A PILOT ENVIRONMENTAL AND SOCIAL BASELINE STUDY FOR RURAL WATER SUPPLY AND SANITATION PROJECTS

N Motaung

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Water Research Commission

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Report to the Water Research Commission

by

N. MOTAUNG

Bumba Research and Human Development Consultancy

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EXECUTIVE SUMMARY

BACKGROUND AND MOTIVATION

For reasons of accountability to the people whose quality of life and health status is meant to be improved by RDP rural water supply and sanitation programmes and of evaluating the worth of government spending on social programmes, it is important to conduct evaluation and impact studies on these projects. These studies are; however, not very illuminating where there is no baseline information that depicts what conditions existed before the implementation of a water supply programme. Yet, in South Africa, many water supply and sanitation projects are implemented without conducting baseline assessments. In view of the lack of a culture of conducting baseline studies as part of the implementation of rural water supply programmes, the Water Research Commission funded a pilot research project that would develop a methodological model for conducting baseline assessments for basic water supply and sanitation projects.

It was anticipated that the study would benefit the DWAF by providing a methodological model that could be used and developed further by agencies in the water supply and sanitation sector. It would also help identify problems that might arise from the implementation of DWAF's 1997/98 Program 4 Business Plan and provide decision-makers with a clearer understanding of contentious issues in the implementation of integrated and sustainable people-driven projects.

OBJECTIVES

The purpose of the pilot environmental and social baseline study was to develop a methodological model for conducting baseline assessments for rural water supply and sanitation projects. In making funding available for the project, the Water Research Commission intended it to benefit the water supply and sanitation sector in the following ways :

- The study was to explore the basic steps that have to be taken in conducting baseline assessments for basic water supply and sanitation projects. These steps could be developed further by agencies undertaking future baseline assessments.
- It was likely to shed light on potential problems that might need to be taken into consideration in the implementation of the DWAF's 1997/1998 Program 4 Business Plan.
- At community level, the study would benefit communities in the study area by making them aware of potential problems that could arise for the management and sustainability of the water project, as well as strengths that they might harness for enhancing project management and sustainability.

MAJOR RESULTS AND CONCLUSIONS

The social development approach to baseline assessment

The contribution of the Baseline Assessment Model for Water Supply and Sanitation Projects that derived from the pilot baseline study is that it recognises that baseline studies are carried out as part of social

programmes that are aimed at achieving specific social development and socio-political goals. Baseline study activities need to be guided by the principles that inform the social programmes of which they are a part. It is for this reason that the model advocates a study approach, strategy and plan that alert researchers to the social processes that need to be taking place alongside the implementation of the methodological aspects of a study, in order to sensitize research to its social responsibilities.

The approach used in the pilot environmental and social baseline study identified the social processes that needed to take place alongside its implementation as interactive participation, capacity building and affording community members opportunity to earn an income. All three principles derive from policies developed by the Department of Water Affairs and Forestry.

The research strategy and plan helped identify which social relations and social actions were necessary for operationalising the vision embodied in the study's approach, thereby facilitating the implementation of the assessment. The strategy prioritised the establishment of good working relations with relevant structures of governance at provincial and village levels as well as with other relevant organisations and individuals. It emphasised the importance of conducting the baseline assessment in such a manner that it facilitated processes that would make a contribution to project sustainability. Follow up action comprised the formal notification of decision-makers about the study. A Steering Committee, the medium through which decision-makers were to participate in the pilot study, was set up. At village level, participatory processes likely to enhance the

sustainability of the eMatolweni/Siroshweni Rural Water Supply project were put in place.

The pilot study demonstrated that placing emphasis on participation and capacity building gained the study the support of all three tiers of government. At community level this orientation, together with the creation of opportunity for community members to earn an income, helped sustain the study, in a context in which people were angry, disillusioned and had little interest in the study itself.

The sequencing of baseline assessment activities

The social processes that are necessary for the successful implementation of a baseline study render the phasing of baseline assessment activities an important aspect to pay attention to. Of particular importance here is the sequencing of activities, particularly those pertaining to the social engagement of stakeholders. It is important to pay attention to issues such as whom access will be negotiated with and in what order. Sequencing will differ depending on the circumstances under which an assessment is done. Overlapping of phases is possible. The proposed model suggests that baseline activities can be grouped and sequenced as follows :

- Literature review and developing a research design.
- Negotiating access at highest decision-making levels.
- Fact finding on the programme to be assessed.
- Negotiating access at local and community levels
- Developing research instruments and sampling methods.
- Training of fieldworkers.

- Testing the research design and research instruments.
- Data collection.
- Data processing, data analysis and initial report writing.
- Feeding back results to relevant stakeholders and final report writing.

Areas of baseline assessment and data collection

The model proposes that the areas of baseline assessment tested in the pilot environmental and social baseline study be amongst those prioritised for the baseline assessment of rural water supply and sanitation programmes. These are :

- Community functioning, for reasons relating to the objectives of the RDP and the DWAF's Program 4 Business Plan to implement people-driven and sustainable basic water supply and sanitation projects.
- Areas that RDP water provision is keen to effect an improvement on. These are environmental features, health, hygiene and quality of life.

Circumstances under which a baseline study is conducted will determine what areas are assessed. The areas covered by the pilot baseline assessment are therefore not a blueprint and may be extended to include other areas such as institutional, socio-economic and financial assessments as well as demand assessment.

The multi-method approach to data collection helped the pilot study develop a composite profile of baseline conditions. Its specific value was that where one method was not successful in eliciting the required baseline data, one of the other methods used to study the same phenomenon would

provide the information. This was the case, for example, in the baseline assessment of health status and water related morbidity; in the absence of secondary data on morbidity and mortality rates, the household survey yielded baseline data that was used to develop a profile of morbidity.

The pilot baseline study *environmental baseline assessment* collected data on physical location, topographic conditions, climate, the location and use of local water sources, demography, settlement patterns, land and soil resources as well as land use patterns. This information helped assess the water potential of the study area, the implications of the position of water sources for community health, the quality of land available and its potential for farming, access to land and the various uses to which land was put. The demographic information collected enabled estimation of demand - of what level of service and what size of water project would be appropriate to meet the needs of the area. It enabled the study to carry out analyses that have implications for further monitoring and evaluation, such as examination of the health status of a community.

Assessment of *community functioning* covered community structures, decision-making processes, participation, communication, relations and interactions amongst structures of local governance. The broader context of water supply services planning and implementation was also examined.

Incorporated in the *baseline assessment of health and hygiene* were the use of water in the household, local perceptions of how water accessibility affects health, examination of health status in the households, the health infrastructure and the organisation of health service delivery, sanitation conditions and hygiene practices. Perceptions of how water accessibility

contributes to morbidity as well as a survey of health status in the households helped sketch a picture of the impact of water accessibility on health.

The *assessment of perceived quality of life* drew attention to how water inaccessibility interact with other disadvantages to retard social development in the area.

A combination of methods was used to collect data. Effective for the collection of data on environmental aspects was content analysis of secondary data, field observation, desktop physical environment analysis, a household survey and in-depth interviews with relevant experts. Community functioning was assessed through direct observation, in-depth interviews with community groups and key informants, relevant experts and government officials.

The household survey was an important instrument for assessing household health status. In-depth interviews with relevant experts and key informants elicited views on how water accessibility affects community health as well as on the organisation of health service delivery and its implications for epidemiological statistical compilation. Field observation helped assess the health infrastructure. The household survey and interviews with key informants were equally effective in determining household perceptions of quality of life.

THE EXTENT TO WHICH STUDY OBJECTIVES WERE REALISED

The pilot baseline study realised all three objectives it set out to achieve. It developed the Baseline Assessment Model for Water Supply and Sanitation Projects. This methodological model is based on the assumption that it provides a framework for the baseline assessment of basic water and sanitation projects in rural areas. It proposes that the objectives of assessment not be completely divorced from the overarching goals of basic water supply service delivery. It advocates that the study approach provide a vision of how the methodological aspects of assessment need to interplay with social development and socio-political concerns. The model further proposes that the sequencing of baseline assessment activities is important for the successful implementation of a baseline study. It proposes that the areas of assessment tested in the pilot baseline study be amongst those prioritised for the baseline assessment of rural water supply and sanitation projects. Lastly, it calls for a multi-method approach to data collection.

The study shed light on problems relating to DWAF's implementation of its 1997/1998 Program 4 Business Plan. In its exploration of the broader context of project planning and management for basic water supply projects, it drew attention to a number of problems. It found that implementing agents, consultants and local government did not adequately fulfill the roles they were meant to play in delivery and that the poor infrastructure and resources for local government handicapped the contribution that can be made by local government in the delivery of basic water supply services.

At the feedback meeting with community members, potential problem areas as well as areas of strength were discussed with community members. The significance of both strengths and weaknesses for the management of the planned water scheme were discussed.

RECOMMENDATIONS FOR FURTHER RESEARCH

Future baseline assessments can enhance the methodology developed through the pilot baseline study in the following ways :

- The research strategy and plan should include a fact-finding exercise that is aimed at helping researchers acquaint themselves with the study area.
- Desktop physical environment analysis findings need to be verified by a physical environment analysis field study.
- Demographic baseline assessment should, where possible, be modeled along 1996 census lines. This will facilitate comparison of findings and is likely to lead to more accurate measurement of population size and growth.
- The profiling of community functioning can be enhanced by participant observation in a variety of community activities over a longer period of time.
- Where possible, health data collected on water related morbidity should be compared to data obtained from epidemiological statistics compiled by the health system.
- To be taken into consideration in sampling designs is that analysis of water related morbidity and factors that influence it in groups of special interest, such as the 0 to 5 years age group, requires large samples.

- Where epidemiological statistics are not compiled to meet the needs of baseline assessment
  - The DWAF and the Department of Health could set up an interdepartmental programme to investigate developing a system of compiling epidemiological statistics that can be of mutual benefit.
  - A consultative group, including clinics and schools, can be set up to devise a system by which baseline assessment on health aspects can be conducted for the duration of the course of the assessment.
  - A longitudinal perspective is important for understanding the consequences of water accessibility on health. It needs to be built into the methodology for the baseline assessment of health and hygiene aspects.
- Future studies need to examine the relationship between water-related morbidity and seasonal effect.
- Participatory observation accompanied by recording of hand washing practices might have been useful for obtaining a clearer picture of hygiene practices.
- The household questionnaire can be improved by
  - Developing items that distinguish between households that have access to land but do not use it and those that have no access at all.
  - Adding questionnaire items that give a better indication of the degree of reliance on rainwater tanks.
  - Finding ways of improving the quantification of land use in terms of sizes of land taken up by each farming activity.

- Distinguishing between water fetched and water consumed per household per day in order to get a more accurate picture of water consumption.
- Including water storage and water handling as additional aspects of assessment.

- The pilot environmental and social baseline study was not in a position to assess whether the process of taking community members through an exploration of potential problem areas and strengths, and their implications for the water project, was meaningful to them. The question of how to assess the impact of participatory processes requires the attention of future baseline assessment studies.

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"A PILOT ENVIRONMENTAL AND SOCIAL BASELINE STUDY FOR BASIC WATER SUPPLY AND SANITATION PROJECTS"

The Steering Committee responsible for this project, consisted of the following persons:

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The ISD staff in the King William's Town DWAF office for participating in the study and made transport arrangements for field visits.
Experts and government officials who availed themselves for interviews.
The eMatolweni/Siroshweni Project Steering Committee which supported the study.

LIST OF ABBREVIATIONS

Bumba R & HD	Bumba Research and Human Development Consultancy
CDOs	Community Development Officers
DFID	Department for International Development. UK
DWAF	Department of Water Affairs and Forestry
ISD	Institutional and Social Development
PBS Steering Committee	Pilot Baseline Study Steering Committee
TRC	Transitional Rural Council/Councillor

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CHAPTER 1

INTRODUCTION

1.1 BACKGROUND AND MOTIVATION

The Reconstruction and Development Programme (RDP) identifies poverty as the most serious issue facing South Africa, particularly in rural areas, where at least 11 million of the 17 million South Africans who survive below the Minimum Living Level live. At the time of the drafting of the RDP in 1994, more than 12 million people did not have access to safe drinking water. Over half of rural people were without a safe and accessible water supply. About 21 million people lacked adequate sanitation facilities. The RDP therefore identified improvement of quality of life as its central objective, and poverty alleviation as its priority. One of the five key policy programmes through which the RDP seeks to achieve its goals is meeting basic needs, including the provision of basic water supply and sanitation.[1]

In line with the RDP, the Department of Water Affairs and Forestry (DWAF) disclosed its first 12 rural and semi-rural RDP-related water projects in 1994, totaling R59,2m.[2] In the same year, the department produced its first White Paper on Water Supply and Sanitation Policy, which sets out basic guidelines for the provision of services. By 1996, some 640 000 people had been given access to clean piped water.[3]

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[1] Reconstruction and Development Programme, 1994. African National Congress. Johannesburg : Umanyano Publishers.
[2] RDP Monitor, Vol.1 No.2, August/September 1994.

For reasons of accountability to the people whose quality of life and health status is meant to be improved by RDP water supply and sanitation projects, and of needing to evaluate the worth of government spending on social programmes, it is important to ask some critical questions : How do basic water supply projects benefit the people for whom they are intended? Do they improve the quality of life and the health status of communities? If so, how? If not, why, and what needs to change to make them meet the objectives for which they were intended?

Evaluation and impact studies best answer these questions. Such studies are, however, not very illuminating where there is no baseline information that depicts what conditions were prior the installation of a water supply project. Yet, in South Africa, many water supply and sanitation projects are implemented without conducting baseline assessments. In view of the fact that many water projects are implemented without being preceded by a baseline assessment, the Water Research Commission decided to fund a pilot research project that would develop a methodological model for conducting baseline assessments for basic water supply and sanitation projects.

It was anticipated that the study would benefit the DWAF in two ways. Firstly, it would provide a methodological model that could be used and developed further by agencies in the water supply and sanitation sector. Secondly, it could help identify problems that might arise from the implementation of DWAF's 1997/98 Program 4 Business Plan[4] and

[3] Ibid., Vol.2 No.12, September 1996.
[4] The DWAF's 1997/1998 Business Plan seeks to involve local government in the provision of basic water supplies. It also advocates a programmatic rather than a project-based approach to provision.

provide decision-makers with a clearer understanding of contentious issues in the implementation of integrated and sustainable people-driven projects.

1.2 OBJECTIVES'

The pilot baseline study was aimed at a systematic gathering of baseline information on environmental, social and health and hygiene features on a water supply project implemented through the Local Government Community Water Supply and Sanitation support programs of the DWAF. The specific objectives of the pilot baseline study were envisaged as three-fold :

- Primarily to develop a methodological model for the baseline assessment of basic water supply and sanitation projects.
- To identify key environmental and social variables, which through regular monitoring, would provide information on types and rates of changes brought about by the implementation of a water supply project. The value of this kind of information would be that it could be used to inform decision-making on matters such as upgrading the project, and could form a basis for later project evaluations and impact assessments.
- To help the communities who will serviced by the project on which the baseline assessment is piloted identify areas of strength in the functioning of their community, as well as problems that are likely to arise. Identified strengths could be harnessed constructively in order to achieve project sustainability.

1.3 THE NATURE OF THE PROJECT

The study was to be executed and tested on a small scale on a small water supply project. In terms of areas of coverage, the scope was to be limited to the baseline assessment of

- Community functioning, as a result of considerations expressed in the RDP and the DWAF's Program 4 Business Plan relating to implementing people-driven and sustainable basic water supply and sanitation projects.
- Areas that RDP water provision wanted to impact on the most. These were environmental features, health, hygiene and quality of life.

Through the help of a steering committee established to guide the study, the eMatolweni/Siroshweni Rural Water Scheme near Idutywa in the Eastern Cape was identified as the water project on which the pilot baseline study was to be conducted (see Appendix 1 for a map showing the geographic location of the study area). The Project Business Plan[5] developed for the installation of this water project had been drawn up in 1997. A village based Project Steering Committee had been selected and given decision-making powers.

The study was conducted over a period of nine months, starting from March 1998 and ending in December 1998. The research team consisted of a project leader from Bumba Research and Human Development Consultancy (Bumba R & HD), a research co-ordinator based in the

[5] Project Business Plan for the Matolweni/Siroshweni Rural Water Scheme, Stewart Scott Consulting Engineers. Undated.

Eastern Cape and two Community Development Officers (CDOs) from the Institutional and Social Development (ISD) Directorate in the King William's Town DWAF office.

The pilot baseline study operated under budgetary constraints. As a result, limited time could be spent on the field. This, however, did not hamper the study from achieving its main objectives.

1.4 THE FORMAT OF THE REPORT

The remaining part of this report is arranged into three chapters. Chapter 2 deals with the methodological aspects of the study. Chapter 3 tables the research findings through providing a description of the contribution of data collection methods to developing profiles on each area of assessment, and an evaluation of the profiles. In addition, key variables identified for monitoring and evaluation are presented. A summary of the methodological model deriving from the pilot baseline study is given in Chapter 4 and includes a discussion of conclusions and recommendations. A concluding section of this chapter comprises summary guidelines for conducting baseline assessment for rural water supply and sanitation programmes.

The data obtained from the pilot baseline assessment are presented separately in Appendix 9.

CHAPTER 2

METHODOLOGICAL ASPECTS

This chapter constitutes a discussion of the methodological aspects of the pilot environmental and social baseline study. The discussion deals with the design that was planned as the point of departure for the study approach, research strategy and plan, phasing of the study, areas of assessment and research methods. Modifications that were made to the original design as a result of the influence of conditions in the study area are explained, as well as factors that influenced these changes. The application of the modified design, also referred to as the actual design, and the outcomes of its application are examined and evaluated. This fashion of presenting research process facilitates a discussion of methodology that not only documents the methodological components of the study but also the influences that the research context came to exert on the research.

2.1 THE STUDY APPROACH, RESEARCH STRATEGY AND PLAN

Against the background of the concerns to implement people-driven and sustainable basic water supply and sanitation projects, it was necessary to implement the study in such a manner that it contributed to setting in motion processes that would enhance project sustainability. This was done through adopting a study approach that embodied a vision of what needed to take place in the course of conducting the study, such that the study not only realised its methodological objectives but also took into consideration issues of sustainability.

2.1.1 The planned study approach, strategy and plan

The original approach designed for the pilot baseline study prioritised three principles that were to guide the implementation of the study. Two derive from the White Paper on Water Supply and Sanitation Policy.[6] They are participation by stakeholders, and capacity building and skills transfer. The third derives from the already mentioned Program 4 Business Plan; it is concerned with ensuring project sustainability through implementing people-driven basic water supply and sanitation projects.

Interactive participation[7] was seen as the most desirable form of stakeholder participation in the pilot baseline study, for the following reasons :

- Interactive participation considers process to be the most important product of any intervention. It emphasises the importance of providing everyone who could be directly affected by an intervention opportunity to participate in its processes, in order to create understanding of both the intervention and the environment in which it takes place.
- It seeks to provide participants with the information, knowledge, understanding and motivation that will enable them to participate effectively in the intervention.
- It makes allowance for plans to be updated, extended and corrected frequently, thus allowing an intervention to be adaptive.

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[6] White Paper on Water Supply and Sanitation Policy, Department of Water Affairs and Forestry, November 1994.

[7] The concept of interactive participation is borrowed from the notion of interactive planning proposed in Vergara, E., Gharajedaghi, J. and Ackoff, R.L. 1989. A Guide to Interactive Planning, S^3 Papers. University of Pennsylvania : Social Systems Sciences Department.

Interactive participation was seen as needing to take place at decision-making and community levels. It was designed primarily to give the researchers opportunity to provide information on the pilot baseline study to decision-makers and the communities that were to be directly affected by the study. In the process, stakeholder input would be obtained to facilitate a process by which the planning of the study and its research design took into account local conditions. At decision-making level, interactive participation would thus provide opportunity for decision-makers to guide the study and find solutions to problems arising during implementation. At community level, it was anticipated that this form of participation would help even out power relations between the researchers and the communities concerned, in the hope that this would provide the latter with a sense of control over the activities of the pilot baseline study. It was hoped that this manner of working with communities in the study area would facilitate good working relations and encourage a people-driven process.

The White Paper considers capacity building and skills transfer for community support personnel as important for molding development support workers who are equipped with a balanced set of both community organisation skills and appropriate technical skills. It is for this reason that the pilot baseline study approach advocated creating opportunity for community development officers in the water and sanitation sector to gain research skills in the course of conducting the study.

In order to translate the principles of participation and capacity building into practice, a research strategy and plan of action were developed. The strategy took into consideration the following :

- Securing the approval and support of decision-makers for the pilot baseline study to take place.
- Establishing good working relations with other relevant structures, bodies and individuals in the study area. It was envisaged that these entities could assist the project with identifying sources of information, sharing knowledge and skill, obtaining support for the project at community level and ensuring proper dissemination of information.
- Providing opportunity for Community Development Officers to participate in the study, and to create space for collaboration between the organisation responsible for the study and staff from the Eastern Cape DWAF's Monitoring and Evaluation Unit.
- Setting in motion processes that would contribute to the sustainability of the water project on which the pilot baseline study was to be conducted, by helping generate long-term interest and commitment to the water scheme.

