

CHAPTER FOUR

QUALITY OF WATER SUPPLY AS AN INDICATOR OF QUALITY OF LIFE

4.1 INTRODUCTION

The pattern of the water utilisation practices (see Section 3.4) among the residents of Makoko is determined directly by the current water provision situation within the research settlements. It is especially the women's daily routines that are influenced by the pattern of water supply and availability. Chapter Four deals with the issue of how the available water facilities and infrastructure (water provision) and consequently the water utilisation practices, ultimately influence the quality of the lives of the residents of Makoko (see Section 1.3), according to their own perceptions.

The concept "quality of life" must be clearly defined in terms of the people of Makoko's unique culture and environment. In order to set criteria for "quality of life" the residents' perception of "quality of life" needs to be determined. The actual water provision situation in the settlement is compared to the criteria for sufficient water provision as determined by the South African government. Consequently, meaningful and sensible conclusions can be reached on how the standard of water facilities within Makoko ultimately influence the residents' quality of life.

4.2 DEFINING QUALITY OF LIFE

According to Smedley (1979b:1), the concept "quality of life" cannot be defined in universal terms: "the concept 'quality of life' raises a number of important issues, *inter alia*, the need to take cognizance of subjective (as well as objective) realities and the need for research into, and action based on, the priorities of particular communities rather than on our assessments of what the constituents of high quality of life should be."

According to a UNESCO report of 1977, quality of life is “an inclusive concept which covers all aspects of vital needs as well as more transcendental aspects of life such as personal development, self-realisation and a healthy eco-system” (Dube 1988:58). An individual’s “subjected reality, his[/her] subcultural realities and the objective reality of the society in which he[/she] lives in dialectical relationship with each other” therefore mould an individual’s concept of quality of life (Smedley 1979b:7).

The objective reality of the society in which a given individual lives is structured by factors such as the historical background of the society’s members as a group, the social institutions, the economy as well as the authority structure of the society and environmental factors (Smedley 1979b:7). From an anthropological perspective, culturally-determined value judgements have to be included in the “list” of determining factors in order to arrive at an acceptable description of the meaning of quality of life.

From the work of Smedley (1979a and 1979b), Jonas (1983), Barlett and Brown (1992), Romney, Brown and Fry (1994), and Dube (1988), it can be concluded that a general definition for the term “quality of life” does not exist. However, four important aspects or characteristics of the concept emerge from Smedley (1979b: 6), namely:

- The concept “quality of life” is complex and the assessment thereof is a complicated task clouded by cultural relativism.
- The perception and assessment of quality of life is subjective, although an individual may judge his/her own quality of life according to his/her culture’s (and/or subculture’s) commonly held beliefs about the constituents of high or low quality of life.
- Perceptions and evaluations of the constituents of high or low quality of life are relative because conditions which may be regarded as decreasing quality of life by one individual or member of a culture need not be evaluated in the same way by another individual of the same cultural group.

- Quality of life may be a concept that has not been consciously comprehended by members of a cultural group and there may be no awareness of alternatives to established patterns of life.

It is clear that the concept of quality of life can easily be used without adequate understanding of the context and relativism inherent in the concept.

Romney *et al.* (1994:246) state that there are several reasons for the difficulty experienced in clearly specifying the term “quality of life”. One reason for this is that the concept is value-laden. Romney *et al.* (1994:246) further point out that “processes and outcomes which are designated as ‘superior’ QOL [quality of life] are typically those accepted and valued by contemporary society, *often by the middle class of that society*” (italics in original). Contemporary society, however, in the above context, is defined in terms of a Western orientation.

According to Coertze (1980:44), a system of value judgements in a given cultural group is established through the group’s co-existence over generations. The system of value judgements is conveyed to following generations through the process of enculturation (Coertze 1980:45):

Ten gevolge van die saambestaan van mense, en vanweë hulle noodsaaklike medewerking en onderlinge verantwoordelikheid in die lewensproses, ontstaan daar by lede van ’n etnos ’n konsensus in die oordeel en opvattinge oor die waarde van verskynsels, van handeling en van gedraging in hulle daaglikse lewe en saambestaan. ... Soos elke ander kultuuraspek ontstaan ’n waardesisteem ook deur samewoning, samewerking, samelyding en samestryding; dit kom so langsamerhand as ’n geïkete sisteem tot stand.⁴

⁴ Because people co-exist, and because, of necessity, they co-operate and are jointly responsible in the life process, consensus arises among the members of an ethnos in terms of people’s judgement and understanding of the value of phenomena, actions and behaviours in the daily life and co-existence of the ethnos... As with any other aspect of culture, a system of values emerges when people live together, work together, suffer together, struggle together; it emerges gradually as an established system.

A system of value judgements is therefore specific to each different culture. Value judgements of people from a specific culture on the different aspects of their conscious world are, according to Kriel (1992:14), formulated against the backdrop of a communal world view:

...’n sisteem van sinvormende geheeloordele wat ontplooi uit filetiese kennis, opgedane en oorgedraagde kennis, en deelnemende en emosionele betrokkenheid by die ervarings en aktiwiteite van die groepsverband waarin die individu gebore word en grootword. ...en daarom die draers van ’n bepaalde kultuur se denke, handeling en spontane reaksie op bepaalde prikkels, tot ’n sinmakende geheel [saamsnoer].⁵

At the end of any discussion on the concept, “quality of life”, one must agree with Smedley (1979a), when she states that it is simple intuitively to understand what quality of life means, but that it is virtually impossible to give a theoretical description of the quantitative meaning of the concept (Smedley 1979a:204). In broad terms, however, quality of life refers to the satisfactory nature of people’s lives, according to their own perceptions (Jonas 1983:96).

4.3 MEASURING QUALITY OF LIFE

According to Barlett and Brown (1992:154), quality of life involves both an objective measurable reality and a subjective unquantifiable reality. Objective material measures or social indicators (such as per capita income, mortality rates or, for the purposes of this study, water supply) attempt to objectively measure people’s life conditions in terms of wealth and health. The subjective approach attempts to measure quality of life in terms of individuals’ assessment of their own life circumstances and life satisfaction, thus emphasising the role of individual perception (Barlett and Brown 1992:154).

⁵ A system of holistic judgements that make sense of and emerge from philetic memory, experience and transmitted knowledge, and empathetic and emotional involvement in the experiences and activities in the group context into which the individual is born and in which he/she grows up. ...and for this reason [joins] the bearers of a particular culture’s thinking, actions and spontaneous reaction to certain stimuli to form a whole which makes sense.

These two approaches, measurable reality and a subjective unquantifiable reality, include a person's ability to achieve culturally prescribed goals. Therefore, quality of life might be regarded as the relationship between objective social indicators and culturally defined perceptions of needs and life expectations. Given the strong role that the individual plays in forming perceptions of needs and life expectations, brought about through the filter of his or her culture, one agrees with Jacobs and Pauw (1995:99) that these perceptions are directly linked to the given culture's system of value judgements.

Jonas (1983:97) states that an anthropological approach to measuring quality of life stresses the link between culture and quality of life. People's satisfaction with their lives is *therefore determined by the extent to which their culture fulfils their needs and expectations*. This means that a complete view of a group of people's quality of life can only be formed by acknowledging the entire spectrum of such a group's culture, including the fact that the culture might change due to a number of factors. Therefore, evaluation of quality of life entails the use of values. According to Headey (1981:157), one aim of quality of life research is to determine which values different sections of a society want to fulfil in specific facets of their lives. Consequently, it is necessary to include the value judgements of the residents of the research settlements regarding water as a natural resource, and the water supply as a service when determining how water supply influences the quality of the lives of the residents of, for instance, Makoko.

