% have no specific problem with the source.

However, the interviewed households appear to be under-supplied. The interviewees gave a daily demand (termed normal demand) of 7,132.14 litres. We estimate the correct consumption (based on the responses) to be about 8,096.57 litres. Based on an Average Daily Demand (ADD) of 150l per head, the ideal ADD is 138,150 litres for the current population of 921 people.

Using a conservative ADD for a low-income population consuming 500 litres per day, the "minimum" ADD should be 92,100 litres at least. Conversely, the current ADD is only 7.74% of the estimated adequate level.

1.3 Sanitation and Drainage

Appliances

About 18.5% use chemical toilets, 23.8% have Water Closets (WCs) in-house and 57.14% have WC's outside the house. Conversely, most foul water disposal is by WC drainpipe or by wash place drainage (about 60% or the households are wash-place-drained).

Most households share toilets. In addition to the household population, a further 5,059 people share the 120 toilets found in the subject area, which is about 1 toilet per 50 people.

1.4 Statistical Analysis

F-tests carried out on groups ranked by duration of residence, suggest that early comers to the subject area enjoy better access to WCs and access to water services. In addition, similar F-tests suggest that most latecomers are tenants compared to the percentage of tenant early comers. This may suggest that newcomers to the subject area rent the unpopular residences first, before finding better accommodation later on.

26 households do not have an adequate water supply or access to a drained appliance.

2. Analysis on Shack dwellers

92 respondents live in shacks in the subject area, out of 156 responses to dwelling type: this represents approximately 59% of the respondents.

2.1 Demographic information

Householder occupation:

Type of occupation	Number
Labourers	50
No occupation	5
Self employed	16
Unemployed	20
Pensioner	1

From the above occupation statistics, it appears that most heads of households are labourers and between 21 – 30% of the shack dwellers have no steady source of income. Most shacks have been in existence for more than six years. Almost 53% of the households own the shacks while more than 27% are shack tenants. 76.25% of the population falls in the 15 – 49 years age bracket.

Disposable income

The average monthly income is at R567.60 per shack, with only 2 households paying for Municipal water. Food and transport take up the bigger proportions of household expenditure taking 55% and 21% respectively. The expenditure on healthcare is very low or not readily available.

2.2 Water Supply and Consumption

40% of the respondents collect water under 10 minutes, which suggests relatively adequate proximity to the source of water. 54% collect water in a round trip of between 10 and 30 minutes, which may suggest that most respondents are fairly near to tapped water. Only five respondents or 0.05% of the respondents have access to portable water (the water source is located inside the shack).

The estimated ADD for the shack dwellers is 4,647.90 litres of water for the recorded 438 residents. This is a paltry consumption rate of only 10.61 litres of water per day per head, which suggests an inadequacy and a lack of fire flow. However 65% of the respondents claim that water supply is adequate and almost 35% say that the water is inadequate. This may suggest that most family members use water frugally or are not able to estimate reasonably, how much water is consumed per day.