The plan of action developed to operationalise the research strategy prioritised the following activities :

- Identifying provincial, area and local level policy and decision-making structures that were important to provide support.
- Formally notifying the identified decision-making structures of the existence of the project, prior to commencement of the project.
- Soliciting the support of decision-makers for the establishment of a Steering Committee for the study.
- Framing the activities of the Steering Committee along terms of reference negotiated and agreed upon by its members.

- Identifying other structures, bodies and individuals to liaise or work with in the course of conducting the study.
- Securing the practical involvement of Community Development Officers in the study, and collaborating with the Monitoring and Evaluation Unit of the Eastern Cape DWAF, for purpose of sharing knowledge and skills.
- At community level, setting in motion an interactive participatory process aimed at :
    - Providing accurate and relevant information about the study to the communities concerned, in order to develop an appreciation of the information the study would generate for the long-term sustainability of the project.
    - Making allowance for the community to influence the planning and implementation of the study.
    - Creating opportunity for learning and skills development for community members, thereby providing them with a sense of having gained something from participating in the pilot baseline study.
    - Enhancing project management and sustainability by equipping local residents with a long-term vision of how best to manage the water scheme. This was to be done by involving community members in identifying key environmental and social variables that were likely to have an influence on the functioning of the water scheme, and by helping them identify areas of strength in community functioning as well as potential problems.

2.1.2 Modifications in the planned approach, research strategy and plan and influencing factors

Though accommodated in the study budget, creation of opportunities for earning for community members was not initially consciously conceptualised as an element of the study approach. However, as particular social dynamics began to play itself out in the course of the study, it soon became evident that many people were not particularly interested in the baseline study. Those who participated in it nonetheless did so for the reason that it provided opportunity for earning income. Since it turned out to be a motivational factor that facilitated community participation, creation of opportunity to earn income was included as an additional component of the study's approach.

The study happened to take place in a context in which the residents of the villages of eMatolweni and Siroshweni were angry and frustrated over delays in the delivery of their water scheme. They therefore tended to view the pilot baseline study as a distraction that was not going to bring them the water supply they needed. Due to this tension, the identification of key variables for monitoring and evaluation was not undertaken jointly with village residents, as originally planned.

The actual approach, strategy and plan that came to inform the pilot baseline study thus consisted of four major components :

- Interactive participation by stakeholders at decision-making level and community level.
- Creation of opportunities to earn income.

- Capacity building and skills development.

2.1.3 Evaluation of the outcomes of the actual approach, strategy and plan

Applying the actual approach, strategy and plan facilitated the setting in motion of processes the outcomes of which are tabled below :

- Relevant stakeholders were identified and notified of the pilot baseline study. These were the Eastern Cape DWAF offices, the village based Project Steering Committee, the Idutywa TRC and the Amatola District Council.
- The establishment of the Pilot Environmental and Social Baseline Study Project Steering Committee, referred to here as the Pilot Baseline Study (PBS) Project Steering Committee. The committee became the medium through which interactive participation of national, provincial and regional decision-makers in the pilot baseline study found its expression.[8] Participation took the form of meetings. The meetings discussed study goals, the research design, terms of reference for the PBS Project Steering Committee, the selection of a water scheme on which the pilot study could be conducted, the participation of DWAF staff in the study, research progress, problems encountered by the study and research findings.
- The participation of the eMatolweni and Siroshweni communities in the activities of the pilot baseline study. Participation was secured through creating forums for participation – a contact meeting with community

members, a consultative workshop and a community feedback meeting for reporting research findings. At the contact meeting, access to villages in the study area was negotiated and permission to conduct the study obtained. The consultative workshop was used to provide villagers with a comprehensive description of the pilot baseline study, elicit their views, create opportunity for them to participate in the planning of the study and help identify respondents and participants. The feedback meeting informed villagers of the research findings and discussed the significance of the findings for future management of the water scheme. Participation was also secured through the practical involvement of community members in collection data for the household survey.

- Capacity building and research collaboration. The Eastern Cape DWAF's ISD staff received first hand experience in conducting research in rural settings. Research collaboration took the form of technical assistance from the European Union Support Programme in producing maps for the study and measuring distance and height differences between households and water sources.

The benefits of applying the actual approach, research strategy and plan included the following :

- As a result of using an approach based on principles deriving from the RDP and DWAF's policy papers, the study received acceptance and support from all tiers of government.

[8] The ISD national office, the Umtata office and King William's Town DWAF offices, the European Union Support Programme for the DWAF, Bumba Research and Human Development Consultancy, as well as Build, Operate, Train and Transfer (BOTT) were represented on the committee.

- The setting up of the PBS Steering Committee and the interactive participation that took place in its meetings served to build common understanding at the highest decision-making level of what the study aimed to achieve, and facilitated exploration of expectations in relation to its orientation. A water project on which the pilot baseline study could be done was identified. Discussion and agreement on collaborative arrangements between Eastern Cape DWAF and Bumba Research and Human Development Consultancy for facilitating research skills acquisition by ISD staff was facilitated. Participation also made it possible for the PBS Project Steering Committee to play an advisory and problem-solving role.
- As a result of their practical involvement in the study, ISD staff participating in the study reported having acquired skills in facilitating a baseline study, administering a questionnaire, conducting community feedback reporting and dealing with situations of conflict. They reported to have learnt that conducting a baseline assessment necessitates phasing of the research process. They also learnt that it is possible to devise ways of overcoming problems encountered in the course of conducting a baseline study. They learnt that conducting community research can be exhausting, emotionally, physically and mentally. They appreciated that the pilot study had provided them with a frame of reference for future research activity.

At community level, the participatory perspective that was implemented served to :

- Draw attention to problems in the implementation of the water project planned for eMatolweni and Siroshweni. One was the high level of

frustration experienced by the local communities over the slow pace of implementation of their water supply project. Another was the exclusion of villages bordering eMatolweni and Siroshweni from the water project, a factor posing a threat to its sustainability.

- Allow people to air their dissatisfactions, thereby minimising tension in a context where people had perceptions that they were an object of an injustice. The tension could have resulted in premature termination of the pilot baseline assessment.
- Create rapport between the researchers and the community, despite the tension. A comment made by a member of the village Project Steering Committee at the community feedback suggested that the manner in which the researchers interacted with community members gave the committee no cause for dissatisfaction.
- Alert the researchers to community perceptions and attitudes to the water project and prompted a modification of methodology where possible and where necessary.
- Motivate people to participate in the activities of the study, though they were skeptical of it. This was largely due to the opportunity provided to earn an income from participating in data collection.

A weakness in the applied research strategy and plan was that the process of stakeholder identification embarked on did not cater for a fact finding exercise aimed at familiarising researchers with issues such as structures of governance in the study area, and how they interact with each other. This omission resulted in some delay in the notification of the Amatola District Council.

2.2 AREAS OF BASELINE ASSESSMENT, RESEARCH PHASES AND RESEARCH METHODS

This sub-section discusses areas of baseline assessment, research phases, and research methods. Also discussed is how the actual research methods were applied and the outcomes of their application.

2.2.1 Planned and actual areas of baseline assessment

Planned areas of baseline assessment for the pilot study were environmental aspects, community functioning, health and hygiene and quality of life. These came to be the areas that were actually assessed.

Environmental baseline assessment

- Assessment of the physical environment – geographic location, topographic and climatic conditions, the location and use of existent water sources, land and soil resources, settlement patterns and land use patterns.
- Demography.

Community functioning

- Community governance and leadership as they relate to issues of water supply. Assessed were participation, decision-making, communication, community structures and leadership. Subsequent to initiating the study, problems relating to delays in the installation of the eMatolweni/Siroshweni water project made it necessary to extend the

inquiry to include examination of the broader context of basic water project planning and governance.

Health and hygiene baseline assessment

- Water availability for household use.
- The health infrastructure.
- Health status
- Sanitary conditions and hygiene practices.

Quality of life

- Perceived quality of life and its relationship to the availability and utilization of existent water supplies.

2.2.2 Planned and actual research phases

The phases that were envisaged and the activities that were to take place within each are listed below.

Phase 1

- Initial site visit
- Identification of relevant stakeholders

Phase 2

- Consultations with relevant stakeholders
- Gathering of existing data
- Sampling design.

Phase 3

- Development of research instruments
- Field work training
- Piloting of research instruments.
- Revision of research instruments

Phase 4

- Data collection for the pilot baseline study
- Data processing
- Data analysis
- Initial report writing.

Phase 5

- Report back of findings to relevant parties
- Writing of the final report.

An additional phase was introduced at the beginning of the research process. It entailed negotiation of access to a water scheme at provincial level and setting up the PBS Project Steering Committee.

2.2.3 RESEARCH METHODS

Planned sampling and data collection methods

Sampling and data collection methods that were to be used were :

- Representative sampling methods for a household survey.
- Purposive sampling for selecting experts, community-based key informants and groups for interviewing. The purposive sampling of community key informants was to be informed by the leadership generated community social profile methodology.[9] The methodology proposes identifying key informants through using trained researchers to ask residents in the vicinity of a project for the names of key persons in each of specified community institutions and areas of interest. From the names given is complied a list of 25 to 40 most frequently mentioned persons. About 20 to 25 of these people are interviewed using an in-depth interview schedule.
- Document analysis, for purposes of reviewing what is already known about the project.
- Desktop physical environment analysis for documenting environmental features.
- Filed observation
- In-depth interviews and group interviews for developing a profile on community functioning.
- A household survey for providing a quantitative angle to the baseline assessment.

Three types of research instruments were to be used : an observation checklist for field observation, a survey questionnaire for the household survey and in-depth interview schedules for interviews with key informants, experts, government officials and community groups. Table 1 below shows the data collection methods and instruments planned for each area of assessment.

[9] Savatski, P.D. & Freilich, E.D. 1977. "Leadership Generated Community Social Profiles." In Finsterbusch, K. and Wolf, C.P. (eds). Methodology of Social Impact Assessments. Dowden, Hutchinson & Ross.

Table 1 Summary of planned areas of baseline assessment, data collection methods and research instruments

Areas and aspects of baseline assessment	Data Collection Methods	Research instruments
1. Environmental Baseline Assessment		
1) Physical location and boundaries 2) Topographic conditions 3) Climatic conditions 4) Location and use of local water sources 5) Demography 6) Settlement patterns 7) Land and soil resources 8) Land use patterns	Document analysis Field observation Desktop physical environment analysis In-depth interviews Household survey	Observation checklist Household survey questionnaire Interview schedules
2) Community functioning		
1) Participation and decision-making 2) Leadership and governance	Observation In-depth interviews Group interviews	Observation checklist Interview schedules
3. Health and hygiene baseline assessment		
1) Water for household use 2) Health infrastructure 3) Perceived effects of water accessibility 4) Health status in the household 5) Mortality rates and water related diseases 6) Sanitary conditions and hygiene practices	Document analysis In-depth interviews Household survey	Observation checklist Household survey questionnaire Interview schedules
4. Quality of life		
1) Perceptions of quality of life	In-depth interviews Household survey	Household survey questionnaire Interview schedules

Modifications in sampling and data collection methods

- Local conditions influenced two changes in the sampling design. First, the two villages initially considered for the pilot baseline assessment, namely eMatolweni and Siroshweni, were small villages with a combined total of 114 households. In view of the need for adequate sample sizes for statistical analysis, a village census was conducted. The second change arose from a request by the village Project Steering Committee to include eQolweni in the household survey. This village lies between eMatolweni and Siroshweni and comprised of 33 households, divided by a shallow valley into two clusters. A decision was taken to include the cluster lying in more or less a straight line with eMatolweni and Siroshweni and consisting of 24 households. This decision was informed by reticulation layout plans, which suggested that the pipeline for the planned water project would probably pass through this part of eQolweni. Purposive rather than probability sampling methods thus informed the inclusion of the 24 households in the survey.
- Tension arising from the delayed installation of the water scheme influenced the research team to modify the methodology planned for identifying community based key informants. Instead of obtaining the names of key informants from individuals in the community, as suggested in the leadership generated community social profile methodology, informants were identified through the consultative workshop.

How data collection methods were applied and the outcomes of application

Sampling methods

The household survey took the form of a whole population study for eMatolweni and Siroshweni, and covered 24 of the 33 eQolweni households. It resulted in 130 household interviews.

Characteristics on the basis of which experts and government officials were selected as respondents were past or current involvement in the eMatolweni/Siroshweni water scheme and the role played. Interviews were obtained with the civil engineer consultant contracted to manage the eMatolweni/Siroshweni water supply project, the local administrative officer for the Amatola District Council and Idutywa TRC, the Eastern Cape DWAF project manager for RDP projects and the chief/village headman/TRC Councilor for the study area. An interview was also held with a group of eight agricultural officers of the Idutywa branch of Department of Agriculture.

The methodology followed in adapting the leadership generated community social profile methodology involved informing community members participating in the consultative workshop that they would be asked to help identify village leaders to be interviewed on various aspects of village life. A leader was defined as knowledgeable about community affairs, capable of giving a good account of events and as commanding the respect of the community. It was explained that each leader who agreed to be interviewed would be asked to comment on issues from a perspective

informed by what he/she does for a living or from the point of view of responsibilities carried out. A grid (see Appendix 2) listing eight areas of involvement was then pinned up for all to see. Areas listed were farming, health, governance, politics, church, youth, women and education. Workshop participants were asked to suggest three names for each area of involvement, for each of the villages of eMatolweni and Siroshweni.[10] The method generated a total of 38 names. However, due to the tensions already alluded to, only five of the 20 in-depth interviews that were planned could be conducted.

Community members for group interviews were selected on the basis of gender, age and social role. Again, due to the problems already mentioned, only two group interviews were conducted, both of them in the pilot phase. One comprised of nine adult men, whose ages ranged from 48 to 78 years, and the other of four mothers of children in the 0 to 2 years age group (though mothers of 0 to 1 years were asked for). No other group interviews could be obtained.

Data collection methods and research instruments

Document analysis

Document analysis turned out not to be a viable research method for the study. Other than the Business Plan, no previous project or research reports and no annual regional and district reports could be obtained. Census data were not useful for obtaining village specific census

[10] At this point, the inclusion of eQolweni in the pilot baseline study had not been discussed, hence key informants from this village were not obtained.

information, as pre-1996 censuses do not provide such data, and the 1996 census data for enumerator areas were not yet released. The epidemiological statistics kept by the clinics in the study area, and by health authorities at district level, were not adequate for proper analysis of water related morbidity and mortality.

Field observation

Observation was conducted throughout the research process and field notes taken. An observation checklist developed for field observation helped focus attention on environmental and social conditions to be taken into consideration by the pilot baseline study. It also helped develop a first hand profile of :

- The location of the villages and their regional and district boundaries.
- Village sizes and the physical layout of the villages.
- Regional and local water sources and barriers to their accessibility.
- Settlement patterns in relation to water sources.
- The use of land in the area and crops produced.
- Clinics and doctors in the area.
- Community structures and organisations.

Information obtained on the first field observation trip was used to assist research decision- making in the selection of sampling and data collection methods.

Desktop physical environment analysis

Desktop physical environment analysis was particularly useful for assessing topographic and climatic conditions. The topographic information informing the physical environment analysis was obtained from the 1: 50000 topo-cadastral sheet 3128CD CLARKEBURY, second edition, 1982. Profiles represent cross-sections of the relief along straight lines and are horizontally true to scale. Vertical scales are exaggerated. Basically contour intersections were marked off a straight edge placed along the straight lines and then transferred to graph paper for the profiles to be constructed.

Interviews

Interview schedules for experts (see Appendix 3) and government officials (see Appendix 4) addressed issues relating to responsibilities of their portfolio, the nature of their involvement in the eMatolweni/Siroshweni water scheme, impressions of the study area and understanding of problems of water supply delivery in the study area.

Interviews with community-based key informants (see Appendix 5) covered quality of life, water related issues and issues specific to health, education, and governance. The community group interviews conducted during the pilot were used to gauge whether there were any important issues that were being missed by the research.

On conducting the interviews, a brief background to the study was given and the purpose and objectives of the interview as well as issues of

confidentiality were explained. Permission for conducting the interview and tape recording were obtained.

The interviews generated data that helped build a baseline profile of environmental conditions, quality of life, the effects of the water situation on the health of village residents, community governance and leadership, and the broader context of project planning and governance. The group interview with mothers was used successfully as a 'screening' tool, for issues pertaining to infant care. The one held with adult males aborted; its participants were more intent on expressing their dissatisfaction with the delay in the installation of their water scheme than responding to research questions.

The household survey

A questionnaire based on the SALDRU/World Bank survey household questionnaire[11] was developed for the household survey. The adapted questionnaire (see Appendix 6) contained the following components :

- A household roster for collecting demographic information on the village households.
- An environmental baseline section that elicited information on land use patterns including vegetable gardens, land for cultivating crops, land for animal grazing, land used for other purposes and types of crops grown.
- Use of existing water in relation to land use patterns.
- A health section eliciting information on
    - water use for household purposes.

[11] Project for Statistics on Living Standards and Development. 1994. South Africans Rich and Poor : Baseline Household Statistics. Cape Town : SALDRU

- the health status of children 0 to 1 year old.
- hygiene practices in relation to the 0 to 1 year old age group.
- the health status of other household members.

- Sanitation conditions and hygiene practices.
  - sanitation facilities
  - the effects of existing water supplies on the practice of hygiene.
- Perceptions of quality of life in relation to the existing water situation.

The questionnaire was piloted and necessary revisions made. Training of fieldworkers in interviewing and questionnaire administration had taken place prior the pilot. Fifteen people conducted the door-to-door survey, over a period of four days. They included 10 community fieldworkers, three ISD staff members from the King William's Town DWAF office, the research coordinator and the project leader.

On the first day of data collection, a three-hour meeting was held to agree on ground rules for participation and take participants through the revised questionnaire. Participants were given verbal and written instructions on how to conduct the household interviews (see Appendix 7).

The survey was managed between the project leader, research co-ordinator and the chairperson of the village-based Project Steering Committee. To assure full household coverage, the interviewers moved systematically as a single group from the Siroshweni end of the villages through to the end of eMatolweni.

Supervision was provided immediately after questionnaire administration. All questionnaires filled in on a particular day were re-examined at the end

of the day. This exercise was useful in the case of incompletely filled-in questionnaires and those containing errors. Field workers could be sent back to the relevant households to obtain full and correct information while the research team was still in the vicinity of the households concerned.

Methods of analysis

The qualitative data generated by field observation, in-depth and group interviews were subjected to content analysis. The household survey questionnaire data were entered, coded and analysed using the statistical computer package SAS. In order to understand the manner in which some variables in this study are related, statistical techniques were employed. They included descriptive and summary statistics that depict the current state of affairs in the study area and two-way tables with statistical inference based on chi-squared tests, to determine the significance of association of variables.

CHAPTER 3

RESEARCH FINDINGS

This chapter reports on the findings of the pilot environmental and social baseline study. It examines the contribution of the research methods used in developing a profile of each area of baseline assessment, evaluates the baseline profiles generated and lists the key variables that were identified for monitoring and evaluation.

3.1 ENVIRONMENTAL BASELINE ASSESSMENT

The baseline assessment of the environment encompassed an examination of the physical environment and demography.

3.1.1 The contribution of research methods

The physical environment

Features of the physical environment that were assessed were physical location, topographic and climatic conditions, existing water sources, settlement patterns, land use patterns and land and soil resources.

Document analysis

Secondary data obtained from the Business Plan provided information on the absolute location of the villages of eMatolweni and Siroshweni, thus enabling the desktop physical environment analysis to be conducted.

Field observation

Field observation was useful for collating data on the physical location of the study area in terms of regional and administrative boundaries. This method also made it possible to give a first hand account of the physical layout of the study area, climatic conditions, regional and local water sources, settlement patterns as well as land use patterns. It was particularly important for gathering baseline data on local water sources with regard to types, location, number, existing infrastructure, protection, yield, distance from the households and height difference between the water source and households.

Desktop physical environment analysis

Desktop physical environment analysis generated data on the topographic conditions and physiographic characteristics of the study area, such as altitude, position in relation to the Great Escarpment and regional sources of water. It enabled analysis of the implications of physiographic characteristics for water accessibility in terms of the physical layout, distance of the villages from regional water sources, drainage and accessibility of underground water. It made possible it possible for the baseline assessment to comment on climatic conditions, specifically temperature ranges, rainfall and wind patterns as well as on the implications of wind patterns for water source infrastructure, such as windmills.

The specific value of this method for the pilot baseline assessment is that it provided in-depth, technically weighted analysis of topographic and

climatic conditions with which to compare findings from field observation. It depicted the manner in which topographic and climatic conditions interact to shape the water accessibility potential of the study area.

The household survey

The household survey served to give a quantitative indication of the degree to which the villages are dependent on local water sources for drinking livestock and for watering their vegetable gardens. It also shed light on which types of water sources were used to satisfy which of the two needs.

Demography

Document analysis

Secondary data from the Matolweni/Siroshweni Rural Water Scheme Project Business Plan and the Eastern Cape DWAF Population Planning Database[12] provided estimates of the population sizes of eMatolweni and Siroshweni. The Business Plan also furnished a per year estimate of growth rate for the two villages. No figures were provided for eQolweni since the inclusion of this village in the water scheme was not in the original design of the water scheme.