As is shown in the above paragraphs, the task of measuring quality of life entails an objective and a subjective approach. The goal of this chapter is to determine how water supply as an objective reality (social indicator) influences the residents of Makoko's quality of life, which in turn is a subjective reality. In order to achieve this goal, criteria for both the objective and subjective realities had to be set.

For the purposes of establishing criteria for water supply (objective reality), the RDP minimum standard in terms of basic water supply was used (see Section 2.9.6) as a point of departure. In establishing criteria for the quality of life of the residents of Makoko (subjective reality), it speaks for itself that only the residents of Makoko can define their

own quality of life. Criteria set by Möller (1992:50) for measuring quality of life are used as a guideline for measuring the residents' quality of life. Möller (1992:50) gives four criteria which she says “share a common dimension and can usefully be condensed into a composite index of overall Quality of Life” (Möller 1992:49), namely:

- satisfaction with life as a whole;
- global happiness;
- life rewarding; and
- life getting better.

4.4 CRITERIA FOR THE QUALITY OF WATER SUPPLY AND FOR MEASURING QUALITY OF LIFE

4.4.1 Quality of water supply (objective reality)

The RDP minimum standard in terms of basic water supply is used as a set of criteria since it represents the minimum standard of water supply for all South Africans (White Paper on Water Supply and Sanitation 1994:15). In order to determine the quality of the water supply via the water reticulation pipelines of Makoko, the current status of Makoko's water supply is compared to the RDP minimum standard criteria, as set out in Chapters Two and Three.



Table 4.1 RDP minimum standards for water supply compared to the Makoko settlement's water supply (Nsikazi District, Mpumalanga)

RDP CRITERIA	RDP MINIMUM	MAKOKO
Quantity required	25 litres per capita per day	33 litres per capita per day (see Table 3.1)) ⁶
Cartage	Less than 200 m	0 – 1 km (see Section 3.2.3.3)
Availability	10 litres per minute from outlet	Erratic availability from outlet (see Section 3.2.2.1)
Assurance of supply	Raw water 98% of the time. Minimum of 1 week interruption per year	Only 12.7% of the households have water 98% of the time from their stand taps (see Section 3.2.2.1)
Quality	Minimum standard re health-related chemicals, microbial contaminants and potability	Very good quality (see below)
Upgrading	Desire of community to upgrade basic water service to provide for household connections	Water pipe network is designed to accommodate upgrading (see Section 2.8.2)

Qualitative data indicate that the respondents of Makoko have two distinctly different perceptions regarding the cleanliness of the water pumped from the Sabi River. One perception is that the water is cleaner than any other water source because it is treated with cleaning agents such as chlorine, while the other water sources are not. Spokespersons often referred to these cleaning agents as “JIK” or “medicine”.

⁶ The RDP criteria are projected against the facts and figures of water supply by means of the water reticulation system. The RDP criterion of quantity is projected against the volume of water that respondents receive mainly through boreholes. The reason for this is that 60% of residents make use of boreholes for their daily water supply (see Section 3.2.3) due to the untrustworthy nature of the water reticulation system (see Section 3.2.2). Therefore, when indicating the volume of water residents have at their disposal daily, it is of necessity representative of the volume of water received from boreholes.

The other perception is that water cannot be accepted to be clean “if one does not know where it comes from”. Spokespersons from Makoko and Phameni generally reported that they considered borehole water to be clean because it is underground where nothing can contaminate it and sand has a filtering effect on the water. Water from the Sabi River was perceived by some spokespersons to “come from far away and no one knows what might have contaminated it along its course to the settlement”. These respondents mentioned that corpses of humans and animals might be in the river and the water might therefore be contaminated. However, these fears were not common.

A company specialising in water technology, namely SMS Afriwater, monitors the quality of the Sabi River water which supplies the northern Nsikazi District. Tests done by SMS Afriwater to monitor the quality of raw and chlorinated water pumped from the Sabi River to the northern Nsikazi produced the following results (Van Oudtshoorn, 1999: pers. com.)⁷:

- The low count of total dissolved solids (48 - 62 mg/l) indicates a low amount of pollution in the water.
- The pH-level of between 7.30 and 8.10 indicates very little contamination through air-pollution and agricultural material.
- The very low level of sodium (2.6 – 6.7 mg/l) indicates a low health risk (a count above 50 mg/l can cause heart problems).
- The low to very low nitrate count (10.3 – 0.07 mg/l) indicates very little pollution through human excreta.
- The very low fluoride content (<0.01- 0.14 mg/l) in itself does not cause dental problems, but adding a fluoride supplement to the water could help to reduce dental problems.

⁷ Mr J. VanOudtshoorn is a water technologist and works for SMS Afriwater in Nelspruit, Mpumalanga. SMS Afriwater is a private company, contracted by DWAF to monitor the quality of the water pumped from the Sabi River.



- The total temper of calcium and manganese is soft to very soft (86 - 22 mg/l) which makes the water corrosive and can cause weak teeth and bones. However, including fresh milk in growing children's diets can prevent corrosive water from weakening teeth and bones.

The above information indicates that the water received by residents of Makoko through the water pipe system is of good quality and cannot cause health-related problems. Tests are underway to determine the quality of the borehole water, which is currently used in bigger volumes by the residents of the settlement than the water pumped from the Sabi River (Van Oudtshoorn 1999:pers. com.).

The water provision in Makoko through the water pipe network does not compare well with the RDP minimum standard. Only three of the RDP criteria for basic water supply are met, namely, quantity, quality and upgrading. The remaining three criteria, cartage, availability and assurance of supply, are not met. The reasons for the system's inability to meet the latter three criteria are all rooted in the existence of private connections within Makoko and the fact that the reservoir of the settlement has inadequate storage capacity (see Sections 3.2.1, 3.2.2.1):

- With regard to cartage, the RDP minimum standard states that the nearest water point must be within 200 metres of a resident's stand. According to an engineer working directly with water provision at the Northern Nsikazi Bulk Water Scheme, communal taps that form part of the water reticulation pipeline are strategically located within each settlement in the scheme to adhere to the 200 metre standard. However, due to the effect of private connections and the size of the reservoir on the yield of the water reticulation system (see Sections 3.2.1, 3.2.2.1), the communal water taps in Makoko do not yield sufficient water to serve as a permanent water source. Therefore, residents of Makoko are forced to rely on other water sources on a daily basis. As the data from the questionnaire showed, 60% of questionnaire respondents make use of boreholes (see Section 3.2.3) to compensate for the poor water supply of communal taps as well as their own private connections. Residents have no alternative but to walk up to one kilometre to the boreholes in Makoko and wait in the queues.

- The criterion of availability is not met because the water from the reticulation network is very erratic and does not adhere to the RDP standard of 10 litres per minute from outlet. As was mentioned in Section 3.2.1, the water availability from the recently installed taps in Makoko should be 15 litres per minute, but these taps currently yield no or very little water.
- The RDP standard of assurance of supply dictates a supply of raw water 98% of the time, with no more than one week's interruption per year. The data from the questionnaire showed that only 12.7% of respondents have access to a permanent water supply (98% of the time) from the water reticulation system (see Section 3.2.2.1). These residents are either the lucky few whose stands are geographically lower down in the settlement and therefore the weak downflow of water in the water pipes is sufficient to allow their private connections to yield water all the time or those whose private connections are linked to the bulk water supply line.