[12] The purpose of the Population Planning Database is to give the DWAF a feel of the dimension of water supply and sanitation problems.

Field observation

Field observation helped the researchers obtain numbers of households for each village and village population sizes. An indication of the number of shared households was also obtained.

The household survey

The demographic section of the household questionnaire served three main functions.

- It verified the village and village population sizes obtained from the Public Steering Committee.
- It enabled a breakdown of the population into age groups whose vulnerability to water related morbidity could be analysed individually.
- It made it possible to measure other demographic variables that might have implications for the functioning of the water scheme, such as household size, household structure, increase in household size and migration.

Land and soil resources and land use patterns

Field observation

This method yielded data that helped identify the ways in which land is put to use in the study area. It determined that there was land used for settlement, land used for the cultivation of crops and for rearing livestock. It helped identify what crops were produced. This information was used to

inform the construction of items on land use in the household survey questionnaire.

In-depth interviews

The interviews served to verify field observation findings. They also generated information on natural vegetation and its implications for farming practices.

Desktop physical environment analysis

Desktop physical environment analysis generated a technically based analysis of natural vegetation and the carrying capacity of land. It enabled assessment of the implications of these factors for farming and soil quality, as well of physiographic characteritics for crop production and animal farming.

The household survey

Quantitative data on household access to land, land size and land use practices such as leasing and the rearing of livestock, was obtained through the household survey. Land use practices that were investigated included the proportion of land used for growing crops as opposed to that used for grazing animals, the amount of land tilled, reasons for tilling or not tilling land and types of crops produced.

3.1.2 Evaluation of the environmental profile and its implications

The methods that were used to assess the environmental features of the study area generated an environmental profile that depicted the significance of environmental features, not only for the hydrological potential of the study area, but also for the health and quality of life of communities living in the area. The demographic profile was important for assessing the demand that was likely to be exerted on the water scheme.

The significance of the environmental profile for water accessibility, community health and quality of life

The baseline assessment suggests that the three villages have no readily accessible and reliable source of water, though they are in the catchment area of the Mbashe River. Distances walked to the local springs are long and steep. Groundwater may not be easily accessible. As the physical environment analysis suggested, the dry climate, low yield, mild temperatures and unprotected springs are a recipe for poor quality water that is not very safe for drinking. The limited water available must satisfy competing human, animal and land needs. Though winds are generally favourable for the use of windmills for pumping groundwater, tornadoes and hurricanes threaten the sustainability of windmills. The environmental assessment thus points to poor hydrological potential that is unlikely to improve, and underscores the importance of the planned water scheme for meeting the water needs of people living in the study area.

The description of the physical location of households in relation to water sources draws attention to the implications of physiographic characteristics

for the health of communities in the area. In this case, the settlement of the villages at the top of the ridge implies good drainage as it facilitates clearance of human and animal waste. It suggests that considerations pertaining to drainage, rather than the location of water sources, have influenced settlement patterns. Yet the location of households on high ground possibly carries negative consequences for the quality of water seeping through the low lying water sources. A potential danger, particularly in the rainy season, is contamination of water sources by waste washed down the slopes of the plateau to the valleys. The distance of the households from the water sources, as well as the fact that there is no dense clustering of households around water sources may be a saving factor, however.

Baseline data on land and soil resources and land use patterns provided a grasp of issues of access to land, the quality of available land, its potential for farming and the manner in which it is actually used. Assessment suggests that the hydrological needs of the study area should be viewed against the background of physiographic factors, in this case, the limited size of land suitable for cultivation, as well as soil overuse and overstocking resulting from overcrowding. These factors combine to disadvantage crop production and reduce to subsistence level both crop and livestock farming.

The significance of the demographic profile for the eMatolweni/Siroshweni water scheme

The population count yielded by the pilot baseline study differed from that cited in the Business Plan and in the population database of the DWAF,

but was closer to population sizes obtained from the PSC. Differences in counting seem to be a function of differing methodologies and data qualities. DWAF's calculation of population size is a 1994 desktop estimate based on the 1991 census and applying the growth factor. Taking into consideration the problems of the 1991 Census, the figures are most likely overestimates. The larger population size cited in the Business Plan has two possible explanations. It is possible that people living elsewhere were counted, thus inflating the figure. Though there is no empirical proof and highly unlikely, the second explanation could be massive out-migration from the area since the time of the drawing up of the plan. The present study obtained its figure from household size counts that defined household members in such a way that household members living away from a household for more than two weeks in a year were excluded.

The demographic profile generated by the pilot study portrays a study area of relatively small villages, low in-migration and low levels of circular migration. These factors suggest that it is unlikely that unexpected and disproportionately high demands will be placed on the water scheme in the near future. Put differently, it is unlikely that a sharply increasing population will place unexpected demand on the water scheme in the near future. This scenario might change as the pull factor of the water supply stimulates higher levels of in-migration.

While the male/female ratio is usually significant for purposes of economic planning and assessment, it can, in this case, be put to use in the planning and management of water scheme activities. This information may be used to determine the ratio of gender participation in the activities of the water scheme, such as the ratio of men to women who must be appointed as

office bearers or who must be employed. This will prevent the advantaging or disadvantaging of one party over the other in matters of employment.

3.2 THE BASELINE ASSESSMENT OF COMMUNITY FUNCTIONING

The usefulness of the baseline assessment of community functioning is that it identified strengths and weaknesses in community governance and leadership in the study area and draws attention to what seemed to constitute the greatest threats to project sustainability.

3.2.1 The contribution of research methods

Direct observation

Observation enabled analytical commentary on community processes of decision-making, participation and communication thus providing a first hand account of community interaction. This method made it possible to get insight into relations and interactions amongst local structures of governance and between these structures and the communities of the study area. Participant observation over a period of time, and in activities not related to the study could have provided a more in-depth grasp of internal dynamics, particularly those community members were reluctant to talk about.

In-depth interviews

Interviews provided information that verified observation findings on community decision-making and participation. They also helped develop an account of community functioning that would not have been readily visible or accessible to an outsider in the short space of time spent in the villages.

3.2.2 Evaluation of the community profile and its implications

The main features of the community profile

- Decisions on community matters are taken collectively in community meetings, using participatory processes. This type of decision-making encourages individual opinions to be heard, debated and consensus to be reached. It is a mode of operation that also serves to build a social environment that
  - is conducive for participatory management of the water project.
  - encourages a sense of ownership and identification with the project by lending villagers control over water scheme affairs.
  - facilitates collective problem solving.
- Meetings are announced through a system of messengers. Communication of decisions taken at a meeting are conveyed to those who did not attend by word of mouth. These mechanisms seem to be adequate for a rural setting with limited resources and low literacy levels.
- Participation in decision-making seems to be informed by a problem solving approach that encourages a fluid definition of boundaries for

participation. This lack of rigidity in the definition of boundaries makes it possible for boundaries to be defined either narrowly or broadly. Thus, in some cases, participation in water scheme activities is restricted to residents from the villages earmarked for the water scheme. In other cases, meetings are inclusive of people who live in bordering villages but who may affect the functioning of the water scheme in some way. Judging from the conversations that took place at the consultative workshop, broader participation was allowed for purposes of dealing with suspicion and resentment about the selective provision of water supply projects. This orientation to participation seems to emphasise transparency and the collective finding of solutions to problems.

- The participation of women in the water scheme encourages a situation in which women's needs are given attention. Women's participation seemed to be adequate, though a proper assessment of this aspect would require participant observation over a longer period of time.
- The strength of participation of various sectors of a community in any project lies in the contribution each sector can make in the smooth running of the project, especially in relation to the management of problems emanating from that particular sector. The lack of visible involvement of youth in the water scheme may mean that the management of the water scheme may not deal effectively with problems that involve youth, should they arise.
- The village Project Steering Committee currently managing issues pertaining to the planned water scheme seems to take its responsibilities seriously. This suggests that the project was likely to operate under management committed to making it work.

- The relative latitude with which the community and the village Project Steering Committee can take decisions implies that the people who will be directly serviced by water project make the necessary decisions over its affairs. This is likely to enhance project management.
- The factors outlined above seem to suggest that there is very little of community dynamics and functioning that is likely to be a major disruptive factor to the sustainability of the eMatolweni/Siroshweni water scheme. What seems to be a threat to project sustainability are dynamics in the broader context of project planning and governance.

The broader context of project planning and governance

Examination of the broader context of project planning and governance suggested that the roles played by the DWAF, the Amatola District Council, the TRCs and consultants are meant to complement each other and facilitate the provision of basic water supply. However, in the case of the planning of the Ematolweni/Siroshweni water project there seemed to be shortcomings in the interventions of both implementing agents and local government. The DWAF expressed inability to fulfill its responsibilities due to work overload. Communication between the consultants and communities in the study area about the procedures that are followed in project implementation and the length of time they take appeared to have broken down. The District Council and TRCs were ill-equipped to take on the role of facilitating development due to lack of adequate administrative infrastructure and resources. It was expressed that the political decision to assign councilors to areas they do not reside in and yet not provide them with transportation contributed to their ineffectiveness of local

government. The recently released White Paper on Local Government[13] suggests that one of the foci for forthcoming legislation will be to increase the resource base of local government. This measure will hopefully provide local government with greater muscle to fulfill its duties.

The problems experienced in implementing the eMatolweni/Siroshweni water project suggest limitations in the planning and management of this particular water project, from the point of view of governmental processes and procedures. The Business Plan indicated that the water scheme installation would take nine months to install. Almost a year and a half passed before drilling started. With regard to bordering villages, eXeni is separated from eMatolweni by only a fence and a narrow road, yet eXeni was not getting a water supply project at the same time that eMatolweni was going to. At the beginning of the study eXeni was reported to have had its water project approved. By the time the study ended, the project was reported to have fallen victim of budgetary cuts and its implementation therefore deferred. These factors suggest that project planning and management, at least for this project, is undertaken in a manner that is not conducive to project sustainability.

3.3 THE BASELINE ASSESSMENT OF HEALTH AND HYGIENE

Presented in this sub-section are the results of the baseline assessment of water availability for household purposes, the health infrastructure of the study area, community perceptions of the effects of water accessibility on health, household health status, sanitation conditions and hygiene practices.

[13] The White Paper on Local Government, 1998.

3.3.1 The contribution of research methods

Water accessibility for household purposes

The household survey

Quantifiable data on the extent to which households are dependent on a source outside the home for water, what distances are walked by what proportion of households and amounts of water fetched per household per day were obtained through the household survey. This basic information enabled analysis of relationships between variables such as water consumption per household and distance walked to the nearest water source, water consumption per household and water related morbidity, hygiene practices and the distance walked to a water source.

The health infrastructure

Field observation

Field observation yielded data on the number and location of health facilities in the study area.

In-depth interviews

Interviews conducted with health personnel facilitated a grasp of how the health system in the study area services the villages and provided information on the system used for compiling health statistics at local and district levels.

Perceptions on the effects of water accessibility on health and the assessment of household health status

The effects of water accessibility on health were investigated through in-depth interviews with key informants and through the household survey. The household survey was also used to examine health status in the households. This was done by eliciting information on health problems experienced in the two weeks prior to data collection, and health problems experienced most often. The health problems mentioned as having been experienced were categorised and assigned a number (see Appendix 8). Extra codes were created for combinations of health problems, where more than one health problem was reported for a household member. The frequency distribution of the codes was analysed and then cross-tabulated with age.

The contribution of research methods

<u>In-depth interviews</u>

An account of how key informants, especially health personnel, view the effects of water accessibility on the health of communities in eMatolweni, Siroshweni and eQolweni was obtained through interviews. Important information linking seasonal effect and water related morbidity was obtained, as well as on age groups that were seen to be most vulnerable to water related health problems. This information aided interpretation of findings on the incidence of water related health problems in the households.

The household survey

The household survey generated data that was used to assess health status in the households. It yielded data that made it possible to analyse the relationship between the incidence of health problems suggestive of water related morbidity and age, infant feeding and water consumption per household.

Sanitation conditions and hygiene practices

The household survey

Data on the proportion of households owning a sanitation facility and the nature of the facility owned were obtained through the household survey. The survey helped assess hygiene practices, specifically the washing of hands before preparing food, before preparing an infant's bottle and after using the toilet.

3.3.2 Evaluation of the baseline assessment of health and hygiene and its implications

Water availability for household purposes

Fetching water from a source outside the home implies two issues that can have an adverse effect on the health status of a community. The first is lack of immediate access to water, leading to a situation in which competing demands are placed on water available to a household. Under such circumstances, the use of water for hygiene purposes can be relegated

to secondary importance, leading to susceptibility to water washed diseases, such as skin and eye infections. The second issue concerns the quality of drinking water. Water obtained from outside the home increases the risk of contamination, either by the way it is stored or by the way it is handled.

The estimated water consumption per capita per day in the villages of eMatolweni, Siroshweni and eQolweni is almost equal to the 12 to 15 litres consumed in areas of water scarcity. It falls far below the water consumption levels of South African urban areas, where households in more affluent sectors consume between 350 and 450 litres per capita per day.[14]

It is possible that the pilot baseline study's figures for water consumption per household was an overestimation, since they were calculated on volumes of household water reported to be often fetched by three people (see Part II, Item 6 of the Household Survey Questionnaire). It was not determined whether all three people fetch water on any single day. If the figures are indeed an overestimation, the value of the eMatolweni/Siroshweni water project for improving water household supply becomes even more significant for reducing the incidence of water related health problems.

There was no significant association between water consumption per household per day and household size nor was there between water consumption per household per day and the distance walked to a water

[14] Water Systems Research Group. 1997. Optimisation of Rand Water's Distribution System. Report to the Water Research Commission. WRC Report No: 488/1/97.

source. This is possibly a result of sample sizes that were too small to bring out meaningful relationships. Another explanation for the non-significant associations, even after sufficiently large samples sizes are used, could be that the calculation of average water consumption per household was based on the volume of water fetched per day and not on the volume consumed. Further, the non-significant association between water consumption and distance walked to the nearest water source could be an indication that distance walked to a water source need not necessarily be the only determinant of how much water is consumed by a household. Other factors, such as the yield of a water source on a particular day or the number of people in a position to fetch water in the household, can also play a role.

The health infrastructure

The assessment depicted a poor health infrastructure. The system of epidemiological statistical compilation used in the clinics, and by the districts, does not match morbidity to specific villages. As such, the statistics are not suitable for analysing the degree to which the water situation in the study area affects the health status of people living in it. This creates problems not only for baseline assessments but also for monitoring and evaluation. If the system is used by all the districts in the Eastern Cape and by other provinces, then the problem of inadequate epidemiological documentation could be a general one.

Perceptions on the effects of water accessibility on health and the assessment of household health status

Although it was not possible to conduct microbiological tests on water supplies in the study area, it was still possible to comment, though hypothetically, on the relationship between morbidity and the poor quality of water.

The analysis of health status in the households highlighted the prevalence of stomach ailments. This may have been because the study was conducted in winter, and the high incidence of stomach ailments a result of the deteriorating quality of water during this dry season. As Lindskog and Lundqvist[15] suggest, the decreasing volume of water in springs in the dry season may lead to increasing concentration of contaminated material in water sources. However, without microbiological testing of changes in water quality it is difficult to form any conclusive opinions about the relationship between water related morbidity and seasonal effect.

The analysis showed that children from 0 to 5 years old were the most vulnerable to Type 4 health problems (see categorisation in Appendix 8). This is not surprising. Diarrheal infections remain the leading infectious cause of infant and child morbidity and mortality in most parts of the developing world. In South Africa, there are estimated to be about 1.5 million cases of diarrhea a year in children under five years of age.[16] This factor underscores the importance of improving water supplies to

[15] Lindskog, P. and Lundqvist, J. 1989. Why Poor Children Stay Sick : The Human Ecology of Child Health and Welfare in Rural Malawi. Uppsala : Scanandanavian Institute of African Studies.
[16] Genthe, B. and Seager, J. 1996. The Effect of Water Supply, Handling and Usage on Water Quality in Relation to Health Indices in Developing Communities. Report to the WRC. Report No : 562/1/96.

communities where the lack of safe drinking water may be contributing factors to diarrheal infections.

The reporting of combinations of health problems complicated data processing, analysis and interpretation. As a way of dealing with this problem, extra codes for processing were created for each combination, but this did not offer a solution for how to interpret the frequency distribution of the codes in relation to the other categories of health problems.

There was significant association between water consumption per household and health problems often suffered, with the frequency of stomach ailments increasing with household consumption. Fetching larger volumes of water necessitates storage. The increasing incidence of Type 4 health problems in households fetching larger volumes of water may be a reflection of poor water storage and handling practices.

Sanitation conditions and hygiene practices

The baseline assessment depicted poor sanitary conditions, both in terms of the number and quality of facilities. Household reporting of handwashing suggests that there are high levels of awareness of the importance of hygiene for good health.

There was a significant association between the distance walked to a water source and hand washing practices. However, the finding indicating that the shorter the distance walked the greater non-adherence there is to hand washing is contradictory and difficult to explain.

3.4 THE BASELINE ASSESSMENT OF PERCEIVED QUALITY OF LIFE

3.4.1 The contribution of research methods

In-depth interviews

The interviews generated perceptions of quality of life as shaped by infrastructure, level of education, support structures, interpersonal relations, obstacles to development and the effects of water accessibility on development and transitional processes.

The household survey

Data on who provides the labour for fetching water and how much time is spent on fetching water was obtained through the survey. Levels of satisfaction on various aspects of water accessibility were elicited.

3.4.2 Evaluation of the baseline assessment of perceptions on quality of life and its implications

Research methods were successful in eliciting comment on the quality of life in the villages, both from the perspective of those who live in it and those who work on the water project. The data highlighted perceptions of quality of life, not just in terms of the consequences of the inaccessibility of water, but also in terms of how water scarcity interacts with other kinds of deprivation to produce an impoverished environment that is lacking in almost all basic amenities.

Interviews with women and educators were particularly informative on the effects of water scarcity on the social and educational development of girls. The household survey provided quantifiable data on time spent fetching water and on levels of dissatisfaction with the water situation.

3.5 Key variables for monitoring and evaluation

Identifying key variables for monitoring and evaluation was motivated by considerations relating to the sustainability of the planned water scheme. The rationale was that undertaking this exercise jointly with community members, together with identifying strengths and potential problem areas, would develop a long term vision of issues pertaining to the project and thereby stimulate long term interest and motivation in managing it. For reasons already mentioned, the exercise was not undertaken with the communities in the study area.

The key variables were identified during the course of the baseline study, by noting, observing and using common sense judgement. Content analysing this report and relevant literature also helped identify what factors would be worth monitoring and evaluating if one were to assess the impact of a basic water supply project. Below are listed some of the variables that were deemed pertinent to monitoring and evaluation.

Variables concerning service levels

- Accessibility of the water supply - is it easier to reach and use ?
- Reliability of the water supply- is water being supplied consistently and at appropriate levels ?

- Peak of demand for water and how demand matches the water supply - what time of the day do these occur ? Does the demand of the water scheme allow for utilization at appropriate levels ?
- Is the design adequate for producing the quality and volume of water required ?

Variables relating to the water supplied

- Improved quality - has the quality improved ?
- Improved quantity - does the quantity obtained per capita meet RDP requirements ?

Variables relating to the impact of the water supplied

- Are there any negative consequences of the water supplied ?
- Has it led to improved health ?
- Has it led to improved hygiene practices ?

User variables

- Who uses the water supply and how ?
- How do you track consequences thereof, how should a balance be struck.
- The proportion of the population who use the water supply in comparison to those who do not ?

Affordability

- Do all users pay ?
- The proportion of people who pay against those who do not pay.
- Factors influencing payment and non-payment.

CHAPTER 4

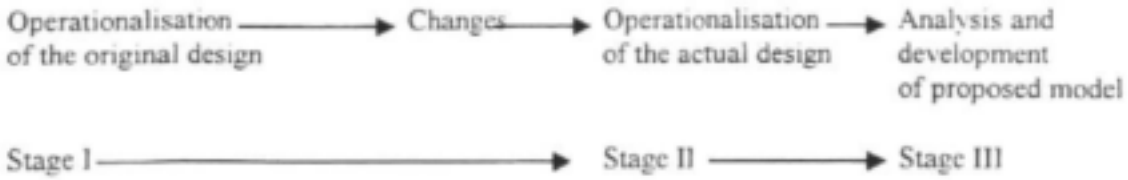
THE METHODOLOGICAL MODEL DERIVING FROM THE PILOT BASELINE STUDY : SUMMARY, CONCLUSIONS AND RECOMMENDATIONS

This chapter provides a summary description of the methodological model that derives from the pilot environmental and social baseline study. The first part discusses the steps through which the model was developed. The second deals with the assumptions on which the model is premised. Basic propositions on research phases, research approach, strategy and plan, areas of baseline assessment and research methods as well as conclusions and recommendations are discussed in the third section. In the last section, summary guidelines for conducting baseline assessments of rural water supply and sanitation projects are tabled.