The above indicates the objective reality of how Makoko's water supply compares with the RDP water supply standard. Next, the subjective experience of this situation is examined.

4.4.2 Quality of life (subjective reality)

The purpose of this section of the study is to determine whether the settlements' water supply has an influence on the residents' perception of their quality of life. The section also examines which aspects of the residents' daily life cause them to experience quality of life, and to what extent.

During the two years of research amongst the residents of Makoko and Phameni, an evaluation was made of the residents' value judgements and their perceptions of their quality of life as well as their perceptions of how their water supply affects their quality of life (see Section 1.5.2). Although these value judgements could easily be observed, they could not easily be tested. Consequently, these observed value judgements were tested against the opinions of eleven carefully chosen spokespersons (see Section 1.5.2)

from the research settlement by means of in-depth research, using the criteria set out by Möller (1992) (see Section 4.3).

In the literature, it is suggested that research on quality of life should be undertaken in such a manner as to avoid “flamboyant and insincere” answers (Mukherjee 1983:52). Such answers can be avoided by adopting a style of interview which “elicit[s] a complete answer from the interviewee in response to a question” (Mukherjee 1983:52). The interview must produce answers that would be answered “neither in terms of set replies of ‘yes’, ‘no’ and ‘don’t know’, nor in the telegraphic language of one or two words” (Mukherjee 1983:52).

It was therefore decided that qualitative research in the form of interviews would be a more efficient method than quantitative research for testing perceptions on quality of life. A qualitative research methodology creates scope for discussions that eventually reveal a respondent’s sincere opinion.

In order to test the residents’ value judgements on aspects of their everyday lives that have an influence on their quality of life, the criteria set out by Möller (1992:50) were used as a guideline for measurement (see Section 4.3).

Since the goal of this study is to determine specific aspects of life that cause the residents’ global (un)happiness, these four criteria were modified into questions which set out to confirm these four aspects in terms of their being linked to the water supply situation in Makoko. Evaluations of the residents’ perceptions that were gained during the two years of research were “translated” into questions. These questions were put to a group of eleven residents from Makoko who were selected to be as diverse as possible to avoid one-sided answers (see Section 1.5.2). The eleven interviewees thus allowed a check to confirm the information on perceptions of quality of life which the researcher had obtained over the two years of research. According to Coertze (1993:69-78), qualitative research adds depth to answers when the same question is repeated in different ways, something which cannot be easily done in quantitative research using questionnaires.



4.4.2.1 The quality of life interviews

The questions created to confirm perceptions on quality of life (the check interview) were the following:

- Describe the present state of living conditions in Makoko. Refer to positive and negative aspects.
- Are you in general a happy person? What in your daily life causes you to be happy/unhappy?
- Name the six most important things in your life.
- Are these important things as good as they can be? If not, why and how can they be improved?

a. Positive and negative aspects about life in Makoko

i. Positive aspects

The selected check interviewees confirmed the general value judgement of the residents of Makoko encountered over the two years of research that there is very little crime in Makoko. According to spokespersons, this is because Makoko is a small rural settlement and the inhabitants are not exposed to the vices of the townships and locations. A reason given for the low crime rate is that most of Makoko's inhabitants have lived there since birth and that there are very few "strangers" who can upset the long-established routine of Makoko's residents.

Another positive aspect confirmed by the check interviewees, is that Makoko offers enough space for its inhabitants to practise subsistence horticulture. As with the low crime rate, interviewees compared the available space in Makoko and the available space in locations or townships. The latter are more crowded due to higher population figures. For example, the location of Kabokweni in the Nsikazi District has a population of 10 356, in comparison to Makoko's population of 5 600 (see Section 2.6).



A further positive aspect confirmed by the check interviewees is that Makoko offers education to children of all ages, as it has a crèche, a primary and a secondary school. Consequently, children do not have to travel to other settlements or locations to attend school. Spokespersons said that this had the effect that children attend school better in Makoko.

Further positive aspects confirmed by the check interviewees were the clinic in Makoko, the fact that residents have access to electricity and telephones, and that the traditional Swazi culture is still strong amongst the residents. The Swazi culture is strong because most residents have lived in Makoko since birth and there are thus few outside influences that can weaken the traditional Swazi culture.

ii. Negative aspects

The negative aspect most commonly confirmed by the check interviewees is Makoko's water shortage. According to the spokespersons, the main problem created by the water shortage is that less subsistence horticulture can be practised than they would like. Vegetable gardens are the livelihood of most of Makoko's residents, not only for personal consumption but also for commercial purposes. Apart from maize and ground nuts, which only need rainwater, vegetables such as tomatoes, cabbage, onions and spinach, as well as fruit such as mangoes, are sold locally and in Nelspruit for extra income. These plants need to be watered fairly regularly (see Section 3.4.4).

The negative aspect second most commonly confirmed by the check interviewees was the lack of transport in conjunction with the poor condition of roads to and in Makoko. The bus to Nelspruit leaves at 8 am and only returns after 4 pm. Furthermore, almost no taxis service Makoko, due to the bad roads. According to spokespersons, taxi owners refuse to use bad roads because their minibuses suffer tremendous damage. Roads to and in Makoko are not tarred and have many potholes. As was mentioned in Section 2.10, a project to tar the road between Makoko and Malekuthu is currently underway.



The third most common negative aspect confirmed by the check interviewees was the slow rate of infrastructure development in Makoko. Spokespersons complain that the government does not keep its promises to improve the condition of water facilities and roads or to build sports grounds for the school children. Furthermore, according to the spokespersons, the various government officials in charge of the infrastructural developments ensure that the settlements where these government officials themselves live are given priority in developments and far-off rural settlements such as Makoko are tended to last. This tendency among government officials is also reported by persons who speak on this matter from long experience (Els 1999: pers. com; Boonzaaier 1999:pers. com.).⁸

Further negative aspects of life in Makoko noted were the high rate of unemployment, the undisciplined youth, and witchcraft. The reason witchcraft is mentioned is that there were a few deaths within a short period of time in Makoko during the time of the interviews, and the spokespersons believed these deaths were due to witchcraft.

The positive and negative aspects confirmed by the interviewees about life in Makoko indicated what the residents considered important and what they perceived as problematic. Subsistence horticulture forms an integral and very important part of the spokespersons' lives, because it is part of their daily survival. The water shortage in Makoko therefore has a direct influence on the spokespersons' ability to cultivate their vegetable gardens and thus also on their ability to survive.

⁸ Prof. C.C. Boonzaaier and Prof. H. Els, both from the Department of Anthropology at the University of Pretoria, have done in-depth research projects which included focusing on the role that government officials play in rural development (Hartman *et al* 1993).



The confirmed positive and negative aspects of life in Makoko can be outlined as follows:

Positive aspects:

- a low crime rate;
- ample space for cultivating vegetable gardens;
- education for all ages;
- electricity and telephones;
- the Makoko clinic; and
- that Swazi culture is still practised.

Negative aspects:

- water shortages;
- the slow rate of infrastructure development;
- undisciplined youth;
- unemployment;
- witchcraft; and
- the poor condition of roads

b. Global happiness

The eleven check interviewees confirmed the general value judgement of the residents encountered during the two years of research in Makoko that the reason for happiness was due to residents' home environment and that unhappiness was due to extreme financial hardship.

The concept of financial hardship indicates a value judgement in the sense that the concept can mean different things to different people. Therefore, when spokespersons said that they were unhappy due to financial hardship, their statements had to be interpreted according to the spokespersons' own value judgements. These spokespersons were asked to explain how their financial hardship affects their lives. Their reply was



that financial hardship meant that they could not buy clothes and schoolbooks for their children or buy food for their animals. Financial hardship thus has a long-term effect on these spokespersons' lives, since, amongst other things, it affects their children's education.

It is apparent that financial hardship can cause an experience of reduced quality of life and may even overshadow the positive aspects that should provide good quality of life. One spokesperson expressed total despondency about her financial situation and added that her unhappiness was aggravated by the fact that nobody could help her.

A happy home environment is confirmed to be one of the primary aspects that determine quality of life of those people. It may even push other problems into the background because the "happy spokespersons" also mentioned financial hardship but not to the same extent as the "unhappy spokespersons".

c. The six most important things in life

The purpose of the question was to confirm what the residents perceived to be essential for happiness in life. Money, a job, an education, a family, religion and practising horticulture were confirmed to be essential by the check interviewees.

- The selected interviewees confirmed the general value judgement among the Makoko residents that education was important because "it ensures a job and therefore money". This statement represents a value judgement of the spokespersons with regard to what an education can offer. The younger spokespersons wanted a university or technicon education. The older spokespersons wanted education for their children so that these children could get good jobs and could help their parents financially.
- The selected interviewees confirmed that money is important because "without money one can do nothing". Spokespersons gave examples such as wanting to extend



their houses because of growing families and indicated that this could not be done without money. One answer given was that “without money one will steal”.

The selected interviewees confirmed the perception that money can be obtained if the government provides jobs. This statement represents the spokespersons’ value judgements on whose responsibility it is to ensure jobs. Some of the spokespersons suggested that the government should build an industry or factory close to Makoko that would provide all the residents with jobs. None of the spokespersons mentioned that money could be made from selling fruit and vegetables. According to the spokespersons, income derived from selling fruit and vegetables is only enough to sustain the existing lifestyle and will not improve it. When the spokespersons refer to “an education that will ensure a job and provide money” this comment can be interpreted as meaning a gateway to an exalted lifestyle with enough money.

- The check interviewees confirmed that a family is very important to ensure a happy life. Reasons given were: “children are a gift from God”; “my children will support me in my old age”; “one must have a family with which one can share one’s life”.
- The check interviewees confirmed religion to be one of the most important things in their lives because “God will always help you”. Respondents also motivated their perception of the importance of religion by saying that praying to God keeps one a good person.
- The check interviewees further confirmed that the cultivation of fruit and vegetable gardens is important in the residents' lives because it is the only means of feeding one’s family. For most residents it is the only source of income and as long as fruit and vegetables are cultivated, “you know your children will not die of hunger”.
- Other things that were confirmed as being important in the resident’s lives are water because “one cannot live without water”, and having a house “to accommodate one’s family”.

The interviews with the selected interviewees confirmed the evaluation that the following six aspects are vital to ensure quality of life to the residents of Makoko:



- money;
- a job;
- an education;
- a family;
- religion; and
- an opportunity to practise subsistence horticulture.

d. Improvement of the six most important things in life

- Money. The selected check interviewees confirmed the general perception that the people of Makoko do not have enough money. They motivated this belief by saying that the cost of living is too high and that, due to poor job opportunities, a resident of Makoko will never have enough money. Once again, the concepts “high cost of living” and “not enough money” were value-laden. According to spokespersons, “not having enough money” means one cannot buy essentials such as household soap, bath soap, clothes and building materials. When the check interviewees were asked how they themselves could improve their income despite the poor job opportunities, they suggested that residents could use labour from Makoko for odd jobs such as digging pit toilets, instead of getting people from “outside” to do it. According to them, this will then ensure that short-term job opportunities within Makoko are not lost to non-residents. Further suggestions included the idea that residents must use their spare time to buy and sell goods in order to add to their income. One interviewee mentioned that she had made and sold candles in the past and that she would do so again.
- Job opportunities. When the check interviewees were asked how the poor job opportunities could be improved, they confirmed the general value judgement encountered over the two years of research that it is the responsibility of the government to ensure that the people of Makoko have jobs. Only one of the interviewees in the check interviews mentioned that he could get a loan from the bank



with which he could start a small business. The remaining check interviewees maintained that the government must, for example, “build a factory near Makoko where all the residents can get jobs”. One respondent said that she was in the process of applying for a travel agent’s course and, when she had completed this course, the government would give her a job. It is thus apparent that the general value judgement regarding jobs is that it is the government’s responsibility to give people jobs. This in itself creates false expectations, but also attests to a lack of perspective regarding the realities of life outside Makoko.

- Education. According to the check interviewees, primary and secondary education in Makoko is satisfactory. This is also the value judgement that was encountered among residents during the two years of research. For example, the principal of the high school in Makoko ensures that all the teachers know their timetables so that no classes are missed. The principal also improves discipline by rewarding pupils who wear uniforms. Furthermore, the spokespersons in the check interview confirmed the general value judgement that it is vital to receive an education because it ensures a job and therefore money. This is a deep-rooted perception and expectation among residents of Makoko. However, these value judgements on education place a higher value on completing school than on actually gaining knowledge.
- Family. As mentioned in Section 4.4.2.1 c, a happy family life is essential for a good life. The check interviewees confirmed the general perception that children are “a blessing from God” and that “one cannot be happy without a family”. The older check interviewees also confirmed the general value judgement that their children would help them in their old age. Therefore, when one has a happy family life, unhappiness is caused by external factors, such as financial hardship.
- Religion. According to the check interviewees, the importance of religion is diminishing among the youth of Makoko. This confirms the value judgement encountered among the older spokespersons during the two years of research. Spokespersons complained that the young men tend to drink over weekends and



consequently do not attend church. One young interviewee stated, however, that he could not attend church because he worked as a field ranger in the Kruger National Park on Sundays. Other interviewees claimed that poor church attendance among the Makoko youth was due to the fact that Makoko does not have a church building. It is an open question whether having a church building will influence the youth to attend church.

- Horticulture. As mentioned in Section 4.4.2.1 a, the interviewees confirmed the value judgement of the spokespersons that the poor water supply of Makoko is the main reason why residents struggle to cultivate their vegetable gardens. For most residents, selling fruit and vegetables is their only source of income and an improved water supply will definitely, in their opinion, lead to more successful cultivation. However, the cultivation of maize does not require irrigation, since rainwater is sufficient for crops. A point worth noting here is that the spokespersons did not perceive increased effort on their part in irrigating their vegetable gardens as a means of improving their vegetable produce, which would in turn improve their income potential and therefore their quality of life. Constantly, the value judgement that emerged was that their ability to produce more vegetables is related more to external factors than to their own increased efforts.