4.1 Stages of development of the model

The model, referred to here as the Baseline Assessment Model for Rural Water Supply and Sanitation Projects, was developed in a three-staged process. The first stage involved operationalising an initial baseline assessment design, which was then revised in order to accommodate conditions and influences emanating from the social context in which it was applied. Out of the changes effected on the original design evolved the study's actual design. The application of the actual design constituted the second stage. The third stage comprised the analysis of the outcomes of the application of the actual design and developing the model. The steps

followed in developing the model as a whole can be represented as follows:



4.2 Assumptions

The model builds on the assumptions that :

- It is a framework for the baseline assessment of basic water supply and sanitation projects in rural areas.
- Baseline assessments for basic water supply and sanitation projects are informed by RDP principles as outlined in the policy papers of the DWAF (ref).

4.3 General propositions, conclusions and recommendations

The framework makes the following general propositions for rural water supply and sanitation baseline assessments :

- Baseline assessment should be informed by a study approach that provides a vision of how the methodological aspects of the study need to interplay with social development and socio-political concerns.
- A research strategy and plan are necessary for facilitating smooth implementation of the study approach as well as the baseline assessment itself. Details of research strategy and plan may differ

depending on the objectives of the assessment and the circumstances under which it is conducted.

- Though the objectives of assessment may differ from study to study, they should not to be completely divorced from the overarching goals of providing basic water services, as defined in the DWAF's policy papers. As such, the model proposes as core areas of assessment the areas of baseline assessment tested in the pilot environmental and social baseline study.
- Assessment should be carried out in phases.
- Areas for baseline assessment will depend on the circumstances under which a baseline assessment is conducted. The areas covered by the pilot baseline assessment are therefore not a blueprint. The framework may be extended to include areas suggested by the Institutional and Social Development Package for Water Supply Projects,[17] such as institutional, socio-economic and financial assessments, and demand assessment, as suggested by the DFID Guidance Manual.[18]

4.3.1 The study approach, strategy and plan

It is proposed that the study approach for water supply and sanitation baseline assessments be defined not only in terms of methodological considerations, but also of a vision of the interplay of methodological aspects with the social development and socio-political concerns of South African society. The importance of defining the study approach in this way is that it alerts researchers to questions of social responsiveness. For rural

[17] Institutional and Social Development (ISD) Package for Water Supply Projects. 1998. Draft Package, Version 1, Department of Water Affairs and Forestry.
[18] DFID. 1998. Guidance Manual on Water Supply and Sanitation Programmes, Well Water and Environmental Health. London : WEDEC for DFID.

water supply and sanitation projects social responsiveness is perceived as incorporating the following elements :

- Allowing for participation at provincial, regional and local decision-making levels.
- Creating opportunities for participation at community level.
- Creating opportunities for community members to earn income.
- Capacity building and skills development.

The pilot environmental and social baseline study demonstrated that working from an interactive participative perspective and placing emphasis on capacity building gained the study the support of all three tiers of government. At community level this manner of working helped forge relations of trust under difficult circumstances, created opportunity for earning income for communities and helped sustain the study in the face of disillusion and suspicion.

In order to bring about the realisation of the vision mapped out by the study approach, as well as make it possible for the study to take place, a research strategy and plan needed to be developed. The detail of research strategy and plan will, of course, differ across studies as it will be shaped by the circumstances under which the baseline assessment is conducted. The pilot environmental and social baseline study discussed here necessitated a research strategy that prioritised :

- Securing approval and support from relevant decision-making structures at government level and village level.

- Establishing good working relations with other relevant organisations and individuals in the study area.
- Facilitating processes conducive to the long-term sustainability of basic water supply projects.

Developing a research plan helped identify which actions were needed to achieve the objectives of the pilot environmental and social baseline study, both in terms of its approach and strategy. Important actions that were necessary to undertake were:

- The formal notification of decision-makers about the study and securing their approval.
- The setting up of a Steering Committee for the project.
- Identifying and holding consultations with other relevant organisations and individuals in the study area.
- Setting in motion processes that would enhance the sustainability of the eMatolweni/Siroshweni Rural Water Supply project.

A recommendation to be made in relation the research strategy and plan is that an initial and brief fact-finding exercise be undertaken so as to familiarise researchers with the study area on such things as community history, structures of governance and other relevant stakeholders, before embarking on the assessment. This was missing in the planning of the pilot environmental and social baseline study.

The advantages of adopting an approach, strategy and plan comprising of the elements mentioned above were as follows :

- At decision-making level, these elements served to earn the study acceptance and support from all three levels of government and facilitated skill acquisition by DWAF staff.
- At community level, they drew attention to problems relating to the implementation of the DWAF's 1997/1998 Business Plan, minimised tension and helped sustain the study to completion.
- They helped inform research decision-making about changes needed to made in the study methodology in order for the research design to accommodate local conditions and influences.
- They afforded a largely unemployed community opportunity to earn income.

An issue in baseline assessment needing the attention of future studies is finding ways of evaluating the impact of participatory processes conducted in the course of baseline assessment. The pilot baseline study was not in a position to conduct this kind of evaluation.

4.3.2 Baseline Assessment Phases

The pilot environmental and social baseline study was carried out in phases. The phasing was prompted by the recognition that the assessment of rural water projects primarily rests on social processes the effective management of which largely rests on the successful negotiation of social relationships. The sequencing of these negotiations is of particular importance, hence the need for phasing.

The sequencing of baseline assessment phases will differ depending on the circumstances under which an assessment is commissioned. For example,

if a baseline study is part of a feasibility study requested by a provincial department, the phase of negotiating access at the highest decision-making level may not be essential, though negotiating access at village level may still be relevant. Overlapping of phases is possible, as long as it does not adversely affect the research process. Looking at the phases listed below, it is possible, for example, for Phase 1 and Phase 2 to run concurrently. However, one does not envisage embarking on Phase 4 without finalising Phase 2.

The model developed in the pilot environmental and social baseline study suggests the following phases for rural water supply and sanitation services :

Phase 1- Literature review and developing a research design

- Updating research planning, through a literature review, with current developments in baseline assessments.
- Developing a detailed research design for the study.

Phase 2 - Negotiating access at the highest decision-making level

- Identifying relevant highest decision-making level.
- Negotiating access at the relevant highest decision-making level.
- Identifying stakeholders at decision-making level.
- Setting up a steering committee for the baseline assessment on which
- relevant stakeholders are represented.
- Negotiating working relations at highest decision-making level.

Phase 3 - Fact-finding mission on the project/s to be assessed

- Conducting a brief fact finding exercise on the project on relevant issues, such as structures of governance in the area and project processes already under way.

Phase 4 - Negotiating access at community level and district and local decision-making levels

- Identifying relevant decision-making structures at district, local government and community levels.
- Making the initial contact and negotiating access at district, local and community levels.
- Identifying other relevant stakeholders, structures and individuals and holding consultations with them.
- Undertaking the first field observation trip.

Phase 5 - Developing research instruments and designing sampling methods

- Developing research instruments.
- Designing sampling methods.

Phase 6 – Training

- Recruitment of village field workers.
- Training for fieldwork.

Phase 7 - Piloting the research instruments

- Piloting the research instruments.
- Analysis of the pilot and revision of research instruments, based on the piloting of research instruments and considerations relating to local conditions.

Phase 8 - Data collection

- Data collection for baseline assessment.

Phase 9 - Data processing and data analysis

- Data processing.
- Data analysis.
- Initial report writing.

Phase 10 – Report back and final report writing

- Report back of findings to relevant parties.
- Writing of the final report.

4.3.3 Areas of assessment and data collection

The model proposes the areas of baseline assessment tested in the pilot environmental and social baseline study be amongst those prioritised for the baseline assessment of rural water supply and sanitation programmes. These are :

- Community functioning, for reasons relating to the objectives of the RDP and the DWAF's Program 4 Business Plan to implement people-driven and sustainable basic water supply and sanitation projects.
- Areas that RDP water provision is keen to effect an improvement on. These are environmental features, health, hygiene and quality of life.

A multi-method approach to data collection is proposed. The multi-method approach adopted in the pilot baseline assessment helped develop a composite profile of baseline conditions. Its specific value was that where one method was not successful in eliciting the required baseline data, one of the other methods used to study the same phenomenon would provide the required information. This was the case, for example, in the baseline assessment of health status and water related morbidity. In the absence of secondary data on morbidity and mortality rates for the study area specifically, the household survey yielded baseline data that was used to develop the desired profiles.

Tables 2 provides a summary of the areas of assessment covered in the baseline study, aspects studied within each area of assessment, data collection methods and instruments used and an evaluation of the contribution of each method to meeting the objectives of the assessment. The last column contains recommendations – suggestions on additional areas of assessment, additional aspects within an area and areas for further enquiry or development.

Tables 2 Summary table of areas of assessment, data collection methods and research instruments used in the pilot environmental and social baseline study, the evaluation of the contribution of each research method and recommendations

Area of baseline assessment	Data Collection Methods	Research Instrument	Evaluation of Method	Recommendations
Environmental Baseline Assessment				
1) Physical location	Content analysis of available secondary data		Provided information on the geographic position of the villages.	
	Field observation	Observation checklist	Provided information on the location of the study area in terms of the region, district, TRC and administrative area in which the study area is located.	
2) Topographic conditions	Field observation	Observation checklist	Yielded a first hand account of the physical layout of the area.	
	Desktop physical environment analysis		Generated data on the topographic and physio-graphic characteristics of the study area and their implications for water accessibility.	Desktop analysis needs to be verified by physical environment analysis fieldwork.
3) Climatic conditions	Field observation	Observation checklist	Provided a first hand impression of climatic conditions in the study area.	
	In-depth interviews with experts	Interview schedule	Obtained commentary from experts on climatic conditions and their implications for agricultural activities.	

Area of baseline assessment	Data Collection Methods	Research Instrument	Evaluation of Method	Recommendations
	Desktop physical environment analysis		*Analysed climate in terms of average rainfall,* temperature range and wind patterns, thus enabling assessment of the potential for water accessibility as well as the implications of climate for water infrastructure.	*Desktop analysis needs to be verified* by physical environment analysis fieldwork.
4) Location and use of local water sources	Field observation	Observation checklist	Enabled documentation of water sources with regard to location, yield, degree of protection, distance from households and height difference from water source to village.	
	Household survey	Household Survey Questionnaire (see PART I, Section 2 and PART II)	Gave an indication of the extent to which the village population is dependent on existing water sources, competing demands on existing water sources and perceptions of when local sources run dry.	Obtain a better indication of the degree of reliance on, and use of rainwater tanks.
5) Demography	Household survey	Household Survey Questionnaire (see Household Roster)	Enabled assessment of village sizes, population sizes, male to female ratios, household size, household structure and migration patterns. Findings on increases in household size, patterns of migration and household structure enabled further analysis of the implications of demography for the planned water project.	Model demographic baseline assessments along 1996 census lines as the 1996 census was the first South African census to undertake census enumeration at village level.[19]
6) Settlement patterns	Field observation	Observation checklist	Gave a first hand impression of settlement patterns.	

[19] At the time of the writing of this report, the 1996 statistics for enumerator areas were not yet released. According to a Statistics South Africa source, problems relating to enumerator boundaries and transitional local/rural council boundaries were still being addressed. Only provincial statistics were available.

Area of baseline assessment	Data Collection Methods	Research Instrument	Evaluation of Method	Recommendations
	Desktop physical environment analysis		Provided analysis of the carrying capacity of land and its implications for farming.	
7) Land and soil resources	Desktop physical environment analysis		Yielded information on types of soils found in the area, the quality of soil, natural vegetation, the carrying capacity of land and the implications of physiographic characteristics for land cultivation. These provided a broader perspective for assessing the relationship between agricultural potential and water accessibility.	
8) Land use patterns	Field observation		Provided a frame of reference that informed the construction of household survey items on land use.	
	Interviews with experts		Provided supplementary information on climate, farming and natural vegetation.	
	Household survey	Household Survey Questionnaire (see Part I, Section 1)	Served to provide a profile of what proportions of the population use land in what ways, the size of land being used by households for these activities, and some indication of how much available land is actually used.	Future studies need to develop improved ways of estimating the amount of land taken up by each of the uses to which it is put. Distinguish more clearly between households that have access to land but do not use it and those that have no access at all.

Area of baseline assessment	Data Collection Methods	Research Instrument	Evaluation	Recommendations
The baseline assessment of community functioning				
1) Decision-making, participation and communication	Direct observation		Revealed the nature of community interactions as they pertain to decision-making, participation and communication.	Undertake participant observation over a longer period of time and around different activities.
	In-depth interviews with key informants	Interview schedule	Helped assess the accuracy of direct observation on community functioning.	
	Interviews with selected community groups	Interview schedule	Enabled assessment of community perceptions and attitudes towards the planned water scheme and their implications for participation.	
2) Community leadership and governance	Direct observation		Made it possible to assess the nature and quality of the leadership of the water scheme. Provided insight into interactions and relations amongst structures of governance and community structures. Brought to light problems in the implementation of the water project.	Undertake participant observation over a longer period of time and around different activities.
	In-depth interviews with key informants	Interview schedule	Helped sketch the hierarchy of governance and relations between different structures and levels of governance.	Observe interactions over a longer period of time and around different activities.
3) The broader context of project implementation and planning	Direct observation		Visits to the Amatola District Council revealed poor administrative infrastructure.	

Area of baseline assessment	Data Collection Methods	Research Instrument	Evaluation	Recommendations
	In-depth interviews with key informants and government officials.	Interview schedules	Provided information on the roles of public and private institutions in the delivery of basic water services. Exposed understanding of problems in the delivery of water services in the study area by different stakeholders.	
The baseline assessment of health and hygiene				
1) Health infrastructure	Field observation	Observation checklist	Yielded data on the health infrastructure of the study area.	
	Interviews with health workers	Interview schedule	Provided details of how health facilities function to provide services for communities in the study area. Highlighted the inadequacies of the statistical compilation of health data in the study area.	
2) Water for household purposes	Household survey	Household Survey Questionnaire (see Part II)	Gave and indication of the degree to which households are dependent on water from local sources and how this water is generally put to use.	Distinguish between water fetched and water consumed per household per day in order to get a more accurate picture of water consumption in the households. Examine water storage and handling as additional aspects of baseline assessment.
3) Health status	Household survey	Household Survey Questionnaire (see Part III, Section 1 and 2)	Enabled examination of water related morbidity in the households.	Where possible data on water related morbidity obtained through household surveys should be compared to data obtained from medical records.

Area of baseline assessment	Data Collection Methods	Research Instrument	Evaluation	Recommendations
				To be taken into consideration in sampling designs is that analysis of water related morbidity and factors that influence it in groups of special interest, such as the 0 to 5 years age group, requires large samples. Where epidemiological data are not compiled to meet the needs of assessment • The DWAF and the Department of Health could set up an interdepartmental programme to investigate developing a system of compiling epidemiological statistics that can be of mutual benefit. • A consultative group including health clinics and schools should be constituted for purposes of compiling such data for research purposes. • A longitudinal perspective is important for understanding the consequences of water accessibility on health. It needs to be built into the methodology for the baseline assessment of health and hygiene aspects.

Area of baseline assessment	Data Collection Methods	Research Instrument	Evaluation	Recommendations
				Where possible, microbiological testing of water from sources in the study area should be done in order to examine the relationship between water related morbidity and seasonal effect on water quality.
4) Perceived effects of water quality and scarcity	Interviews with health workers	Interview schedule	Gave health workers' view of how water quality and scarcity affect health.	
	Household survey	Household Survey Questionnaire (see Part III, Section 1 and 2)	Gave the community's view of how water quality affects health.	
5) Sanitation conditions	Household survey	Household Survey questionnaire (see Part III, Section 3)	Provided information on the nature and quality of sanitation facilities.	
6) Hygiene practices	Household survey	Household Survey Questionnaire (see Part III, Section 3)	Assessed awareness of hygiene.	Participant observation accompanied by recording of hand washing might be useful to get better insight into health awareness.
The baseline assessment of perceptions of quality of life				
1) Perceptions on quality of life	Interviews with key informants	Interview schedule	Elicited perceptions on quality of life in general and specific to the water situation.	
	Household survey	Household Survey Questionnaire (see Part IV)	Provided views on quality of life in relation to the water situation.	

4.4 Summary guidelines

Translated into guidelines for conducting environmental and social baseline studies for rural water supply and sanitation services, the model deriving from the pilot environmental and social baseline study suggests the following important considerations :

- Baseline assessment methodology should be informed by a social development approach.
- The sequencing of baseline study activities is important for the effective management of the social processes that are part and parcel of conducting assessments.
- Areas of assessment tested in the pilot environmental and social baseline study should be amongst those prioritised for the baseline assessment of rural water supply and sanitation projects.
- Data collection is to be informed by a multi-method approach.

4.4.1 The social development approach

Baseline studies are conducted as part of social programmes that are aimed at achieving particular social development and socio-political goals. By virtue of being conducted as part and parcel of such programmes, baseline studies need to be premised on the principles that inform the broader social programmes of which they are part. Such an approach ensures that studies are responsive to the social development and socio-political concerns of the society. The DFID Guidance Manual [20] refers to this kind of approach

[20] DFID. 1998. Guidance Manual on Water Supply and Sanitation Programmes, Well Water and Environmental Health. London : WEDEC for DFID.

as a social development approach. In order to implement this approach, as well as achieve the objectives of baseline studies, a research strategy and plan need to be developed. Their development, which is to be undertaken before the study is embarked on, is for purposes of identifying social processes, social relations and social actions that need to be set in motion in order for the baseline study to be conducted successfully. In the South African context, the approach, and therefore, the principles on which baseline studies are to be based should derive from DWAF policies.

4.4.2 The sequencing of baseline study activities

An important aspect of research strategy and plan, also to be thought through in the initial stages of undertaking an assessment, is to determine how the activities that go into making up the assessment should follow on each other. This is particularly important for activities that require the social engagement of stakeholders, such as negotiating access at various decision-making levels and feeding back the results of the study to various stakeholders.

4.4.3 Using a multi-method approach to data collection – what information to collect and what methods to use

Before taking a decision on what data collection methods to use, a decision needs to be taken on what information is required.

To a large extent, the data to be collected for a baseline assessment can be determined before the study begins. This is so because there is agreement on the kinds of things a baseline study should generally be assessing, such

as those enumerated in the DFID manual. However, factors such as country specific water supply and sanitation policies, the specific social and group dynamics operating in a particular study area, budgets available for conducting baseline studies and how much information has previously been collected may introduce country and area specific nuances into baseline assessments. Such nuances are bound to result in differences in the specifics of baseline information collected from country to country, and within a country, from area to area.

The fact finding exercise proposed to take place prior embarking formally on assessment, as well as the first field observation trip should help researchers decide on what baseline information should be collected for a specific area, and what the best methods are for collecting the data.

In conducting *environmental baseline assessment* it is important to collect data on physical location, topographic conditions, climate, the location and use of local water sources, demography, settlement patterns, land and soil resources as well as land use patterns. Information on these physical aspects helps assess the water potential of an area, the implications of the position of water sources for community health, the quality of land available and its potential for farming, access to land and the manner in which land is used. The significance of demographic information which includes village size, population size, household size and migration patterns lies in enabling estimation of human demand - of what level of service and what size of water project would be appropriate to meet the needs of the area. Demographic information also makes it possible to carry out analyses that have implications for further monitoring and evaluation, such as examination of the health status of a community. For example, a

breakdown of the population according to age made it possible to analyse the degree of vulnerability of different age groups to water related health problems. Subsequent monitoring and evaluation can therefore help assess the impact of a water scheme on the health of the community. The DFID manual suggests two other aspects for inclusion in collecting demographic information. These are class and, where appropriate, religion, ethnicity and language.

Data collection on *community functioning* should cover community structures, decision-making processes, participation, communication, relations and interactions amongst structures of local governance. Where appropriate, the broader context of water supply services planning and implementation should be examined. The DFID manual suggests other important information to be collected as customary approaches to cross-subsidization, the way in which care and social safety nets are provided as well as types and sizes of enterprises and employment opportunities.

Issues to be included in the *baseline assessment of health and hygiene* are the use of water in the household, perceptions of how water quality contributes to health problems, examination of health status in the households, the health infrastructure and the organisation of health service delivery, sanitation conditions and hygiene practices. The way water is used in the household has implications for health. Its examination requires a distinction to be made between water fetched and water consumed so as to highlight competing uses in the households and the implications for health. Perceptions of how water accessibility contributes to morbidity as well as a survey of health status in the households help sketch a picture of the impact on health of water conditions prior the installation of a water

project. Information collected on the health infrastructure, and the way in which health services are rendered to the community, provides good indicators of whether the system of compiling health statistics is adequate for monitoring and evaluating the impact of a water programme on water related health problems.

Perceived quality of life is an important area of baseline assessment in as far as monitoring and evaluation of rural water programmes is concerned. Questions to be addressed relate to whether a water programme will improve living conditions in relation to matters such as the time spent fetching water, the effects of water inaccessibility on socio-economic development.

In terms of the methods to be used to collect data, it is advisable to use a combination of methods. Effective for the collection of data on environmental aspects is content analysis of secondary data, field observation, physical environment analysis verified by fieldwork, a household survey, in-depth interviews with relevant experts. Transect walks[21] can also be used to collect information on water sources and uses, sanitation provision, and settlement patterns.