Part of the check interview contained direct questions on how the spokespersons thought the poor water supply of Makoko influences their lives. The purpose was again to confirm the value judgements encountered during the research period.

e. Spare time created by an improved water supply system

The check interviewees confirmed the value judgement that residents would spend more time on their horticulture if the water supply was better. Reasons given for this answer is that if they spent more time on horticulture they would have more crops and vegetables to sell and to consume. Their lives would therefore improve in terms of their diet and their finances if it were not necessary to spend time fetching water each day. This means that, according to the spokespersons, poor water supply influences their horticulture negatively



and forces them to spend valuable time on fetching water from water points. This is a general value judgement encountered throughout Makoko during the research.

The check interviewees confirmed the general perception that schoolchildren would have more time to do their homework if they did not have to fetch water after school. As mentioned in Section 3.2.2.3, it is part of the daily routine for schoolchildren to fetch water after school. Consequently, there are long queues at the water points during this time of the day and it takes at least one or two hours out of the afternoon to fetch water which children could have spent on homework. The spokespersons therefore perceive the time their children spend on fetching water as impeding their children's education. Education, as pointed out in Section 4.4.2.1 d, means the attendance of school, is perceived to be vital to ensure a job, which in turn ensures money. One young spokesperson mentioned that if she did not have to spend time fetching water each day she would have more time to spend on her academic correspondence course. Whether this is true or not, it remains an important perception on the influence that a poor water supply system has on quality of life.

Check interviewees further confirmed the statement by residents in general that they would also like to rest if they had spare time in the day because they work hard in the fields. One spokesperson said he would like to have time to spend on soccer because if he improved his talent he might become a soccer star and then earn lots of money.

The value judgement that the people of Makoko would like more time to spend on horticulture and education and that they are impeded because of an unsatisfactory water supply system was confirmed. It was apparent that the spokespersons perceived improved horticulture and education as a means to earn more money and thus create a better quality of life.



f. Improvements in lifestyle due to improvement in water provision

Questions were put to the check interviewees to confirm the general perceptions encountered during research on how improved water provision would influence the important aspects of the residents' lives and consequently their quality of life.

All the check interviewees confirmed that their lifestyles would be much better if Makoko did not experience poor water provision. The interviewees confirmed that they would have successful vegetable gardens, which meant they would eat better and would have more vegetables to sell and consequently earn more money. They also confirmed that they would plant flower gardens to beautify their stands and that they would practise better hygiene because they would have more water to bath in, to wash their clothes, and to clean their houses.

It is therefore a confirmed value judgement that an ample water supply would ensure better horticulture, hygiene and even add the aesthetic pleasure of flower gardens.

g. Increased productivity due to improved water supply

Questions to the check interviewees about whether productivity would increase due to improved water supply were, in a sense, "stating the obvious". The answers had already been given in the preceding questions. However, these questions were asked as a means of falsification to confirm the general value judgements on whether an improved water situation would truly influence the residents' daily routine. It has already been established that, in the spokespersons' minds, their quality of life would be improved by the ability to practise more successful horticulture. The question is now whether the residents *would* practise more and better horticulture if they had more water. The same question can be asked about whether schoolchildren would spend more time on their homework if they did not have to fetch water after school. A realistic answer can obviously only be provided once research has been conducted in a settlement before and after the improvement of their water supply.



The check interviewees confirmed the general perception of the residents of Makoko that they would be more productive if they had no problems with water availability. They said that they would plant more vegetables than they currently do. The spokespersons also mentioned that, at present, due to the poor water supply, the cultivation of maize is more extensive than the cultivation of vegetables, because vegetables need more water. The check interviewees specifically mentioned that the communal vegetable garden of the Sukumane Women's Club would produce more vegetables than it currently does.

It is thus a confirmed value judgement that ample water supply would ensure better horticulture. The perceived results of better horticulture have been outlined above as being a means to earn more money by selling more vegetables and having more food per household on a daily basis.

4.4.2.2 The quality of life indicators of the residents of Makoko

The information set out in Section 4.4.2.1 above confirms that the residents of Makoko measure their own quality of life in terms of:

- their ability to practise horticulture insofar as it provides them with an income and food for their households;
- having an income, which ensures the ability to provide the household with a house, clothes, and funds to pay for education;
- receiving an education, which promises a job and therefore a higher income because of the job opportunities that the residents believe the government will create; and
- having a happy family life.

It is clear from these four aspects of the residents' lives that money or income is the primary indicator of perceived quality of life. This is a definite indication of acculturation towards a modernised life style. Residents of a rural settlement such as Makoko cannot survive on subsistence agriculture alone, because the income derived from it is insufficient to fund basic essentials such as soap and clothes. This is emphasised by spokespersons' statements, such as "without money one will steal" and



“without money one can do nothing”. However, survival is not necessarily the only reason why money is important in the lives of the residents.

Atte (1983:40) states that in the rural areas of Nigeria, people desire to bring their living standard up to the level of that of city dwellers. This entails buying goods such as radios, mattresses and non-traditional food items, which rural people regard as basic needs. Atte (1983:41) explains this phenomenon as being a result of educated sons and relatives in non-farming jobs in towns who send money home to their families in rural areas. Rural people often rely upon this financial contribution to survive. When family members who live in the cities return home to visit their family, they arrive in cars, have wrist watches and wear modern clothes. Rural people measure their living standard against that of their relatives from the city whom they perceive as “richer” and consequently perceive the city dwellers’ lifestyle as superior to their own.

Atte (1983:42) further states that this is the reason why the rural people of Nigeria regard education as vital if they are to improve the quality of their lives. Having an education represents the potential to break from the “old” to the “new” and the “new” is considered better than the “old”. The lifestyle of educated city people contrasts so sharply with that of rural people that rural people are convinced that to live in the city and being educated is better than their way of living.

The desire to live a modern (non-traditional) lifestyle is observed specifically among the young residents in Makoko. In casual discussions with teenagers and young men and women in their twenties living in Makoko, they expressed a strong interest in the modern world. Their knowledge of the modern world stems mainly from siblings and friends who work or live in the townships or cities and also from what they see on television. Young residents who have access to television express the desire to talk and dress in the way people on the television do. Therefore, there is a strong process of acculturation towards the non-traditional, western lifestyle among the young residents of Makoko, as they perceive this different lifestyle to be better. The young residents furthermore perceive education as the primary gateway to achieve the lifestyle they admire. To them,



having an education promises work and an income and therefore opportunities to attain their objectives.

4.5 QUALITY OF LIFE AS INFLUENCED BY QUALITY OF WATER SUPPLY

For the purposes of determining how the water provision situation in Makoko influences the residents' quality of life, the four criteria in terms of which the residents of Makoko measure their quality of life are compared to the six RDP criteria for basic water supply.

4.5.1 Quantity

The average volume of water used in Makoko is 33 litres per person per day (see Table 3.1). This figure is higher than the RDP minimum of 25 litres per person per day (see Section 2.9.6). The figure of 33 litres per person per day is, however, much lower than the estimated figure of 60 litres per person per day which settlements in the Northern Nsikazi Regional Bulk Water Scheme should theoretically receive (see Section 3.2.1). The fact of the matter is that, due to less water at the individual's disposal than desired, fewer vegetables can be cultivated. The result of this is that there is less variety of food in every household, and that the households' incomes suffer when fewer vegetables are sold (see 4.4.2.1 a).

Thus two necessities for the residents of Makoko's perceived quality of life are influenced negatively by the small volume of water at the residents' disposal per day.

4.5.2 Cartage

Communal water taps that form part of the original design of the Northern Nsikazi Bulk Water Scheme are supposed to be the only water points linked to the temporary reservoir. As a result of private connections and the inadequate storage capacity of Makoko's reservoir, these communal taps yield less water and residents have to fetch water from boreholes (see Sections 3.2.1, 3.2.2, 3.2.3).



The cartage distance thus influences the residents' perceived quality of life negatively in two respects, namely that women spend time that could have been spent on practising horticulture on fetching water and children spend time that could have been spent on their education (homework and studying) on fetching water (see Section 4.4.2.1e).

4.5.3 Availability and assurance of supply

Only 12.7% of respondents to the questionnaire have private connections that yield water on a regular basis (see Section 3.2.2.1). The rest of the residents of Makoko have no assurance of water supply and are subject to erratic water availability (see Section 3.2.2.1).

Lack of assurance of water supply and water availability forces residents to make use of boreholes for their daily water supply. This means that residents have less time per day to spend on the things that, according to the check interview, enhance the residents' quality of life, for example, practising horticulture, doing homework and studying and being able to earn a better income.

4.5.4 Water quality

As mentioned in Section 4.4.1, the quality of the water pumped from the Sabi River to the settlements serviced by the Northern Nsikazi Bulk Water Scheme is good and will not cause health-related problems. Therefore, the quality of the water from the water pipe system cannot affect the Makoko residents' quality of life negatively with regard to their health.

It can be concluded that good water quality does influence the residents' quality of life positively, albeit in an indirect manner and in a way that they do not realise. Since the tap water does not cause any health problems, the residents of Makoko do not suffer disease from drinking tap water. The result is that residents are largely safe from contracting water-borne diseases. It was, however, clear that the residents of Makoko do not perceive the quality of their water as an important aspect in determining their quality



of life. The quality of water only really becomes an issue once it causes visible problems and, as long as the water is, in their opinion, clean and tastes fine, water quality will not be considered to have an influence on quality of life.

4.5.5 Upgrading

As mentioned in Section 2.8.2, the Northern Nsikazi Bulk Water Scheme was designed to accommodate upgrading. This influences the residents' quality of life positively in an indirect manner, since upgrading represents the potential for the water supply problem to be improved. However, until upgrading takes place and further research is conducted on this matter, one cannot be sure what influence upgrading will have on the residents' value judgements.

4.6 VALUE JUDGEMENTS ON WATER AND WATER SERVICES

According to DWAF spokespersons, the fact that residents of the rural settlements in the Nsikazi District are not paying for water services received is a great problem to the water service providers of the district in terms of cost recovery. The DWAF spokespersons indicated that because the residents of the Northern Nsikazi district do not pay for their water supply, the further development of water supply in the district is hampered by a lack of funds. As was mentioned in Section 3.2.1, projects such as DWAF's Northern Nsikazi Reservoirs Project cannot get underway due to this lack of funds. The reservoirs project includes the goal of building permanent reservoirs for Makoko and Phameni, which would significantly reduce the two settlements' water shortage problem (see Sections 3.2.1, 3.2.2), but will still not improve the financial situation of the water providers if people do not pay for the water supply.

Data from the questionnaire showed that 66.6% of respondents are not prepared to pay for their water supply. In order to understand the reasons for this attitude amongst the residents, it is necessary to analyse the residents' value judgements on water as a natural resource and water supply as a service that has to be paid for.



The goal was therefore to determine what the people living in Makoko's value judgements are on water and its sustainable utilisation and procurement. This task had two dimensions. First, the purely cultural dimension of the people of Makoko's value judgements on water as a natural resource is discussed. This knowledge improves understanding of what the residents perceive water as a natural resource without which humans cannot survive. Second, the residents' value judgements on the insufficient water supply are discussed. The second approach does not move away from the cultural dimension of value judgements, but merely focuses on water supply as a distinctly Western aspect of the residents' reality because of the technological implications attached to water supply.

4.6.1 Cosmological perceptions

In order to fully understand the value judgements of a given culture group, it is important to analyse the cosmological perceptions of that culture group. Cosmological perceptions refer to the philosophical explanation of the universe, phenomena and events within the universe and the connection and cohesion thereof, as observed and experienced by people (Coertze and Coertze 1996:159). It is also the result of people's interpretation of reality and phenomena within reality (Coertze and Coertze 1996:159).

The traditional sub-Saharan African cultures incorporate a cosmology that entails five aspects.

- It is holistic. The cosmos is an unbroken entity within which man strives to maintain uniformity, harmony and prosperity. Humans must adapt to the order of nature and must not change or disturb it in any way, since doing so may be detrimental to both humans and nature. Natural resources can be exploited, as nature has the ability to replenish itself.
- It involves a human-centred (anthropocentric) life-view. Humans are central within the cosmos and the most important element. Therefore, discord amongst people can be detrimental to the order of nature, for example, it can be the cause of drought.



- A magical world view is held. In keeping with the concept of holism, there is interaction between the order of nature, humans and the invisible supernatural world. An invisible magical power exists within the cosmos, a power which is part of phenomena or which enfolds phenomena and of which the influence can manifest itself at any time, at any place and in any form.
- A group-directed approach to life is followed. Through upbringing, the individual is systematically incorporated from birth into a family, family group and tribal life. The individual's life thus only obtains meaning within this context. Ancestral spirits are included in this group context and any discord between a person and the ancestors must be rectified as soon as possible to avoid the anger of the ancestors' intervention.
- A cyclic time perception prevails. Life is lived according to the time frame of nature. This is manifested in rituals, which are synchronised with the cosmic cycle. Time perception is focused more on the present and the past than on the future (De Beer 1994:9).

Sub-Saharan African cultures include the traditional African cultures of South Africa and the cosmology outlined above is therefore also applicable among the residents of the research settlements.

4.6.2 Value judgement on water as a natural resource

To understand how water as a natural resource is perceived, it is important to understand how nature is perceived. The *siSwati* word for nature is "*imvelo*".

According to Rycroft (1995: 105), *imvelo* means origin, tradition, nature, custom, habit and instinct. Fowler and Fowler (1969:532) define "nature" as the uncultivated state of plants and animals. The term "*imvelo*" in the Swazi culture thus has a much wider meaning than the term "nature" in Western culture. The Swazi term "*imvelo*" also refers to age-old traditions existing since the origin of human life. Els (1996:395) also discusses this aspect in respect of the Tsonga-term, *ntumbuluko*, which has largely the same meaning.



According to Mbiti (1969:15-16), “Africans have...an extremely anthropocentric ontology in the sense that everything is seen in terms of its relation to man”. According to Malan (1988:62), “All natural resources are viewed as having been provided by the Creator in order to meet the demands of man.” It therefore makes sense that the *siSwati* definition of nature should include a human aspect since humans are central in the universe and no element is more important than humans.

Els (1996:396) argues that in the general sub-Saharan African perception, humans are central in the universe and everything in the universe is created to maintain human life, because humans are in all aspects dependent on nature to stay alive. Els (1996:396) further states that, given human dependence on nature, humans have the right to exploit all natural resources within their direct environment such as land, water, grazing, plants and wild animals. Els (1996:396) states that, due to this prevailing value judgement, sustainable utilisation (in the Western sense) is not always relevant and that today’s needs are more important than tomorrow’s problems.