Community functioning can be assessed through direct and participant observation, in-depth interviews with community groups and key informants, relevant experts and government officials. Stakeholder analysis and other participatory rapid appraisal methods,[22] such as time- lines, trend

[21] Bid
[22] Ibid.

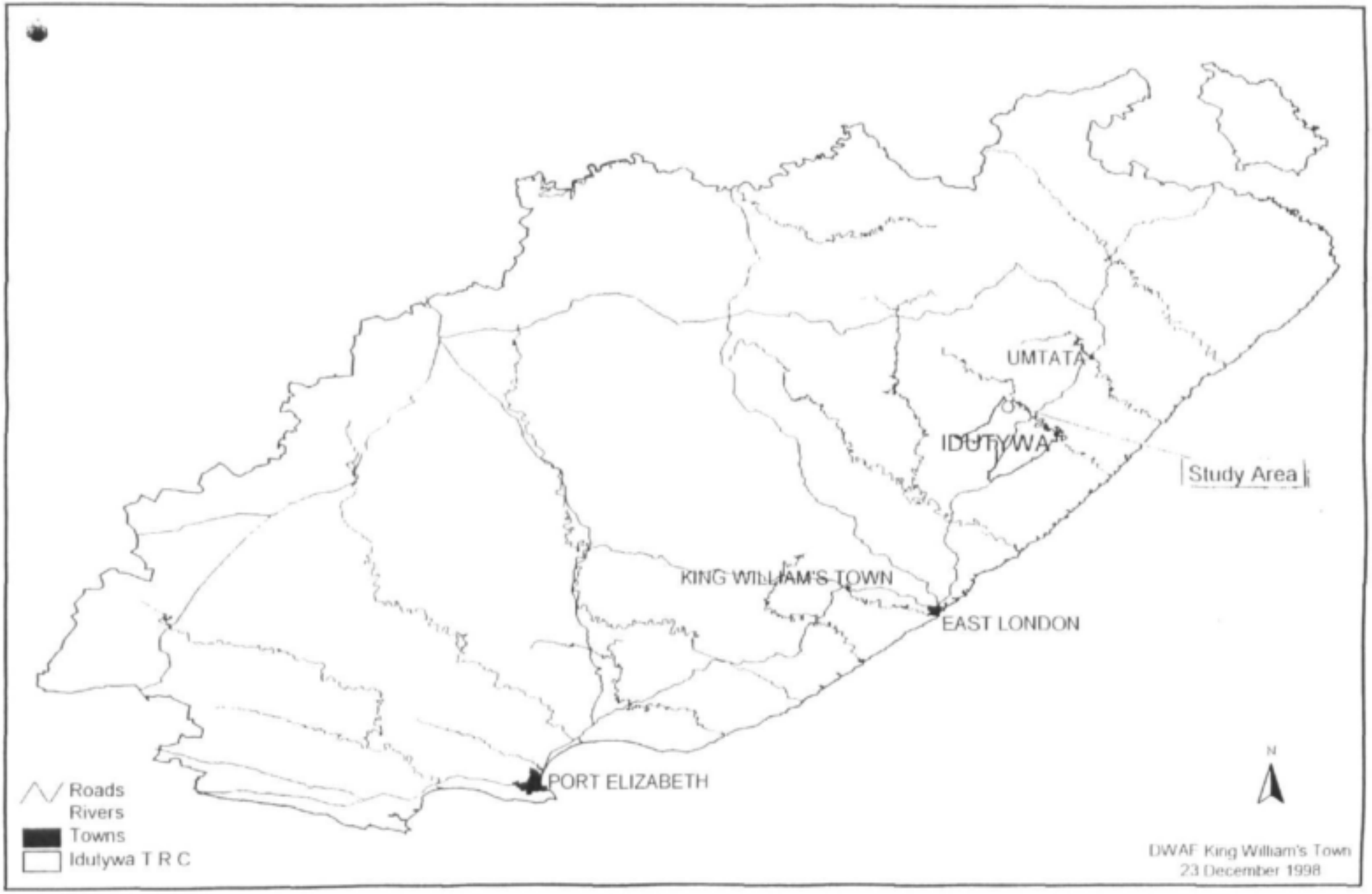
and change analysis, seasonal calendars and daily time use analysis, matrix scoring and ranking as well as mapping and modeling, can also be used.

A household survey is very effective for assessing household health status. Field observation and in-depth interviews with relevant experts and key informants should be used to gather information on the health infrastructure and local perceptions of how water accessibility affects health.

The household survey and interviews with key informants were effective in determining household perceptions of quality of life. They should be supplemented by the well-being grouping method to establish local criteria for deprivation and disadvantage.[23]

[23] Ibid.

APPENDIX 1


UMTATA
IDUTYWA
Study Area
KING WILLIAM'S TOWN
EAST LONDON
PORT ELIZABETH
N
Roads
Rivers
Towns
Idutywa T R C
DWAF King William's Town
23 December 1998

APPENDIX 2

PILOT ENVIRONMENTAL AND SOCIAL BASELINE STUDY : KEY INFORMANTS

ESIROSHWENI	EMATOLWENI
ABALIMI 1. 2. 3.	 1. 2. 3.
EZEMPILO 1. 2. 3.	 1. 2. 3.
EZOBURHULUMENTE 1. 2. 3	 1. 2. 3.
EZEPOLITIKI 1. 2. 3.	 1. 2. 3.
EZECAWE 1. 2. 3.	 1. 2. 3.
EZOLUTSHA 1. 2. 3.	 1. 2. 3.
OOMAMA 1. 2. 3	 1. 2. 3.
EZEMFUNDO 1. 2. 3	 1. 2. 3

APPENDIX 3

Interview schedule : Experts

1. What is the nature of your involvement in the eMatolweni/Siroshweni water supply project
2. As..., what are your major responsibilities ?
3. Which of these responsibilities have you already carried out ? which are still pending ?
4. At what stage is the water supply implementation now ?
5. What are your impressions of the area in which the villages are located
   - generally ?
   - specifically in relation to water conditions and sanitation?
6. What are you impressions of the three villages
   - generally ?
   - specifically in relation to water and sanitation ?
7. Problem of delays in the installation of the water scheme
   - how do you understand this problem ?
   - how do you think it will affect the functioning of the water project ?
   - what do you think can be done about this situation ?
8. Problem of providing water for the two village and for those bordering on it
   - how do you understand this problem ?
   - how do you think it will affect the functioning of the water project ?
   - what do you think can be done about this situation ?
9. Where do you think the project will be six months from now ?
10. Questions pertaining to area of specialty ?

APPENDIX 4

Interview schedule : Government officials

1. What is the nature of your involvement in the eMatolweni/Siroshweni water supply project.
2. As..., what are your major responsibilities ?
3. Which of these responsibilities have you already carried out ? which are still pending ?
4. At what stage is the water supply implementation now ?
5. What are your impressions of the area in which the villages are located
    - generally ?
    - specifically in relation to water conditions and sanitation?
6. What are you impressions of the three villages
    - generally ?
    - specifically in relation to water and sanitation ?
7. What are the goals and implementation plans of your department for the development of the study area in relation to water supply and sanitation ?
    - How is the achievement of these goals and implementation plans organised to fit in with those of other related areas such agriculture, health and the environment ?
    - How is the achievement of these goals organised to fit in with other structures of governance ?
8. Problem of delays in the installation of the water scheme
    - how do you understand this problem ?
    - how do you think it will affect the functioning of the water project ?
    - what do you think can be done about this situation ?
    - how does you department plan to deal with this problem to avoid complications that might arise from it ?
8. Problem of providing water for the two village and for those bordering on it
    - how do you understand this problem ?
    - how do you think it will affect the functioning of the water project ?
    - what do you think can be done about this situation ?
9. Where do you think the project will be six months from now ?

APPENDIX 5

Interview schedule : Key informants

Igama _____

Umsebenzi _____

Ubudala _____

Uphendula malunga _____

Date _____

General

1. Xa kunokuthiwa uchaze lelali ukuba yindawo enjani, ungathini ukuyichaza ?

2. Ezona ngxaki zayo ziphambili ungathi ziziphi ?

3. Yintoni onokuthi intle okanye inomtsalane ngale ndawo ?

4. Ingaba zeziphi iinguqu ezibalulekileyo ezenzeke apha kule minyaka mihlanu idlulileyo ?

5. Kule minyaka ilishumi izayo ubona kwenzeke nguqu zini kule lali ?

6. Bathini abantu bale lali xa benengxaki evelela ilali iyonke ? Benza ntoni ?

Water related issues

7. Ekuboneni kwakho, ingaba kukho ingxaki yokunqongophala kwamanzi kule lali? Ngokoluphi uhlobo ?

8. Oku kunqongophala kwamanzi kunaziphumo zini kuphuhliso lwayo ? Ingaba yintoni le lali ingakwazi ukuyenza ngenxa yokunqongophala kwamanzi ?

9. Oku kunqongophala kwamanzi kunaziphumo zini kwinkqubela phambili yabahlali bayo ? Ingaba yintoni abahlali abangakwazi ukuyenza, abebenokwazi ukuyenza ukuba amanzi ebemaninzi kwaye efumaneka lula ?

10. Ingaba oku kunqongophala kwamanzi kunaziphumo zohlukileyo kwinkqubela phambili yabantwana abangamakhwenkwe xa bethelekiswa nabamantombazana ? Oko kukuthi, ungaba oku kunqongophala kwamanzi kuyichaphazela ngokohlukileyo inkqubela phambili yabantwana abangamakhwenkwe nabangamantombazana ?

11. Kukho ingxaki yokuba ezi lali zikufutshane azizikufumana manzi. Ingaba oku kuya kuyenza le projekti isebenze ngoluphi uhlobo ? Iyakudala ngxaki zinjani ?

12. Masithi kukho isigqibo ekufuneka sithathwe ngabahlali belali bebonke. Ndichazele ukuba esi sigqibo sithathwa njani ? Kulandelwa yiphi inkqubo ekusithatheni ?

13. Xa sithathiwe esi sigqibo, kwenziwa njani ukuba sifikelele kumntu wonke ? Ingaba kukho ingxaki ezibakho ngolu hlobo loqhagamshelwano ?

Area specific

EZEMPILO

14. Ingaba ukunqaba kwamanzi, kunye nohlobolwamanzi afumaneka apha ayiphatha njani impilo yabantu balapha ?

15. Hlobo luni lwezifo oludibanisa nokunqongophala nohlobo lwamanzi afumaneka apha ?

16. Ingaba nigcina i-statistics ezibonisa ukuba abantu ababhubhayo babhujiswa yintoni nezibonisa ukuba zeziphi izifo ezikhoyo eziziswa ngabantu kuni ? Zezanini ezi statistics? Nizithumela phi ? Ziyafumaneka emntwini ofuna ukuzibona ?

EZOBURHULUMENTE/EZEPOLITIKI

17. Ulawulo lwale lali ngokwaseburhulumenteni luthini ?

18. Eyakho inxaxheba kolu lawulo ithini ?/ Inxaxheba ethathwa ngamaqela opolitiko kule lali ithini ?

19. Malunga nezinye iilali ezingazukufumana manzi, njengomnye wabaphathi, ungakuchaza njani oku, oko kukuthi, kwenzeke njani oku, ngokwaseburhulumenteni ?

- I-structures zoburhulumente okanye ii-structures zopolitiko ucinga ukuba zingathatha nxaxheba ithini ekusombululeni le meko ijongeka ingathi ingayingxaki ?

20. Malunga nengxaki yokuziswa kade kwamanzi, i-structures zoburhulumente/zopolitiko zingathatha nxaxheba yiphi ukuyisombulula ?

EZOLUTSHA

21. Ulutsha luchaphazeleka njani yimeko yokunqongophala kwamanzi ?

22. Ingaba ulutsha lungathatha nxaxheba ithini ukusombulula ezi ngxaki zimbini sezikhankanyiwe ?

23. Ulutsha luthatha inxaxheba engakanani kulawulo lwelali ? Oku kuthatha inxaxheba kuluhlobo luni ?

OOMAMA

24. Ingaba ukunqongophala kwamanzi kuyichaphazela njani inkqubela phambili yabafazi ? Ukuba amanzi ebemaninzi kwaye efikeleleka lula, oku bekunokwenza ukuba abafazi befikelele kweziphi ezinye izinto ?

25. Yeyiphi inxaxheba enokuthi ithathwe ngabafazi ekusombululeni ezi ngxaki bezikhe zakhankanywa ?

26. Oomama bathatha inxaxheba engakanani kulawulo lwelali ? Le nxaxheba iluhlobo luni ?

EZEMFUNDO

27. Ukunqongophala kwamanzi kuyichapahazela njani imfundo esikolweni ? Ingaba kuzisa iingxaki ezithile ekuphathweni kwesikolo ?

28. Ingaba kuza neengxaki ezichaphazela

- ucoceko ?
- ezempilo ?

EZENKONZO

APPENDIX 6

INGXELO NGABANTU ABAHLALA EMZINI
WAKWA_____

Dwelisa amagama abantu abahlala kwikhaya elibuzwa imibuzo, abazalisekisa ezi zinto zine zilandelayo :

1. bahlali phantsi kolu phahla ukusuka kwiintsuku ezili-15 enyakeni ukuya kunyaka wonke, nabathi
2. xa bekunye baphake kwimbiza enye, nabathi
3. xa bekunye bancedise ikhaya ngemali okanye ngezinye izinto okanye
4. abasebenzisa imali nezinye izinto zekhaya kodwa bengafaki nto engxoweni yekhaya, umzekelo, abantwana nabantu abaphelelwe ngumsebenzi.

1.	2. Dwelisa amagama omntu ngamnye ozalisekisa ezi zinto zine zibalwe ngentla apha	3. U_____ uzalana luhlobo luni nentloko yekhaya	4. U_____ yindoda (M) okanye ngumfazi (F)	5. U_____ unemiyaka emingaphi	6. Leliphi elona banga liphezulu lipaswe ngu_____	7. Kwezi nyanga zili-12 zidlulileyo, u_____ ukhe akabikho ekhaya iveki okanye iinyanga ezingaphi ?	8. Isizathu sokuba angabikho ibiseslphi?	9. Ingaba u____ uqale ukuhlala kweli khaya emva ko-1993? UKUBA HAYI, yiya kumntu olandelayo	10. UKUBA EWE, ubehlala phi u____ phambi kokuba aze kuhlala apha?
Inani	Igama	Ukuzalana	Isini	Iminyaka	Ibanga	Ixesha	Isizathu	Ewe Hayi	Indawo
1.			M F					1 2	
2.			M F					1 2	
3.			M F					1 2	
4.			M F					1 2	
5.			M F					1 2	
6.			M F					1 2	
7			M F					1 2	

1. Inani	2. Dwelisa amagama omntu ngamnye ozalisekisa ezi zinto zine zibalwe ngentla apha Igama	3. U_____ uzalana luhlobo luni nendloko yekhaya Ukuzalana	4. U_____ yindoda (M) okanye ngumfazi (F) Isini	5. U_____ uneminyaka emingaphi Iminyaka	6. Leliphi elona banga liphezulu lipaswe ngu_____ Ibanga	7. Kwezi nyanga zili-12 zidlulileyo, u_____ ukhe akabikho ekhaya iliveki okanye ilinyanga ezingaphi ? Ixesha	8. Isizathu sokuba angabikho ibisesiphi? Isizathu	9. Ingaba u____ uqale ukuhlala kweli khaya emva ko-1993? UKUBA HAYI, yiya kunmntu olandelayo Ewe Hayi	10. UKUBA EWE, ubehlala phi u____ phambi kokuba aze kuhlala apha? Indawo
8.			M F					1 2	
9.			M F					1 2	
10.			M F					1 2	
11.			M F					1 2	
12.			M F					1 2	
13.			M F					1 2	
14.			M F					1 2	
15.			M F					1 2	
16.			M F					1 2	
17.			M F					1 2	

ISAHLUKO I : INGXELO NGOBUME BEMEKO YENDAWO

Sifuna ukuqala sithethe ngendlela eli khaya elisebenzisa umhlaba walo ngayo, nangendlela eliwasebenzisa ngayo amanzi kwizinto ezidibene nokusebenzisa umhlaba.

ICANDELO 1 : IINDLELA OSETYENZISWA NGAZO UMHLABA

1a. Ingaba kulo mhlaba limi kuwo eli khaya kukho inxenye yawo esetyenziselwa ukulima imifuno, oko kukuthi esetyenziswa njengegadi ?

Ewe	
Hayi	

Mbuzi-mibuzo : UKUBA HAYI, yiya kumbuzo 2a

1b. UKUBA EWE, ibubukhulu bungakanani lo nxenye yomhlaba ?

Umncinane kunebala lesoka (soccer field)	
Uphantse wangangebala lesoka	
Mkhulu kunebala lesoka	

Mbuzimibuzo : Ukuba umhlaba mkhulu kunebala lesoka, buza, uliphinda kangaphi ibala lesoka

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1c. Ingaba kukho inxenye yale gadi eqeshiselwe abanye abantu kwezi nyanga zili-12 zidlulileyo ?

Ewe	
Hayi	

2a. Ingaba kukho mntu kweli khaya onomhlaba awusebenzisela ukulima, oyintsimi okanye ongamasimi ?

Ewe	
Hayi	

Mbuzimibuzo : UKUBA HAYI, yiya kumbuzo 3a

2b. UKUBA EWE, ingaba le ntsimi/la masimi

Ngumhlaba kawonkewonke	
Ngumhlaba ongowelikhaya okanye ongowomntu weli khaya	
Ngumhlaba oqeshiweyo	
Okunye	

Mbuzimibuzo : Ukuba impendulo yalatha kokunye, nceda ucacise

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2c. Ingaba le ntsimi/la masimi alapha eMatolweni ?

Ewe	
Hayi	

2d. Lo mhlaba uyintsimi/ungamasimi ububukhulu bungakanani ?

Umncinane kunebala lesoka (soccer field)	
Uphantse wangangebala lesoka	
Mkhulu kunebala lesoka	

Mbuzimibuzo : Ukuba umhlaba mkhulu kunebala lesoka, buza, uliphinda kangaphi ibala lesoka

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2e. Ingaba kukho inxenye yale ntsimi/yala masimi eqeshiselwe abanye abantu kwezi nyanga zili-12 zidlulileyo ?

Ewe	
Hayi	

3a. Ingaba kukho mntu kweli khaya onomhlaba awusebenzisa njengedlelo ?

Ewe	
Hayi	

Mbuzimibuzo : UKUBA HAYI, yiya kumbuzo 4

3b. UKUBA EWE, ingaba lo mhlaba

Ngumhlaba kawonkewonke	
Ngumhlaba ongowelikhaya okanye ongowomntu weli khaya	
Ngumhlaba oqeshiweyo	
Okunye	

Mbuzimibuzo : Ukuba impendulo yalatha kokunye, nceda ucacise

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3c. Ingaba eli dlelo lilapha eMatolweni ?

Ewe	
Hayi	

3d. Lo mhlaba ulidlelo ububukhulu bungakanani ?

Umncinane kunebala lesoka (soccer field)	
Uphantse wangangebala lesoka	
Mkhulu kunebala lesoka	

Mbuzimibuzo : Ukuba umhlaba mkhulu kunebala lesoka. buza. uliphinda kangaphi ibala lesoka

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3e. Ingaba kukho inxenye yedlelo eqeshiselwe abanye abantu kwezi nyanga zili-12 zidlulileyo ?

Ewe	
Hayi	

4. Yinxenye engakanani yomhlaba weli khaya esetyenziselwa ukulima ze ibe yinxenye engakanani esetyenziswa njengedlelo ?

Ulinywa wonke	
Ulinywa phantse wonke	
Isiqingatha siyalinywa ze isiqingatha sibe lidlelo	
Ulidlelo phantse wonke	
Wonke ulidlelo	

5.

	5a **Cinga ngonyaka ophelileyo** : Kumhlaba obunokusetyenziselwa ukulima leli khaya, ungakanani owada waba usetyenzisiwe ?	**5b** Ungakanani umhlaba osele ulinyiwe okanye eniceba ukuwulima ngoku ngo-1998 ?
Ungaphantsi kwesiqingatha		
Uphantse wasisiqingatha		
Ungaphezu kwesiqingatha		
Wonke		
Awukho		

6. Sithini isizathu sokuba kube kwasetyenziswa umhlaba obobo bukhulu kulo nyaka uphelileyo ?

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7a. Ingaba kukho mntu kweli khaya onomhlaba awusebenzisela okunye okungakhange kube kubaliwe kwezi sesizibalile izinto ?

Ewe	
Hayi	

Mbuzimibuzo : UKUBA HAYI, yiya kwiCandelo 2

7b. UKUBA EWE, usetyenziswa luhlobo luni ?

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7c. Ingaba lo mhlaba ulapha eMatolweni ?

Ewe	
Hayi	

7d. Ubukhulu bawo bungakanani ?

Umncinane kunebala lesoka (soccer field)	
Uphantse wangangebala lesoka	
Mkhulu kunebala lesoka	

Mbuzimibuzo : Ukuba umhlaba mkhulu kunebala lesoka, buza, uliphinda kangaphi ibala lesoka

.....