Els (1996:397) attempted to determine whether, due to school education, there has been a change in value judgements amongst the young people from his research area regarding man’s dependency on nature to survive. His research proved that young people still see themselves as dependent on nature (Els 1996:401). One of his research results, which is relevant to this study, is that 71.3% of the young respondents stated that nature gives humans and animals water to live. Although Els (1996) writes about the Tsonga of the Mhala district, a similar perception was found among the people of Makoko.

Data from the questionnaire for this study proved that the above value judgements regarding water as a natural resource also prevail amongst the residents of Makoko and Phameni. Part of the questionnaire used in this study included the question: Where does water come from? The three most common answers were:

- from under the ground (24,4% of the respondents);
- from rain (21% of the respondents); and
- from God (19% of the respondents).



A statement made by one of the respondents was that “water is a product of nature and created by God”.

This value judgement on water as a natural resource has a definite influence on the residents’ reluctance to pay for water that they receive through a reticulation network. The quantitative data showed that 66% of the respondents felt they cannot be expected to pay for water. The reasons given for this conviction are two-fold. Some respondents gave their reasons from a cosmological point of view, while others gave their reasons from a viewpoint based on perceptions of reality. Reasons given from a cosmological point of view are following:

- Water is a gift from God, therefore it is free for all.
- Everything needs water to survive.
- Water is a natural thing.
- No one owns water, therefore no one can sell it.
- I have never heard of water being for sale.

These answers indicate that water is perceived as a product of nature and, because humans are part of nature and dependent on nature, everyone has the right to nature’s products, including water. Water is not something that can be given a price. It is something that nature provides for humans to exist and no living person has the right to try and sell it because it belongs to no one in particular, but to everyone.

It is therefore also true that the respondents to the questionnaire did not perceive water from a tap as being any different to water from a stream or fountain. Water in any form is a product of nature. In other words, the respondents did not perceive that they must pay for the **service** (the reticulation network) to have water pumped to their settlement and for the **process** of having this water cleaned. Their perception is that they are expected to pay for water, which to them is something that can under no circumstances be sold. The reason why the respondents do not make the connection between payment and the installation and maintenance of a reticulation network is simply that they do not have knowledge of how a water reticulation system operates, because it has never been



explained to them. The respondents do not have knowledge of the human resources and machinery needed to operate a water reticulation system nor of the costs involved.

4.6.3 Value judgement on the water supply as a service

As mentioned in Section 2.8.2, the Nsikazi district received a water reticulation system for the first time in 1979 and the water reticulation system has been systematically upgraded since then. The residents of the Nsikazi district have never been billed for water services received.

Respondents to the questionnaire gave the following reasons why they believe that they cannot be expected to pay for water supply. These answers are given from a viewpoint based on perceptions of reality as opposed to the cosmological point of view described above, and are arranged in decreasing order of frequency.

- When we were children it was never necessary to pay for water.
- Government must first provide us with jobs so we can afford to pay for water.
- Even if we pay, we have no guarantee that there will be water in the taps.
- If we pay, we will be forced to use less water.
- We use a lot of water when washing clothes, we cannot afford to pay.
- We pensioners cannot afford to pay for water.
- We already pay for electricity, we cannot be expected to pay for water also.

The first answer given by the respondents proves that residents are in the habit of not paying for their water supply because water has always been free. The second answer proves how dependent the residents of Makoko and Phameni are on the government to provide them with what they need to survive. If the government now wants residents to pay for the water that has always been free, then government is also expected to provide them with the means to do so. Thus government must give the residents jobs so that they will be able to afford the water.

The third comment makes a very important point. The respondents are not convinced that paying for the water supply will necessarily assure permanent water supply. The

reality of their everyday situation in the settlement has caused them to distrust the water reticulation system. According to the residents of Makoko and Phameni, the water pipes are the least trustworthy source of water in their settlement, because they provide water very erratically (see Section 3.2.2.1). Residents have, to a great extent, caused the water pipe system's erratic supply themselves due to private connections, but they do not realise this. All they see is that the water taps are dry. Furthermore, residents with private connections have all spent money to have their private connection installed. The result is even less water in the settlement as a whole than before. Thus, to their minds they have already spent money on a water pipe system (private connections) which have turned out to be a "white elephant" and therefore they are reluctant to spend money on something which has, to them, been proven to be unreliable.

The fourth and fifth answers are the respondents' practical conclusions about what paying for water will imply. The residents of Makoko and Phameni know how much water they need to complete their chores each day. The residents are afraid that, when they pay for water, there will not be enough money to afford the huge volumes they use when washing clothes or making bricks. Therefore, they fear they will be forced to use less water per day and that this will cause hardship.

The sixth response focuses on the reality that the pensioners of Makoko and Phameni have very little money (between R350 and R500 per month) and, because of this, they believe that they will never be able to afford paying for water. The pensioners are also less influenced by the drive for modernisation. Their traditional and cultural beliefs remain very strong and they believe that water is a gift from God and free for all, irrespective of how the water is provided.

The seventh answer is also very important. According to spokespersons, Makoko has had electricity since the early nineties (1991/1992). A metering system monitoring the electricity consumption is currently in use in the settlements and the electricity supply is terminated if consumers do not pay their bills. People thus have no choice but to pay for their electricity. Consequently, residents accept electricity as something that must be



paid for, since their electricity supply is otherwise terminated. However, spokespersons from Makoko and Phameni say that electricity cannot be compared to water, because water is a basic human need. Residents also say that they are already paying for electricity, which they consider to be quite expensive, and they feel it is ridiculous to have to pay for water as well because it is not something they feel they have to spend money on.

These statements show spokespersons' conviction that water supply is something that the government has to provide free of charge. The residents are therefore dependent on the government to provide water without which they cannot survive. It creates great confusion amongst residents when the government suddenly demands that residents should pay for a service that they have always received free of charge and that they consider as payment for a commodity which is free anyway. When the situation is observed in this light, one can surely understand why residents are greatly distressed when confronted with the demand that they should pay for water.

It must thus be concluded that residents' unwillingness to pay for water is not unfounded. Indeed, both a deep-rooted culturally determined value judgement and the reality of past experiences cause the unwillingness to pay. One of the main reasons is simply that residents do not realise how a water reticulation system operates. This is also the reason why private connections are such a big problem. Residents do not realise what damage they cause to the entire settlement's water supply when they make these private connections. The fact that there is no community reaction against private connections implies that neighbours cannot be expected to report private connections to the authorities. The fact that the authorities are quite well-informed about the existence, and influence of private connections on the water supply in Makoko and Phameni, also implies an inability or even an unwillingness to act against such offences. One gains the impression that, as long as all the public structures are in place, the reality of the worsening water supply situation is something which will and can be cured by more government spending.



The conclusion that 66% of the respondents who are unwilling to pay for water supply do not understand how a water reticulation system operates is proved when one looks at the remaining 33% of the respondents' reasons for **why they are willing** to pay:

- Money helps to repair the water system.
- Money is needed to clean the water.
- A machine is needed to pump the water.
- DWAF can then implement more water sources.
- If one pays, one will not have problems with water supply.
- Paying will limit the wastage of water.

It is obvious from the above answers that these respondents understand that, for a water reticulation system to operate, money is needed. They are willing to pay their share, because they realise it will mean a more efficient water supply. They understand that they are paying for the **service** of the water supply and not for the water itself. If all residents of the settlement understood this concept, it is very probable that the majority of the residents would be willing to pay for their water supply or at least understand why it is necessary.