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7e. Ingaba kukho inxenye yawo eqeshiselwe abanye abantu kwezi nyanga zili-12 zidlulileyo ?

Ewe	
Hayi	

ICANDELO 2: IMVELISO YOLIMO KUNYE NOKUSETYENZISWA KWEENDAWO ZAMANZI EZIKHOYO

1. **Mbuzimibuzo, ukuba eli khaya linegadi buza :** Eli khaya lilima yiphi imifuno kumhlaba walo oyigadi ?

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2a. Mbuzimibuzo, ukuba eli khaya linentsimis/amasimi buza : Eli khaya lilima ntoni emasimini ?

Umbona	
Amathanga	
Okunye	

Mbuzimibuzo : Bhala phantsi okunye okulinywayo

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2b. Kwizinto ezilinywa leli khaya emasimini, yeyiphi eyona nto ilinywayo ingundoqo ?

Umbona	
Amathanga	
Okunye	

Mbuzimibuzo : Bhala phantsi okunye okulinywayo okungundoqo

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3a. Mbuzimibuzo, ukuba eli khaya linegadi buza : Kwiindawo zamanzi ezifumaneka apha eMatolweni, yeyiphi engundoqo esetyenziselwa ukunkcenkceshela igadi yeli khaya ?

Ayikho	
Umthombo kawonkewonke	
Iphiko likawonkewonke	
Idama likawonkewonke	
Amanzi etanki	
Eyenye	

Mbuzimibuzo : Bhala phantsi indawo yamanzi eyenye engundoqo

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3b. Ingaba amanzi afumaneka kule ndawo akho unyaka wonke ?

Ewe	
Hayi	

3c. UKUBA HAYI, akakho ngaxesha liphi ?

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4a. Ingaba eli khaya linemfuyo ?

Ewe	
Hayi	

UKUBA HAYI, *yiya kwiSahluko II*

4b. UKUBA EWE, bhala phantsi inani lemfuyo.

Imfuyo	*Inani*
1. Iigusha	------
2. Iinkomo	------
3. Iibhokhwe	------
4. Amahashe	------
5. Iihagu	------
6. Iinkukhu	------
7. Okunye	------

4c. Kwiindawo zamanzi ezifumaneka apha eMatolweni, yeyiphi engundoqo esetyenziselwa ukuseza imfuyo yeli khaya ?

Ayikho	
Umthombo kawonkewonke	
Iphiko likawonkewonke	
Idama likawonkewonke	
Amanzi etanki	
Eyenye	

Mbuzimibuzo : Bhala phantsi indawo yamanzi eyenye engundoqo

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4c. Eli khaya likwazi ukuseza yonke imfuyo yalo kule ndawo?

Ewe	
Hayi	

4d. Ingaba amanzi afumaneka kule ndawo akho unyaka wonke ?

Ewe	
Hayi	

4e. UKUBA HAYI, akakho ngaxesha liphi ?

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ISAHLUKO II : UKUSETYENZISWA KWAMANZI ENDLWINI

Ngoku sifuna ukuthetha ngendlela amanzi asetyenziswa ngayo endlwini, efana nokusela nokuhlamba.

1. Ingaba eli khaya kufuneka liye kukha amanzi liwazise endlwini mihla le?

Ewe	
Hayi	

2a. Kwiindawo zamanzi ezifumaneka apha elalini, yeyiphi ekukhiwa kuyo amanzi okusela leli khaya ?

Umthombo kawonkewonke	
Iphiko likawonkewonke	
Idama likawonkewonke	
Amanzi etanki	
Okunye	

Mbuzimibuzo : Bhala phantsi okunye ekukhiwa kuko amanzi

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2b. Ingaba amanzi afumaneka kule ndawo akho unyaka wonke ?

Ewe	
Hayi	

2c. UKUBA HAYI, akakho ngaxesha liphi ?

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3. Ingaba amanzi aselwa leli khaya akhiwa ndawonye namanzi okwenza ezinye izinto ezifana nokuhlamba iimpahla nokuzihlamba ?

Amaxesha amaninzi ewe	
Ngamanye amaxesha	
Amaxesha amaninzi hayi	

4. La manzi akhiwa aziswe endlwini asetyenziswa ngabantu abangaphi ?

_____

5. Akude kangakanani la manzi akhiwa aziswe endlwini ?

Ngaphantsi kwe-100m	
100m ukuya kwi-500m	
500 m ukuya kwi-1km	
1km ukuya kwi-5km	
5km nangaphezulu	

6. Ngubani kweli khaya **odla** ngokuya kukha amanzi ?

Mbuzimibuzo : Buza, Nabani kwakhona,de unikwe amagama abantu abathathu.

	6a Umntu odla ngokukha amanzi **Igama**	6b Ubume ekhayeni **Ubume**	6c Amanzi uwakha kangaphi ngosuku ? **Inani**	6d Kuthatha ixesha elingakanani ukuya nokubuya emanzini (dibanisa nexesha lokulinda emgceni phambi kokukha) **Imizuzu/iiyure**	6e Uwakha ngantoni ? **Umlinganiselo**
Owoku-qala					
Owesi-bini					
Owesi-thathu					

7. Ingaba eli khaya liwafumana onke amanzi eliwafunela ukuwasebenzisa endlwini ?

Ikakhulu ewe	
Ngamanye amaxesha ewe	
Ikakhulu hayi	

ISAHLUKO III : EZEMPILO NEZOCOCEKO

Ngoku ndifuna ingxelo ngezempilo nezococeko ngokuphathelele kwimeko yamanzi yalapha.

ICANDELO 1 : EZEMPILO - UKUPHATHWA KWEENTSANA

Mbuzimibuzo : UKUBA KUKHO ABANTWANA ABANONYAKA NANGAPHANTSI, BHALA AMAGAMA ABO KWI-COLUMN YOKUQALA, UZE UBUZE IMIBUZO NGOMNTWANA NGAMNYE.

UKUBA AKUKHO BANTWANA BONYAKA NANGAPHANTSI, yiya kwiCandelo 2.

1.

	1a Igama lom-ntwana	1b Usa-ncanca ibele? Ewe/Hayi	1c Uyayi-ncanca ibhotile ? Ewe/Hayi	1d Kwezi veki zimbini zidlulileyo ugule kangaphi Inani	1e Ibiluhlobo luphi lokugula? Chaza	1f Amaxesha amaninzi xa egula, udla ngokuba nezigulo eziluhlobo luni? Chaza
Owokuqala						
Owesibini						
Owesithathu						
Owesine						
Owesihlanu						

2. Ingaba kwezi zigulo uzichazileyo kukho ocinga ukuba zenziwa luhlobo lwamanzi afumaneka apha eMatolweni ?

Ewe	
Hayi	

Mbuzimibuzo : UKUBA HAYI, yiya kumbuzo 4

3. **UKUBA EWE,** zeziphi ezo zigulo ? Chaza.

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.....

4. Imeko yamanzi yalapha yenza ukuba abantwana beli khaya abanonyaka nangaphantsi bahlanjwe kangaphi ngeveki ?

Yonke imihla	
Kathathu ngeveki	
Kabini ngeveki	
Kanye ngeveki	
Ngaphantsi kwakanye ngeveki	

5. Imeko yamanzi yalapha yenza ukuba iimpahla zaba bantwana zihlanjwe kangaphi ngeveki ?

Yonke imihla	
Kathathu ngeveki	
Kabini ngeveki	
Kanye ngeveki	
Ngaphantsi kwakanye ngeveki	

ICANDELO 2 : EZEMPILO : IMEKO YEMPILO YABANTU

1. Kwezi veki zimbini zidlulileyo, ingaba kukho umntwana ongaphezu konyaka okanye umntu omdala okhe wagula kweli khaya ?

Ewe	
Hayi	

Mbuzi-mibuzo : UKUBA HAYI, yiya kwiCandelo 3

2. **UKUBA EWE,** nika le ngxelo ilandelayo ngomntu ngamnye ogulileyo

	2a **Igama nobudala**	**2b** Ibiluhlobo luphi lokugula ? **Ewe/Hayi**	**2c** Kunyangwe ngantoni ? **Ewe/Hayi**	**2d** Amaxesha amaninzi xa egula, udla ngokugula luhlobo luni? **Chaza**
Owoku-qala				
Owesibini				
Owesi-thathu				
Owesine				

3. Ingaba kwezi zigulo uzichazileyo kukho ocinga ukuba zenziwa luhlobo lwamanzi afumaneka apha eMatolweni ?

Ewe	
Hayi	

Mbuzimibuzo : UKUBA HAYI, yiya kwiCandelo 3

4. **UKUBA EWE,** zeziphi ezo zigulo ? Chaza.

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ICANDELO 3 : EZOCOCEKO

1. Ingaba eli khaya linendlu yangasese ?

Ewe	
Hayi	

Mbuzimibuzo : UKUBA HAYI, yiya kumbuzo 4

2. **UKUBA EWE,** luhlobo luni lwendlu yangasese ?

Engumngxuma kwaye eneembobo zomoya	
Engumngxuma nje	
Esebenzisa ikhemikhali	

3. Imi ndawoni le ndlu yangasese ?

Ngaphandle kwendlu - eyadini	
Ngaphandle kwendlu - ngaphandle kweyadi	

4. Ingaba imeko yamanzi yeli khaya iyamvumela umntu ukuba ahlambe izandla zakhe xa evela ngasese ?

Ewe	
Hayi	

5. Ingaba imeko yamanzi yeli khaya iyamvumela umntu oza kupheka ukuba ahlambe izandla zakhe phambi kokuba apheke ?

Ewe	
Hayi	

6. Ingaba imeko yamanzi yeli khaya iyamvumela umntu oza kwenzela usana ibhotile ukuba ahlambe izandla zakhe phambi kokuba enze ibhotile ?

Ewe	
Hayi	

ISAHLUKO III : IIMBONO NGEMEKO YOKUPHILA NGOKUPHATHELELE EMANZINI

1. Eli khaya liziva laneliseke kangakanani ngumgama ohanjwa xa kuya kukhiwa amanzi ?

Laneliseke kakhulu	
Lanelisekile	
Liphakathi	
Alanelisekanga	
Alanelisekanga konke-konke	

Cacisa impendulo yakho

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2. Eli khaya liziva laneliseke kangakanani na luhlobo lwamanzi aselwayo nekuphekwa ngawo ?

Laneliseke kakhulu	
Lanelisekile	
Liphakathi	
Alanelisekanga	
Alanelisekanga konke-konke	

Cacisa impendulo yakho

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3. Laneliseke kangakanani luhlobo lwamanzi okuhlamba iimpahla nokuzihlamba ?

Laneliseke kakhulu	
Lanelisekile	
Liphakathi	
Alanelisekanga	
Alanelisekanga konke-konke	

Cacisa impendulo yakho

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.....

.....

4. Eli khaya liziva laneliseke kangakanani bubungakanani bamanzi afumanekela ukusetyenziswa endlwini ?

Laneliseke kakhulu	
Lanelisekile	
Liphakathi	
Alanelisekanga	
Alanelisekanga konke-konke	

Cacisa impendulo yakho

.....

.....

.....

5. Xa lijonge imeko yamanzi ale ndawo, eli khaya laneliseke kangakanani bubungakanani bamanzi asetyenziswa yimfuyo ?

Laneliseke kakhulu	
Lanelisekile	
Liphakathi	
Alanelisekanga	
Alanelisekanga konke-konke	

Cacisa impendulo yakho

.....

.....

.....

6. Ingaba yeyiphi eyona mfuno inkulu ukugqitha ezinye yeli khaya ngokuphathelele emanzini ?

.....

.....

.....

7a. Yeyiphi indlela yokucoca amanzi **edla** ngokusetyenziswa leli khaya ?

.....

.....

.....

7b. Eli khaya loneliseke kangakanani kukuba le ndlela yokucoca ilinika uhlobo lwamanzi eliwafunayo ?

Laneliseke kakhulu	
Lanelisekile	
Liphakathi	
Alanelisekanga	
Alanelisekanga konke-konke	

Cacisa impendulo yakho

.....

.....

.....

8. Ulindele ukuba la manzi eprojekti azayo ayakulenzela/ayakulifumanisa ntoni eli khaya ?

.....

.....

.....

.....

APPENDIX 7

IMIYALELO YOPHANDO : ABABUZI MIBUZO

1. Zazise : igama nendawo osebenza/ovela kuyo.

2. Cela ukuthetha nentloko yekhaya, oko kukuthi umnini-mzi.

3. Ukuba umninimzi akakho, cela ukuthetha nenkosikazi yakhe.

4. Ukuba intloko yomzi ngumntu ongumama, mthathe njengentloko yalo mzi.

5. Ukuba ayikho intloko yomzi okanye inkosikazi yayo, chaza ngokufutshane ukuba ubuwuhambele ngani umzi lowo, uzę ucele indlela.

7. Ukuba intloko yomzi okanye inkosikazi ikhona, chaza okuhambeleyo **(ngale ndlela icaciswe ngezantsi).**

Inkcazo emawuvinike ngophando

Buza umntu obuzwa imibuzo ukuba uyazi na ngeprojekti yamanzi ecetywayo kwilali yaseMatolweni neyaseSiroshweni.

1. Ukuba umntu obuzwa imibuzo akazi nto ngeprojekti yamanzi mchazele ngayo.

2. Chaza ukuba wenza uphando oludibene nale projekti yamanzi, olwenzelwa iSebe lezaManzi.

3. Chaza ukuba iSebe lezaManzi linomdla wokujonga nokwazi ukuba la manzi azakufumaneka apha ayakuyitshintsha luhlobo luni na intlalo yoluntu lwezi lali zimbini, oko kukuthi, lifuna ukwazi ukuba la manzi ayakwenza mahluko mni na kwindlela abantu abaphila ngayo.

4. Chaza ukuba ukuze iSebe lezaManzi lazi ukuba la manzi ayitshintsha njani na imeko yentlalo yoluntu kufuneka liqale lanengxelo yokuba intlalo yoluntu lwaseMatolweni naseSiroshweni ibinjani na phambi kokuba amanzi abekho. Xa linayo le ngxelo, kulula ukuba lijonge lithelekise imeko yangaphambi kokuba amanzi abekho neyamva, lize libone ukuba kutshintshe ntoni.

5. Chaza ke ukuba olu phando lujonge ukuqokelela ingxelo malunga nemeko yangoku, yaphambi kokuba amanzi abekho.

6. Chaza ukuba inxenye yolu phando ifuna ukuba abantu abalwenzayo bangene mzini ngamnye kuthathwe ingxelo kwintloko yomzi ngamnye okanye kumnikazi mzi, kungoko ke ulapha.

7. Chaza ukuba imvume yokwenza olu phondo ifunyenwe kubemi belali, kwi-TRC, kusibonda nakwiBhodi.

8. Chaza ukuba ingxelo enikwa likhaya ngalinye ayiyikuvela ngegama lekhaya elo kwi-report ezizakubhalwa ngolu phando. Igama lekhya alikukuvela, iyakuba yingxelo kuphela evelayo. Njengokuba uza kuthatha igama nje, kukwenzela ukuba ze sazi imizi egqityiweyo ukuze singaphindaphindi imizi.

9. Buza ukuba umntu lo uthetha naye unalo na ixesha elingange-30 ukuya kwi-45 lemizuzu yokuphendula imibuzo oyiphetheyo.

10. Cela imvume yokufumana ingxelo.

* Qinisekisa kwakhona ukuba umntu obuzwa imibuzo yintloko yekhaya engumninimzi okanye engumikazimzi okanye inkosikazi yentloko yekhaya.

APPENDIX 8

LIST OF CODES FOR HOUSEHOLDS HEALTH PROBLEMS

Type 1	=	Fits
Type 2	=	Aching bones/Arthritis
Type 3	=	Coughing
Type 4	=	Diarrhoea, vomiting, stomach cramps (stomach ailments)
Type 5	=	Sores on the body
Type 6	=	Headache
Type 7	=	Body pains
Type 8	=	Aching legs
Type 9	=	Dizziness and nausea
Type 10	=	Aching body limbs
Type 11	=	Backache
Type 12	=	Toothache
Type 13	=	Skin rashes
Type 14	=	Flu
Type 15	=	Burning micturition
Type 16	=	Swelling of the body
Type 17	=	Scabies
Type 18	=	Sore eyes
Type 19	=	TB
Type 20	=	Hiccups
Type 21	=	Disorientation

Combinations of health problems reported

Type 22	=	Coughing and stomach ailments
Type 23	=	Coughing and skin rashes
Type 24	=	Stomach ailments and scabies
Type 25	=	Aching body limbs and backache
Type 26	=	Aching body limbs and stomach ailments
Type 27	=	Aching body limbs and coughing
Type 28	=	Coughing and scabies
Type 29	=	Stomach ailments and sore eyes
Type 30	=	Stomach ailments and headache
Tyoe 31	=	Stomach ailments and sores on the body

APPENDIX 9

THE FINDINGS OF THE PILOT BASELINE ASSESSMENT

1. ENVIROMENTAL BASELINE ASSESSMENT

1.1 THE PHYSICAL ENVIRONMENT

A discussion of physical environment subsumes physical location, topographic and climatic conditions, existing water sources and settlement patterns.

Physical location and topographic conditions

Findings from secondary data

The villages of eMatolweni and Siroshweni are located near Idutywa, with eMatolweni at GPS S:31° 54' 10" E:28° 20' 50" and Siroshweni at GPS S:31° 52' 40" E:28° 21' 59."[1]

Findings from field observation

Ematolweni, Siroshweni and eQolweni are three of 16 villages making up the Nqabane administrative unit, which falls under the jurisdiction of the Idutywa Transitional Rural Council (TRC) and the Amatola District Council. Geographically, the villages are located in the Western Region of the Eastern Cape Province. They are about 30 kilometers from Idutywa, towards Umtata, and about 190 kilometers from East London.

[1] Project Business Plan for the Matolweni/Siroshweni Rural Water Scheme, Stewart Scott Consulting Engineers.

The three villages have settled on a plateau, with relatively shallow valleys separating the villages from each other.

Findings from the desktop physical environmental analysis

The villages of eMatolweni, Siroshweni and eQolweni lie at an altitude between 700 to 800 metres above sea level (see simplified map extract, Appendix 10). They are somewhat removed from the southern part of the Great Escarpment which constitutes the foothills of the Drakensberg Range. Although the altitude could otherwise qualify them to belong to the Great Escarpment, they are not really part of it as they do not consistently and increasingly maintain the altitude above the 1000 metres, the altitude generally considered as the beginning of the escarpment. They may in fact be regarded as being part of the southernmost extension of the low veld.

As the map shows, the villages are situated on a ridge orientated in a northerly direction, gently sloping to the west, but quite steeply sloping towards the Mbashe River in the north and east. The ridge constitutes part of the catchment area of the river. The west-east profile of the relief of the ridge shows its rugged and steep nature towards the Mbashe River. The profile goes through the village of Siroshweni. Of note is the siting of the settlement on the top of the ridge. This settlement pattern is repeated for eQolweni, with a profile in the northerly direction, going through both eQolweni and Siroshweni. EMatolweni is also situated on top of the ridge. The relief shows a rolling nature in the northerly direction, which may be due to the easterly direction of the drainage system into the Mbashe River.

The drainage system is characterised by intermittent, non-perennial streams leading to the Mbashe River. These streams are most likely to be active during the rainy season, while, at other times, there is likely to be a shortage of water. The Mbashe River is too far to be a convenient source of water for any of the three villages. In short, there appears to be no reliable water source convenient to the inhabitants of the villages. Underground water is likely to be deeper than the levels of the streams.

Climatic conditions, existing water sources and settlement patterns

Findings from field observation

Six trips were made to the study area in the course of conducting the study. The visits spanned three of the four seasons of the year - autumn, winter and summer. Throughout this period, the area in the immediate vicinity of the villages was observed to be dry.

The Mbashe River was identified as the nearest biggest regional water source and flows from the northwest towards the east along a valley. Water sources in the immediate vicinity of the villages comprise almost exclusively of springs located in the shallow valleys separating one village from the other.

Four local water sources were identified. EMatolweni has access to a dam built for the use of livestock and a spring popularly known as uSebekwayo (Spring 1 on Map C; see Appendix 11) and mainly used for obtaining water for household purposes. The dam is shared with Mhuku, a neighbouring village. The spring that is the water source for eQolweni is

called eNtshontshweni (Spring 2 on Map C). According to village residents, eQolweni shares this spring with Siroshweni. Siroshweni has the additional use of eMkhiwaneni (Spring 3 on Map C), a spring located much nearer the latter village.

All the springs have a low yield. The water sips through to the surface and forms a small and shallow pond. Sometimes the springs dry up and people have to wait for water to sip through again. The springs all lie unprotected and, therefore, vulnerable to contamination by people and animals.

At eNtshontshweni and eMkhiwaneni, there are disused boreholes with a small reservoir dam and broken pumps. This infrastructure was built in the 1980s by the erstwhile Transkei government. According to one of the members of the village Project Steering Committee, the problem with this infrastructure is that the boreholes were not deep enough. As a result, the reservoir used to run dry quite often.