It might therefore be a good idea to include the technical aspects of water supply in the school curriculum. This would enable schoolchildren to understand the human resources and machinery needed to ensure the constant pumping of water from the river, storing water in reservoirs as well as the cleaning process. The financial implications of this process must also be explained. This may very well result in a young generation of residents who are willing to contribute to the constructive infrastructure development of their settlement and in its maintenance.

4.7 SUMMARY

Quality of life involves an objective, measurable reality and a subjective, unquantifiable reality. Objective material measures or social indicators, such as mortality rates or, as in this study, water supply, objectively measure people's life conditions in terms of wealth

and health. The subjective approach attempts to measure quality of life in terms of the individuals' assessment of their own life circumstances and life satisfaction, thus emphasising the role of individual perception.

An anthropological approach to measuring quality of life stresses the link between culture and quality of life. Therefore, evaluation of quality of life also entails studying values. Consequently, it is necessary to include the residents of the research settlements' value judgements on water as a natural resource and water supply as a service when determining how water supply influences their quality of life.

In order to determine how water supply as an objective reality (social indicator) influences the residents of the research settlements' quality of life, which in turn is a subjective reality, criteria for both the objective and subjective realities were set.

The RDP minimum standards in terms of quantity, cartage, availability, assurance of supply, quality and upgrading were used as criteria for measuring the research settlements' water supply.

Only three of the RDP criteria for basic water supply are met in the research settlements, namely quantity, quality and upgrading. The remaining three criteria of cartage, availability and assurance of supply are not met. The reasons why the latter three criteria are not met are all rooted in the existence of private connections within the research settlements and the fact that the reservoirs of the settlements have an inadequate storage capacity.

The RDP minimum standard for cartage states that the nearest water point must be within 200 metres of a resident's stand. The current reality is that residents have no alternative but to walk up to one kilometre and wait in the queue at the borehole for almost an hour (see Section 3.2.3.3).

The criterion of availability is also not met, due to the fact that communal water taps yield virtually no water. Therefore, the availability does not adhere to the RDP standard of 10 litres per minute from each outlet (see Section 2.9.6).

The RDP criterion of assurance of supply dictates a raw water supply 98% of the time, with no more than one week's interruption per year. Only 12.7% of private connections yield permanent water supply (98% of the time) from the water reticulation system (see Section 3.2.2.1).

The residents of the research settlements measure their own quality of life (subjective reality) in terms of the following:

- practising horticulture in the hope that it will provide them with a better income and food for their households;
- earning an income, which ensures the ability to provide the household with a house, clothes, and funds to pay for education;
- receiving an education, which holds the promises of a job and therefore a higher income if a job is secured; and
- having a happy family life.

Horticulture is the livelihood of the majority of the residents of Makoko, as it provides the household with the bare necessities in terms of food for the family, but also a small income when crops and vegetables are sold at local markets.

Receiving an income, whether through horticulture, a job or from a pension, is vital to ensure the residents' perceived quality of life. Even though residents can physically survive on produce obtained from horticulture, money is essential to build houses and to buy necessities such as soap and clothes.

The residents of the research settlements perceive having an education as a guarantee of obtaining a job, which they believe the government must give them. Receiving an education is a long-term objective with the end goal of experiencing a higher quality of life. Education is a means to an end. Practising horticulture and having money are short-term objectives aimed at maintaining the day to day quality of life.

Most of the elderly residents of the research settlements did not complete their secondary education and stress the importance of education for their children, because they perceive education as a means of improving the quality of their children's lives.

A satisfactory family relationship at home creates personal fulfillment. Apart from physical and material survival, residents also need to be emotionally fulfilled. The main contribution to this is a happy family life and the latter is thus an aspect that ensures the perceived quality of life of the residents.

Chapter Four has pointed out that in terms of the RDP minimum standard for basic water supply Makoko and Phameni's water supply through the reticulation system is poor, since only three of the six RDP criteria are met. It is also concluded that the poor water supply ultimately has a negative impact on the perceived quality of life of the residents, albeit to a lesser degree on some of the residents' criteria of quality of life than on that of others.

Poor water supply has a negative affect on the cultivation of vegetables. When less water at the individual's disposal, fewer vegetables can be cultivated. The result of this is a smaller variety of food in the settlements' households. The household income also suffers when fewer vegetables can be sold.

The time spent on fetching water from boreholes reduces the time that women spend on horticulture and the time that schoolchildren can spend on their homework. The cartage distance thus influences the residents' perceived quality of life negatively.

A lack of assurance of water supply and erratic water availability force residents to make use of boreholes for their daily water supply. This entails spending a lot of time fetching water, which in turn means that residents have less time per day to spend on the tasks that, according to the respondents, enhance their quality of life.

The quality of the water that is pumped from the Sabi River to the research settlements influences the residents' quality of life positively, as the residents do not suffer from water-borne diseases (see Section 4.4.1), although this is not necessarily perceived within this context by the residents themselves.



The upgrading capacity of the water reticulation system of the research settlements also positively influences the residents' quality of life in an indirect manner, as upgrading represents the potential for the water supply problem to be reduced.

The fourth criterion of the residents' perceived quality of life, namely, a happy family life depends more on the internal family relationship than on external service facilities like water supply. However, one might conclude that the consequences of less food and less income can cause a stressful home environment that might influence a good family relationship negatively.

The fact that residents of the rural settlements in the Nsikazi District are not paying for water services received is a big problem to the water service providers of the district in terms of cost recovery. It also hampers the further development of water supply in the district. The residents of the research settlements are, however, not prepared to pay for their water supply. The reasons given by the residents of the research settlements for not being prepared to pay for water supply are twofold. Some respondents gave their reasons from a cosmological point of view, while others gave their reasons from a reality-oriented point of view.

Reasons given from a cosmologically-oriented value judgement indicate that water is perceived as a product of nature and because humans are part of nature and dependent on nature, everyone has the right to nature's products, including water. Water is something that nature provides for humans to exist and no living person has the right to try and sell water because it belongs to no one in particular, but to everyone.

The residents do not see that one must pay for the **service** of having water pumped to their settlement and for the **process** of having this water cleaned. This is because the residents do not have knowledge about how a water reticulation system operates, because it has never been explained to them.

The reasons given from a reality-oriented point of view for why residents are not prepared to pay for their water supply include the fact that residents are in the habit of not



paying for their water supply because it has always been free. The residents feel dependent on the government which must provide them with the basic needs to survive. The residents are, furthermore, not convinced that paying for their water supply will necessarily assure a permanent water supply. The water pipes are, to the residents, the least trustworthy source of water in their settlement, because they provide water very erratically. The residents fear that should they pay for water there may not be enough money to afford the huge volumes that they use when washing clothes or making bricks and they will therefore be forced to use less water per day, which will cause hardship.

The residents' unwillingness to pay for their water supply is due to a deep-rooted culturally determined value judgement and the reality of past experiences. The residents of the research settlements who **are** willing to pay for their water supply understand that for a water reticulation system to operate, money must be paid. They are willing to pay their share, because they realise it will lead to a higher quality of water supply. If the entire population of the settlement understood this concept, it is very probable that the majority of the residents would be willing to pay for their water supply, or at least understand why it is necessary to do so.