According to readings from a Global Positioning System,[2] the stock dam is 600 m from the nearest eMatolweni households while the height difference from village to the source is about 50m. USebekwayo (Spring 1) is 700m from the nearest households and 900m from the furthest, with the slope between village and spring being about 45 m. The shortest distance between eNtshontshweni (Spring 2) and eQolweni households is 400m while the longest is 700m. The height difference from spring to village is about 30m. Due to time constraints, measurements of distance from

[2] The Global Positioning System was used to measure the distance of the water sources from the households by a consultant from the King William's Town DWAF office who is part of the European Union Support Programme for the DWAF.

eNtshontshweni (Spring 2) to Siroshweni, as well as from eMkhiwaneni (Spring 3) to Siroshweni could not be taken.

In all three villages, households are semi-dispersed, with no particular clustering around water sources. This suggests that the location of water has not had any particular influence on the pattern of settlement. What seem to have influenced settlement are considerations of drainage; the households are built on a plateau presumably because the relief is good for drainage.

Findings from the household survey

The household survey provided further information on the use of local water sources. The local springs are the main source of water for household use for 88% of households. The other 12% cited other sources, namely the stock dam and rainwater tanks and a stream. About two thirds of households (66%) indicated that they use water from the local spring to water their gardens. Seventy nine percent said the springs provide water for their livestock. Almost all households (92%) often fetch water for washing clothes and bathing from the same source from which drinking water is obtained.

On being asked if the water sources have water available throughout the year, 65% of households responded that this was the case, while 35% responded in the negative. Some said water was unavailable in winter. Others said it was unavailable when there are no rains.

Findings from the interviews

The interviews depicted Nqabane as situated in a dry area with hillocks. The natural vegetation is sweet veld (short grass area) and Acacia Karoo.

Findings from the desktop physical environment analysis

Allowing for large diurnal variations, the villages belong to a region of cool winters (with a mean July temperature range of 10°-15°C) and mild summers (with a mean January temperature of 15°-20°C). Wind patterns are strongly influenced throughout the year by two high pressure systems on either side of South Africa over the Atlantic and Indian oceans. The villages are dominated by south-easterly winds although local variations are very noticeable, especially in winter when westerly or north-westerly winds can be prominent. The winds are steady enough to sustain windmills where these may be considered for pumping water from underground reservoirs. One should note nevertheless that the villages, in tandem with the rest of the eastern half of the Eastern Cape, are occasionally subject to violent storms such as tornadoes and hurricanes.

With regard to rainfall, the villages fall within an area that may be regarded as dry in spring (September-November), summer (December-February) and autumn (March-May) when rainfall varies between 100 mm and 250 mm. Winters (June-August) are very dry, with rainfall varying between 25mm and 50mm. The Drakensberg Range and the Great Escarpment do not appear to have much orographic effect on the rainfall regime of the three villages.

1.2 THE DEMOGRAPHIC PROFILE

Findings from secondary data

The Matolweni/Siroshweni Rural Water Scheme Project Business Plan cites the combined population size of the two villages as 1 260. The Eastern Cape DWAF Population Planning Database[3] puts the figure at 1 564, with the population size for eMatolweni being 767 and 797 for Siroshweni.[4] The Business Plan further designed the water scheme to cater for a 2,5% per year growth rate. This figure seems to be based on the 1991 census estimation of population growth amongst the African sector of the population. No figures were provided for eQolweni since the inclusion of this village in the water project was not in the design.

Findings from field observation

A record of the total number of households obtained from the Public Steering Committee at the beginning of the study indicated that there were 54 households at Siroshweni, 60 at eMatolweni and 33 at eQolweni. Population sizes obtained were 394 for Siroshweni and 480 for eMatolweni. According to the Public Steering Committee count, the total population size of eMatolweni and Siroshweni is 874.

There was only one household that shared with a person who is not a member of the household as defined by the criteria used in this study.

[3] The purpose of the Population Planning Database is to give the DWAF a feel of the dimension of water supply and sanitation problems.

[4] These 1994 figures are based on desktop estimates derived from previous census information and applying the growth factor.

There are three schools in the area, two at eMatolweni and one at Siroshweni. Nqabane Junior Secondary School at eMatolweni starts from Grade 1 to Grade 8 and had a roll call of 316 at the time of the study. The Nqabane High School, also at eMatolweni, enrolls pupils in Grade 9 and Grade 10. Njemane Junior Secondary School is at Siroshweni.

Findings from the household survey

The survey identified 58 households at eMatolweni. Three were unoccupied. At Siroshweni, 54 households were identified. Three could not be interviewed as they were standing empty. The owners of one of these were reported to have died, while those of the other two were in Cape Town. At eQolweni, the survey covered 24 of a total of 33 households, thus constituting a 73% coverage.

The population size for eMatolweni was calculated to be 371, and for Siroshweni 324. The combined population size for the two villages was thus 695. The 73% coverage of eQolweni yielded a population size of 117, making the total population size covered by the survey in the three villages 812. Assuming that there is no variation in the average household size for eQolweni, its total population size can be estimated to be 161. Of the 812 people counted in the survey, 99 were children from 0 to 5 years and comprised 12% of the population.

The eMatolweni and Siroshweni survey revealed that household sizes ranged from 1 to 18. However, over half the households surveyed reported a household size of between 4 and 8 people (67% of households at eMatolweni and 65% at Siroshweni).

The eQolweni scenario was slightly different in that household sizes ranged from one to eight, with the highest proportions formed by household sizes of three people and six people, 21% and 29% respectively. These were followed by that of eight people (13%). These three household sizes constituted a proportion of 63% (or 15 of the 24 households).

Table 1 Household size distribution by village

Household size distribution by village

---------- VILLAGE=eMatolweni ----------

H12A	Frequency	Percent
1	2	3.6
2	2	3.6
3	2	3.6
4	6	10.9
5	8	14.5
6	7	12.7
7	10	18.2
8	6	10.9
9	3	5.5
10	4	7.3
11	1	1.8
12	2	3.6
16	1	1.8
17	1	1.8

---------- VILLAGE=Siroshweni ----------

H12A	Frequency	Percent
2	5	9.8
3	4	7.8
4	8	15.7
5	6	11.8
6	2	3.9
7	12	23.5
8	5	9.8
9	1	2.0
10	3	5.9
11	3	5.9
14	1	2.0
18	1	2.0

Frequency Missing = 1

---------- VILLAGE=eQolweni ----------

H1	Frequency	Percent
1	2	8.3
2	1	4.2
3	5	20.8
4	2	8.3
5	2	8.3
6	7	29.2
7	2	8.3
8	3	12.5

Of the households for which family relationships were indicated, 52% live as nuclear families, while 45% are extended families. Just less than three quarters (72%) are headed by males and the rest by females.

Table 2 Demographic characteristics of eMatolweni, Siroshweni and eQolweni

Village	Number of households	Population size	Average household size
Ematolweni	54	371	6.9
Siroshweni	58	324	5.7
eQolweni	24 (33)*	117 (161)*	4.9
Household structure:			
Nuclear	52 %	Male headed	72%
Extended	45 %	Female headed	28%

* The bracketed statistic under number of households is the reported number of households in eQolweni, while the bracketed statistic under populations size indicates the estimate of population size for eQolweni and is based on the number of reported households.

The analysis indicated that, in the past five years increases in household size had taken place more as a result of new births rather than in-migration. Eighty eight percent of households indicated having lived in the area for over 15 years. A total of seven new households had been established; only one of these had moved from elsewhere to settle in the study area. Fifty percent of households reported no growth in household size, either by in-migration or by births. Those reporting growth in household size by birth comprised 47%, with a total of 92 births.

The analysis showed that increase in household size for Siroshweni was 20% over the past five years, thus indicating an average increase of 4% per year. For eMatolweni, the figure was 13%, with an average increase of 2,6% a year. Calculated on the 73% coverage, eQolweni had an increase rate of 12%, and 2,4% per year. The average increase in household size for all three villages was 3% per year. It should be pointed out that these rates were based only on the population found in the households at the time of the study.

Circular migration in the 12 months preceding the study showed low levels of movement in and out of the villages by the inhabitants. Only 24% of households reported this type of migration. Job hunting and short term contract work were the reasons given most frequently for absences, followed by illness, visiting and attending school. Periods of absence ranged from one week to eleven months.

1.3 LAND AND SOIL RESOURCES AND LAND USE PATTERNS

Findings from field observation

The majority of households are arranged in clusters of between two to four houses, some of which are thatch roof rondavels, and some rectangular zinc roofed structures. The households stand on large plots of land, part of which many use as a garden for growing maize, pumpkin and other vegetables such as spinach and cabbage. Land used as fields for growing crops on a larger scale is largely located along the valley slopes surrounding each village. The main crops grown are mealies and pumpkin.

Findings from interviews

Maize and pumpkin are staple foods in the area. Because there are no irrigation schemes, the growing of crops is solely dependent on rain. This makes crop production risky. Irrigation schemes could improve crop production, but such schemes can only be implemented if dams were built in the area. Many people rear sheep and goats as the short grass of the sweet veld area is good for this kind of farming.

Findings from the desktop physical environment analysis

Being situated in the southern extension of the low veld, the natural vegetation of the villages is characterised by savanna with short grass. The villages lie in a region whose carrying capacity shows signs of overcrowding of human population. This overcrowding has been translated into overstocking and soil overuse in terms of crop husbandry. Farming is thus mixed - consisting of cattle, sheep and maize - and is typically subsistence in character. Soils are poor, and are further impoverished by soul erosion. The broken or hilly relief has relatively small areas of flat or gently undulating land for cultivation. The area is more suitable for rearing animals than for crop production.

Findings from the household survey

The majority of households (86%) use a portion of the land on which they have built as a garden for growing crops or vegetables or both.

Eighty eight percent of gardens are smaller than, or just about as big as a hectare. Forty three percent of households do not have land to use as fields for growing crops. Of the 57% who do have this access, 86% stated that the land they use belongs to the household, while 13% said it is rented land. Of the 86% of households who consider the land as belonging to their households, 23% stated having leased out land in the 12 months preceding the study. Seventy one percent estimated their fields to be bigger than a hectare. Seventy six percent of the fields are within the boundaries of their village. The majority (96%) grows maize as the main crop.

Just over two thirds of households (68%) said they own livestock. Of these, 83% graze their animals on communal land. Sheep constitute the largest proportion of livestock reared, followed by goats and cattle.

On being asked what proportion of the land belonging to the household is used for growing crops, as opposed to that used for grazing animals, 86% stated that they use all of their land for the former purpose. In 1998, 64% of households indicated having tilled or planning to till all of the land available to them for growing crops. In the preceding year, less households (55%) had made use of all the land available for this purpose.

Ninety nine percent of households do not have land that is put to other use other than gardening, growing crops and grazing. Only one household reported having access to land for brick making.

2. COMMUNITY GOVERNANCE AND LEADERSHIP

2.1 DECISION-MAKING AND PARTICIPATION

Findings from observation

The initial contact meeting held between the researchers and village residents demonstrated that people in the villages take decisions through a collective and participatory process that may culminate in collective consensus as result of convergence of viewpoints or persuasive argument. The former takes place when almost everyone holds the same view on a particular issue and results in a unanimous position being taken. In the case of persuasive argument, some members of the group might have doubts about adopting a proposed position or plan of action, but because a participant or some participants argue for that position persuasively, they all go along with it. In the case of two or more opposing views being put forward, the view that is taken is that which is seconded or receives support from a greater number of people.

With regard to relations between the village Public Steering Committee, the community and local structures of governance, it seemed that the hierarchy of these governing structures does not hinder decision-making by Public Steering Committee-led community meetings. An example was the contact meeting; it approved the implementation of the pilot baseline study in the absence of the chief/village headman and the Idutywa TRC. It was explained though that the chief/village headman and TRCs representing the area were committed elsewhere and that they had been informed that the meeting would take place.

An interesting feature of understanding and exercising participation in the two villages was that the boundaries of participation could at times be defined narrowly and limited only to the residents of the two villages. This was the case in all technical activities related to the research, such as the piloting of instruments and data collection. At other times, they were defined more broadly and sought to involve people resident in other villages, but whose actions may impact on the planned water scheme. This broader participation was evident in the attendance of the initial contact meeting and of the consultative workshop by representation from neighbouring villages.

At the contact meeting, there was a fair representation of women, constituting about half of the total number of villagers who attended. They participated in the discussions. Fewer attended the workshop; five of the 15 attendants were women. Six out of the ten fieldworkers who participated in conducting the household survey were women.

Ten women were reported to be on the village Public Steering Committee. Although the researchers did not have the opportunity to see all 14 members of the PSC participate in meetings, the woman PSC representative who participated in most of the events was articulate, participated visibly and on a regular basis. It was not possible, however, to establish whether this is a demonstration of the degree of openness of the village Public Steering Committee to women's participation or just an expression of personality style, or both.

There was no visible participation of youth in the contact meeting and the consultative workshop, though some of the people who participated in data collection were youth of both sexes.

Findings from interviews

The interviews confirmed that decisions are taken through a collective process. When there is a matter to be attended to by the community, village residents are called to a meeting convened by the village sub-council/sub-headman, using young men as door-to-door messengers.

At the meeting the matter is discussed and a decision reached. Everyone is given an opportunity to voice his/her opinion, and decisions are taken collectively rather than by just one person. Decisions taken at meetings are binding on everyone. Those not in attendance are briefed about its outcomes by those who attended. If a problem requires intervention from outside, such as from government, villagers take the matter to the chief/headman who then takes the matter up with the appropriate authorities.

The interviews suggested that residents from both villages had participated in significant numbers in community meetings on the water scheme, but that this participation waned with the delay in water delivery.

Women who were interviewed said that women participate in village governance and hold positions as officials in village structures.

The interviews painted a picture of village youth that does not participate in village affairs to any great extent. However, the minority who do, do so with a great deal of energy and enthusiasm and are given the space to participate.

2.2 COMMUNITY GOVERNANCE AND LEADERSHIP

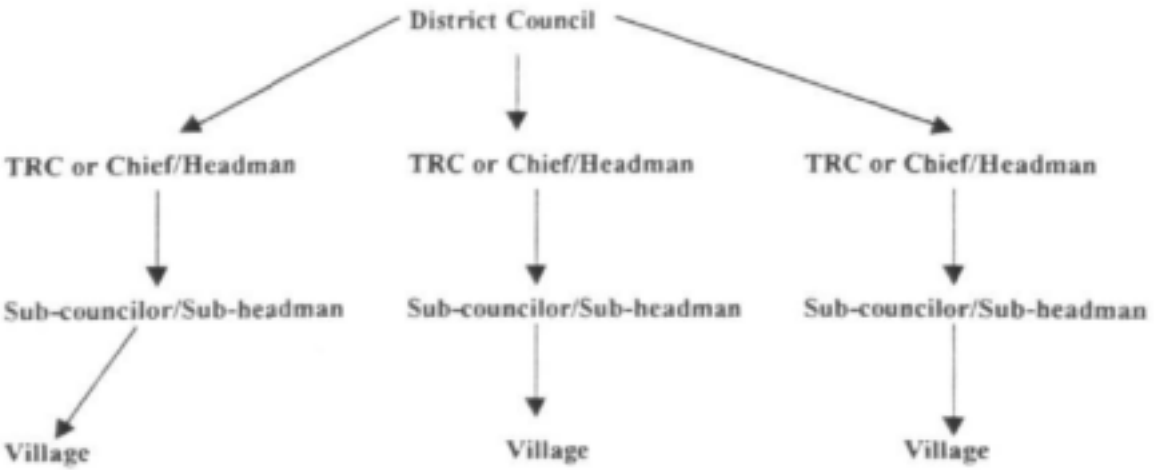
Findings from observation

The limited time spent in the villages made it difficult to observe the influence of community organisations or interest groups in the running of community affairs. However, the ANC was mentioned as the political organisation active in the area. When asked about the existence of other political parties, a community member responded by saying that discussion of that issue would "open old wounds" and should rather be left alone. The question was not explored further.

The Public Steering Committee seemed to have taken up its mandated role of leadership in water related matters. This was evident on a number of occasions. The committee convened the research meetings and the workshop, and actively participated in them. Its members accompanied the researchers around the village. Some members attended the training in questionnaire administration and participated in data collection. Its chairperson arranged appointments with key informants and helped manage the fieldwork. He chaired all meetings held for the research.

Findings from the interviews

The interviews indicated an existence of a hierarchy of structures of governance that comprise of the Amatola District Council at the top, the chief/headman and Transitional Rural Councilors in the middle, then sub-headman or sub-councilors at a lower rank and the villages at the bottom.



2.3 THE BROADER CONTEXT OF PROJECT PLANNING AND GOVERNANCE

The initial contact meeting, the field observation trip and the consultative workshop brought to the researchers' attention the issues of delays in the installation of the eMatolweni/Siroshweni water projects, and the non-provision of water for neighbouring villages. Because these issues had implications for the sustainability of the water scheme, they necessitated an examination of the broader context of project planning, decision making and governance, specifically as it relates to the planning of water supply and sanitation projects.

The roles of public and private institutions in the delivery of basic water supplies

The DWAF was described as the implementing agent for water supply and sanitation projects and oversees their management. Where a project has been approved and funds for installation identified, its functions are to facilitate community consultation meetings with civil engineering consultants, appoint them to manage the installation, ensure that business plans comply with RDP requirements and approve Business Plans. Throughout this process, the project manager for RDP water supply projects should attend village based Public Steering Committee meetings.

Further, the department contracts civil engineering consultants to manage the implementation of the water scheme. The consultants are responsible for community consultations, appointing technicians such as geo-hydrologists, making available drill equipment and ordering materials. They are also responsible for appointing social consultants.

The DWAF reportedly experiences problems in delivering water projects due to heavy workloads. For example, the DWAF project manager for RDP projects could attend only one of the eMatolweni/Siroshweni Public Steering Committee meetings.

Cutbacks in basic water supply budgets for 1998, as well as the shrinking of budgets due to inflation, places limitations on what projects can be delivered by the DWAF. For the eMatolweni/Siroshweni water scheme this might mean that the installation of the water project might have to be

done in phases. This would entail bringing water only to the edge of the villages, instead of the required 200m from the households.

The role of the Amatola District Council is to oversee the running of the TRCs and lend support to councilors who fall under its area of management. An additional role is to facilitate the implementation of development projects and help deal with problems that arise. The specific role of both institutions in the provision of water supply is to facilitate the implementation of water projects by implementing agents such as DWAF and NGOs. The District Council and the TRCs are therefore complementing the goals of the DWAF of supplying clean water within 200m of households and the provision of Improved Ventilated Pit latrines. With the representation of the TRC on the eMatolweni/Siroshweni village Public Steering Committee, the councilors are expected to ensure that the installation of the water scheme takes place.

A major handicap for the effective functioning of the Amatola District Council and the Idutywa TRC is poor infrastructure. The Amatola District Council satellite office in Idutywa that also serves as the Idutywa TRC office, operates from a two roomed office equipped only with office tables, some book shelves and a telephone in each room. The absence of a fax or computer is obviously a major handicap for communicating with the outside world.

According to a respondent who was critical of the assigning of councilors to rural municipalities in which they do not reside, councilors are not provided with transport to travel to and from the areas they represent. This hinders the execution of their responsibilities.

Social and political dynamics seen to be responsible for the delay in installation

Respondents were asked to comment on how they understand the delays in the installation of the Ematolweni/Siroshweni water project, what problems they think it might lead to and what they think the solutions might be.

The first of four explanations obtained saw the problem of delays in delivery as not unique to the Ematolweni/Siroshweni project, but as a general one resulting from budgetary cuts in the funding for water supply and sanitation projects. The second was that the problem is symptomatic of difficulties experienced by government and that cause government to "drag its feet." The respondent would not elaborate on what type of problems these were. Another explanation was that the source of the problem is political. The delays are politically motivated and engineered by sympathisers of the Nationalist Party who are in government. The delays are aimed at denying the ANC the sizeable vote it obtained in the Eastern Cape in the 1994 elections. The fourth explanation suggested that the time estimates that inform project planning are based on lack of knowledge of the government system. The procedures involved in community consultations, the appointment of consultants, the approval of project proposals and reports and the tendering system take long, for reasons that are not clearly defined. The delays could be a result of heavy workloads or just lengthy government procedures. The involvement of TRCs and the district councils in project planning was stated as worsening the delays.

Some respondents did not think that the delay in installation of the water project would affect have negative consequences. Others suggested that by the time the project is installed community interest and motivation to work towards its sustainability might have waned, and that it might be difficult to regenerate it. Another suggested that the communities concerned may be reluctant to contribute to a maintenance fund that needed to be established before the installation of the water project.

Social and political dynamics seen to be responsible for the exclusion of bordering villages from the eMatolweni/Siroshweni water supply project

On being asked how they understood the provision of water supply for some villages but not for others, the respondents gave differing responses.

One response was that implementing agents used desktop plans for making decisions about where to provide basic water supply. These plans do not take into account the physical layout of villages. Another was that, after the elections, the DWAF was under intense pressure to produce a list of villages that would benefit from RDP water supply projects. In the haste to get projects off the ground, little time was spent on proper planning. The third response suggested that the problem was an outcome of the system of administrative jurisdiction applied in the area. The bordering villages and eMatolweni and Siroshweni were under the control of different chiefs. They, therefore, fell under different administrative areas. This explanation was challenged in the consultative workshop, where some villagers stated that the three villages of eQolweni, eMatolweni and Siroshweni fell under

the same chief, yet eQolweni was not included in the Business Plan for the water scheme.

Those who thought that the uneven provision of basic water supply across villages would not necessarily lead to negative outcomes, gave the following reasons for their positive outlook :

- Community conflicts over this type of problem can only occur where there is no political maturity.
- EMatolweni and Siroshweni are already sharing water sources with other villages. Sharing the planned water project with other villages will not be anything new. From this point of view, the bordering villages can also benefit from the water scheme and it serve no purpose for them to want to make the water scheme dysfunctional in any way.
- It is a good thing for eMatolweni and Siroshweni to get water as this will serve as a 'wake up call' for the villages that will not be getting a basic water supply project. They will want to find out what the two villages did to get water.

Those who thought that the lack of consistency in the planning of water supply would create problems mentioned community divisions and conflicts as possible consequences. Several solutions were suggested to circumvent or prevent potential problems that might arise :

- Government needs to increase the water scheme budget so that eQolweni can be included in the water scheme. Plans for the installation of water schemes for other villages would need to be initiated as soon as possible.

- Should conflicts arise, the district council would have to undertake measures to resolve the conflict. Should conflict resolution at this level fail, the DWAF would have to be called on to intervene.
- Politicians need to find solutions.

3. HEALTH AND HYGIENE BASELINE ASSESSMENT

3.1 WATER FOR HOUSEHOLD PURPOSES : SOURCE AND USE

Findings from the household survey

Nearly all households (99%) fetched water on a daily basis from a source outside of the home. As indicated earlier, 88% of the households use a local spring as their main source of water for drinking, and by implication for cooking; 92% obtain water for washing clothes and for bathing from the same source.

Forty three percent walked a distance of between 500m to 1km to the source from which they often fetch water; close to a third (29%) walked 100m to 500m, whilst just under a quarter (24%) walk a distance of between 1km and 5km. Only 2% walk less than 100m and 3% walks more than five kilometres.[5]

[5] None of the water sources identified in the study area was estimated to be less than 100m or more than 5 km from the nearest and the furthest households in a village. The last two statistics are most probably under-estimations and over-estimations of distance.

Table 3 Distances walked to the nearest spring

Less than 100m	2%
100m to 500m	29%
500m to 1km	43%
1km to 5km	24%
More than 5km	3%

The majority of households (61%) indicated that the water fetched is used by between four and eight people. The maximum volume of water fetched for a household is approximately 240 litres a day,[6] and the minimum 2 litres per day. If it is assumed that all water fetched for a household per day is all consumed in a day, the average water consumption per household per day is 53 litres and the average water consumption per capita per day stands at 10 litres.

Household size and water consumption per household per day showed no significant association. Similarly, no significant association was found between the distance walked to water sources and water consumption per household per day. This means that the volume of water consumed per household per day does not depend on the number of people living in a household nor on the distance walked to fetch water.

3.2 THE HEALTH INFRASTRUCTURE

Findings from field observation

None of the three villages has a clinic of its own. The nearest clinic, Lotha Clinic, is in a neighbouring village. There were no medical doctors practising in the immediate vicinity of the villages.

Findings from the interviews

People seeking health care go to one of four health clinics. These are Lotha, Bolothwa, Nywarha and Idutywa. These clinics also serve other villages from the same and other administrative areas.

The present system of compiling health statistics compels clinics to keep monthly statistics, which reflect age and diagnosis but not place of residence. The system therefore does not allow for a breakdown of statistics by locality. The clinics forward all their monthly statistics to their district hospitals and do not keep annual statistics.

On talking to a district hospital staff member charged with coordinating the compilation of statistics from the clinics, it was gathered that annual statistics are not arranged to reflect localities or the administrative areas from which they are collected. They simply express the health picture of the district.

[6] Some households use an ox-driven wagon to cart water from the local spring; three 60 litre containers are usually used.

The clinic sometimes runs short of water. It is, however, is in a position of getting water from the Idutywa Municipality. The water, delivered by a truck, is stored in the clinic's rain water tank.

3.3 PERCEIVED EFFECTS OF WATER ACCESSIBILITY CONDITIONS ON HEALTH AND HOUSEHOLD HEALTH STATUS

Perceived effects of water accessibility on health

Findings from the interviews

Two health problems were associated with the water situation in the villages. The lack of adequate water for hygienic use was associated with scabies. Children were seen to be particularly vulnerable to nephritis and scarring, the complications of scabies. The poor quality of drinking water was linked to diarrhea and the passing of blood stained stools, especially in winter when there are no rains.

Illnesses such as diarrhea, affecting children as a result of the poor quality of drinking water, were reported as increasing absenteeism from school, and therefore, impacting adversely on schooling.

Findings from the household survey

Over half the respondents (53%) who reported morbidity in the 0 to 1 year old group believed that the quality of water obtained from the springs had negative effects on the health of children this age group. Two thirds of

those who reported morbidity for other age groups expressed a similar view. Illnesses associated with the poor quality of water were diarrhea, vomiting and coughing.

Household health status and water related morbidity

Findings from the household survey

Seventy four of the 812 village residents were reported to have been ill in the two weeks preceding data collection. This represents a 9% morbidity rate in the study area. Of this number, 20 were in the 0 to 5 year old group and constituting a 19% morbidity rate within this age group.

Of the 24 children who constituted the 0 to 1 year old group, seven were reported to have fallen ill in this period. This represents a 29% morbidity rate in this age group, and a 7% morbidity rate in the 0 to 5 year old group as a whole. All seven children (100%) were reported to have suffered from Type 4 health problems (stomach ailments), thus making stomach problems the predominant form of illness in this age group.

The incidence of Type 4 health problems in children reported ill in the 0 to 5 years age group was 60% (12 of 20 children), with 58% being constituted by the 0 to 1 year old age group. These statistics suggest that the Type 4 health problem was the most prevalent in children 0 to 5 years old, with the 0 to 1 years old group being the most vulnerable. Taking the whole 0 to 5 years population, the Type 4 health problem accounts for 12% incidence of health problems (12 of 103 children).

When analysing types of health problems most often suffered, Type 4 again features as the most predominant. In the 0 to 1 years old category, nine of fourteen children (64%) were reported to often suffer from stomach problems. In the 0 to 5 year group, 15 of 26 children (58%) often suffer stomach ailments, with 60% constituted by the 0 to 1 year old group. These statistics suggest that when children in the age group of 0 to 5 years fall ill, they most often suffer from stomach ailments.

The small sample sizes made it difficult to correlate morbidity with breast-fed or bottle-fed infants. This type of correlation may have furnished information on the degree of vulnerability to Type 4 disease of bottle-fed only children, as opposed to those who are breast-fed only, breast and bottle-fed and those who are neither breast-fed nor bottle-fed.

The incidence of health problems suggestive of water washed diseases, such as skin rash, scabies, sores on the body and eye infections was very low across all age groups.

Examination of household health status for people over the age of 5 years indicated that 54 of the 74 people (80%) reported ill in the two weeks preceding data collection were over the age of 5 years. Fourteen (26%) suffered from Type 4 health problems, making Type 4 the most prevalent health problem in people older than 5 years. On cross tabulating age with type of health problem often suffered, seven of 36 people (19%) were reported to suffer most often from Type 4 health problems, again making the incidence of Type 4 problems the most prevalent.

With the exception of the 0 to 1 years old age group, indication of severity of illness was elicited by asking how a health problem that had occurred in the two weeks prior data collection had been treated. All 14 of those reported to have suffered from a Type 4 health problem in the age group of people above 5 years old, and five of the 12 children in the 0-5 years group for whom this information was elicited, had received medical treatment.

There was no significant association when water consumption per household was cross-tabulated with incidence of health problems in the two weeks prior the baseline assessment, for all age groups. When water consumption per household was cross-tabulated with health problems often suffered, there was a significant association ($p=0.043$), with the frequency of Type 4 disease increasing with household consumption. The highest frequency of stomach problems was found in households where the water fetched was 200 litres or more, suggesting that where more water is fetched there is greater the vulnerability to stomach ailments.

3.4 SANITATION CONDITIONS AND HYGIENE PRACTICES

Findings from the household survey

Only 26% of households own a toilet. Of the households who own a toilet, 89% have built their toilets within household premises. Just under a half (48%) of the toilets have ventilation. It was not determined if the toilets are VIP toilets.

Seventy five percent of households reported washing hands after using toilets. The same proportion reported washing hands before food preparation, while 71% indicated washing hands before preparing a child's bottle.

There was no significant association between household water consumption and hygiene practices, mother's education and the washing of children and of children's clothes, or between household water consumption and the washing of children and children's clothes.

There was a significant association between the distance walked to a water source and hand washing after toilet use ($p=0.001$); the distance walked and hand washing before food preparation ($p=0.001$) and the distance walked and hand washing before preparing a child's bottle ($p=0.001$). These significant associations indicate that hand washing practices are influenced by how far water is fetched. Surprisingly, however, on all three items, the proportion of households reporting non-adherence to the washing of hands increased with reduction in distance.

5. THE BASELINE ASSESSMENT OF PERCEIVED QUALITY OF LIFE

1. PERCEPTIONS OF QUALITY OF LIFE IN GENERAL

Findings from the interviews

The three villages were characterised as remote, with roads that are very bad. They are poor and lack basic infrastructure and service facilities. There is no immediate access to health facilities.

Many parents, belong to a generation that has had no formal schooling at all. Low levels of education result in a situation in which children are not encouraged to take an interest in school related activities or activities that might benefit their development. This situation has improved since the mid-1970s. Many children study at technicons and universities.

Some respondents thought that poor education contributes to developmental stagnation in the area. Others stressed poverty and unemployment as the major factors contributing to lack of development in the villages. One consequence is that land cannot be cultivated to its full potential. Real progress in development is only likely to take place when people are provided with the means to develop themselves.

The villagers were also described as peace loving, law abiding, respectful and well-behaved people who take an interest in governmental projects. When necessary, villagers make labour or financial contributions to development projects, such as school renovation.

The church is an important support structure for those who attend it. The churches have established supportive structures such as burial societies. When the villages experience tragedies, such as the damage caused by a tornado in 1996, villagers are sympathetic to each other's needs. However, due to conditions of poverty they cannot do much to help reconstruct or bring back what has been lost.

Change is taking place at a slow pace. In the past five years the only change that has taken place is the building of two schools : the high school in Nqabane and a primary school that would have gone up to Standard 4 had it not been destroyed in the 1996 tornado.

The respondents thought that the new government has not done much to bring about changes in quality of life. However, some were optimistic about the future, and felt that government has expressed willingness to bring about changes and will do so. Others were more pessimistic and thought that "Things will go from bad to nothing."

2 PERCEIVED QUALITY OF LIFE IN RELATION TO CONDITIONS ARISING FROM WATER SHORTAGES

Findings from the interviews

Water scarcity is one of the biggest problems confronting the villages, as water was seen as the cornerstone of development. The lack of immediate access to water made it difficult for people to grow crops. It also made it

difficult to erect good buildings. Home gardens are maintained with difficulty.

Educators and women interviewed stated that the scarcity of water was affecting the education of girl children in a number of adverse ways. When there is a ceremonial event to be held in the home, it is usually the girl children who are required to miss school to go and fetch the water that is required. Girls also are the ones who fetch water most often and this makes it difficult for them to do meaningful studying at home. In the mornings they also often have to fetch water before they go to school. By the time they get to school and have to learn they are tired. The long distance between the households and water sources makes it difficult for parents to keep an eye on their girl children when they are fetching water. This situation makes girls vulnerable to falling pregnant and, therefore, to interruptions in their education. Wood is scarce and this makes the boiling of water difficult.

Under these circumstances the delays in the installation of the water scheme were experienced as very frustrating.

Findings from household survey

Most households (43%) walk a distance of between 500m to 1km to the source from which they often fetch water for household purposes; close to a third (29%) walk 100m to 500m, whilst just under a quarter (24%) walk a distance of between 1km and 5km.

Women provide the labour for fetching water; 80% of women spend time fetching water, against 20% of men. On average two trips per household are made to water sources a day. Average time spent fetching water on one trip is 70 minutes. This means that households spend close to 2 hours 30 minutes a day fetching water. The time spent fetching water is therefore a physical burden for women and takes up time that could be used more productively elsewhere.

Most households (69%) expressed total dissatisfaction with the distance they have to walk to the water source most often used for fetching water; it is long, full of stones and steep. There was significant association ($p=0.001$) between the distance walked and the level of dissatisfaction. Those expressing dissatisfaction to strong dissatisfaction constituted the majority of those walking between 100m to 500 m (89%), 500m to 1 km (98.1), 1km to 5km (90%) and above 5km (100%). The figures also indicate that levels of dissatisfaction are greater as distance increases.

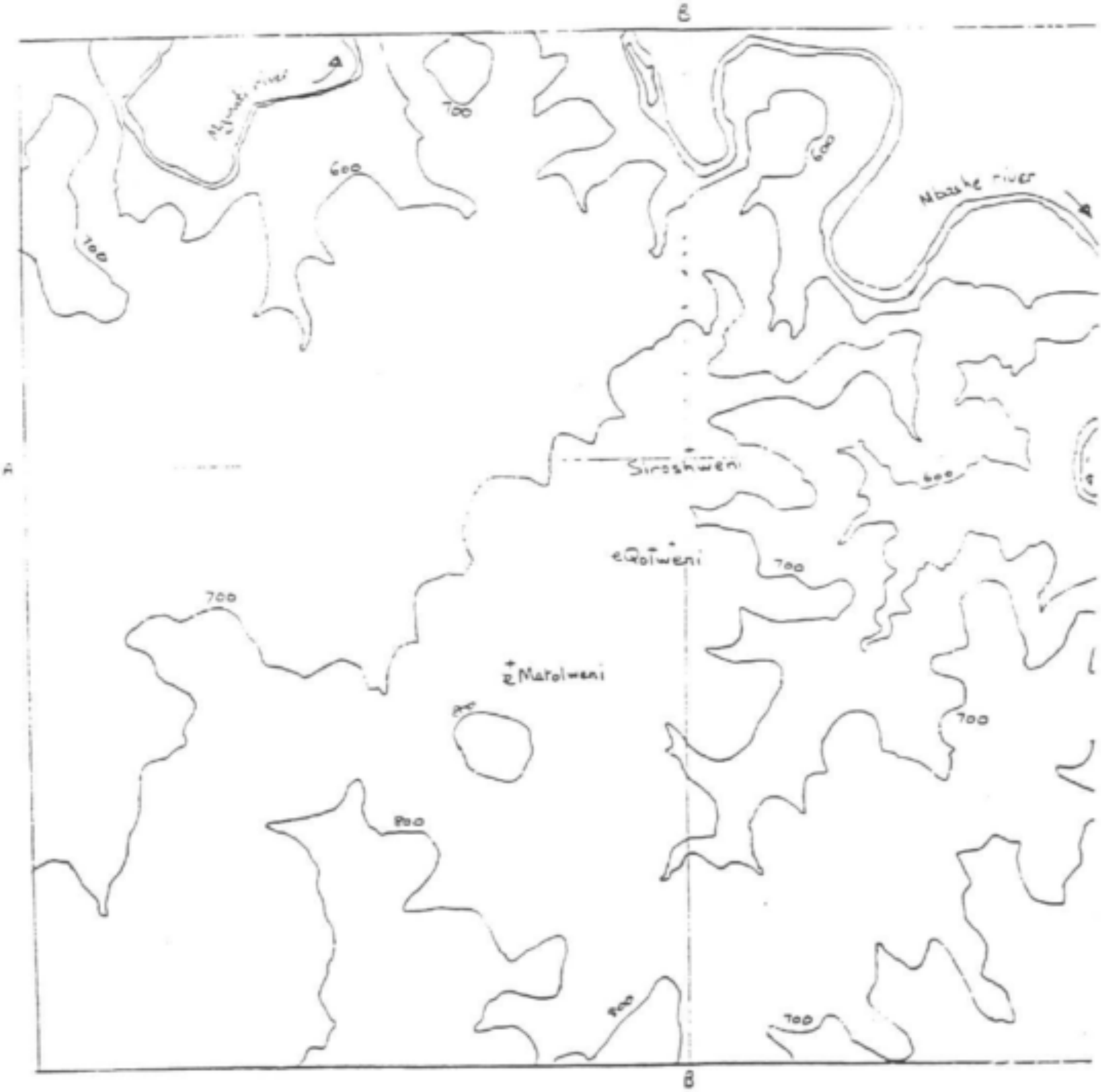
The majority of households were very dissatisfied with the quality of water for drinking and cooking (69%). Respondents said the water in the springs is salty, contaminated by animals, stagnant and tends to grow algae and has tadpoles. Two thirds (66%) said they are very dissatisfied with the quality of the water for washing clothes. They claimed there is not enough water for washing clothes and they do not get washed properly because the water is dirty.

The water was also seen as not adequate for household use, with 62% again asserting their dissatisfaction. The amount of water available does not meet all household demands and households have to use it with care if

they want to avoid going to fetch water too often. Some complained about skin irritation from using it for bathing.

The water available is not adequate for the use of animals, according to (52%) of households. Household respondents who expressed an opposing point of view said that there is enough water for livestock because the springs do not dry up.

APPENDIX 10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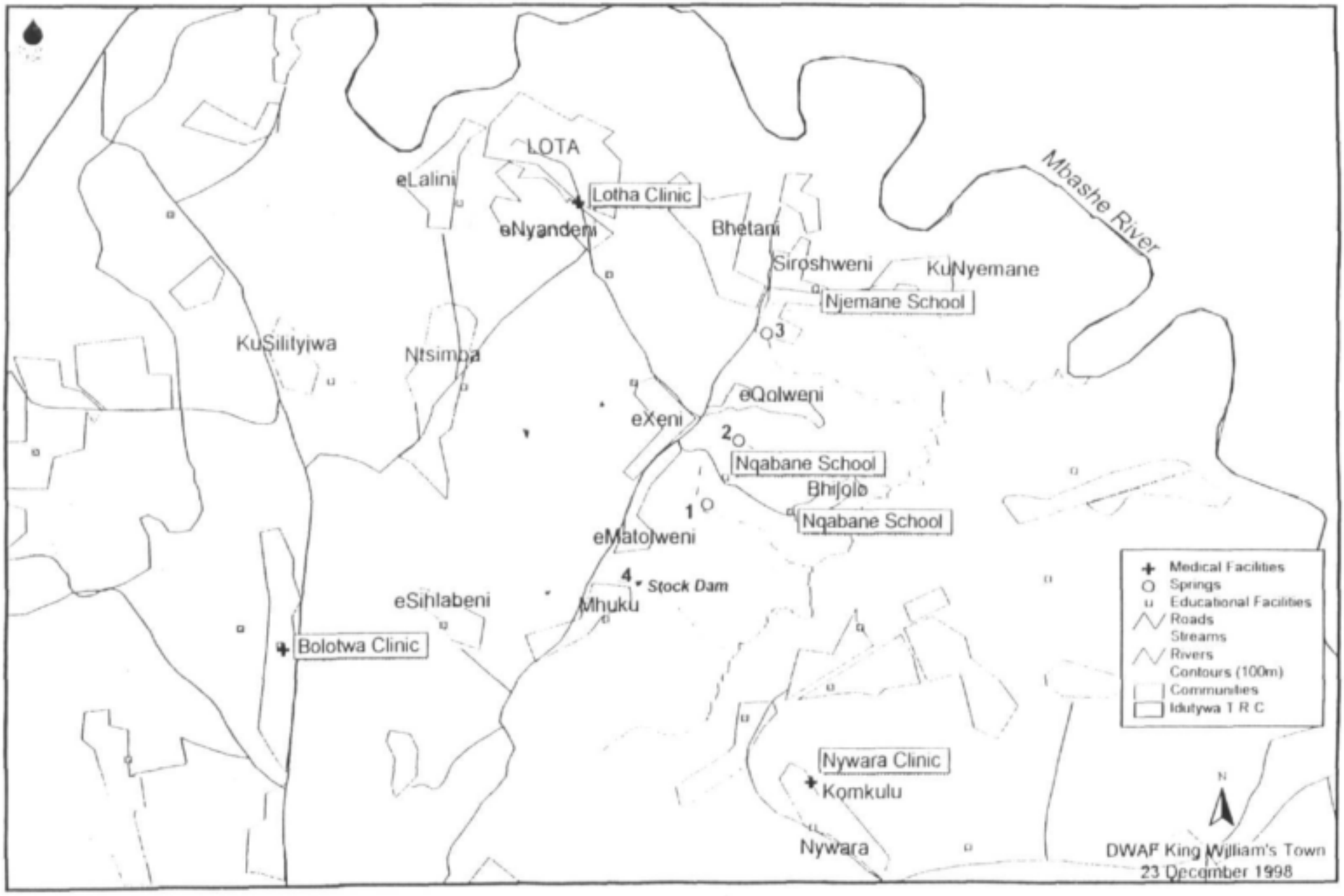
APPENDIX 11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eNyandeni
Bhetani
Mbashe River
Siroshweni
KuNyemane
Njemane School
3
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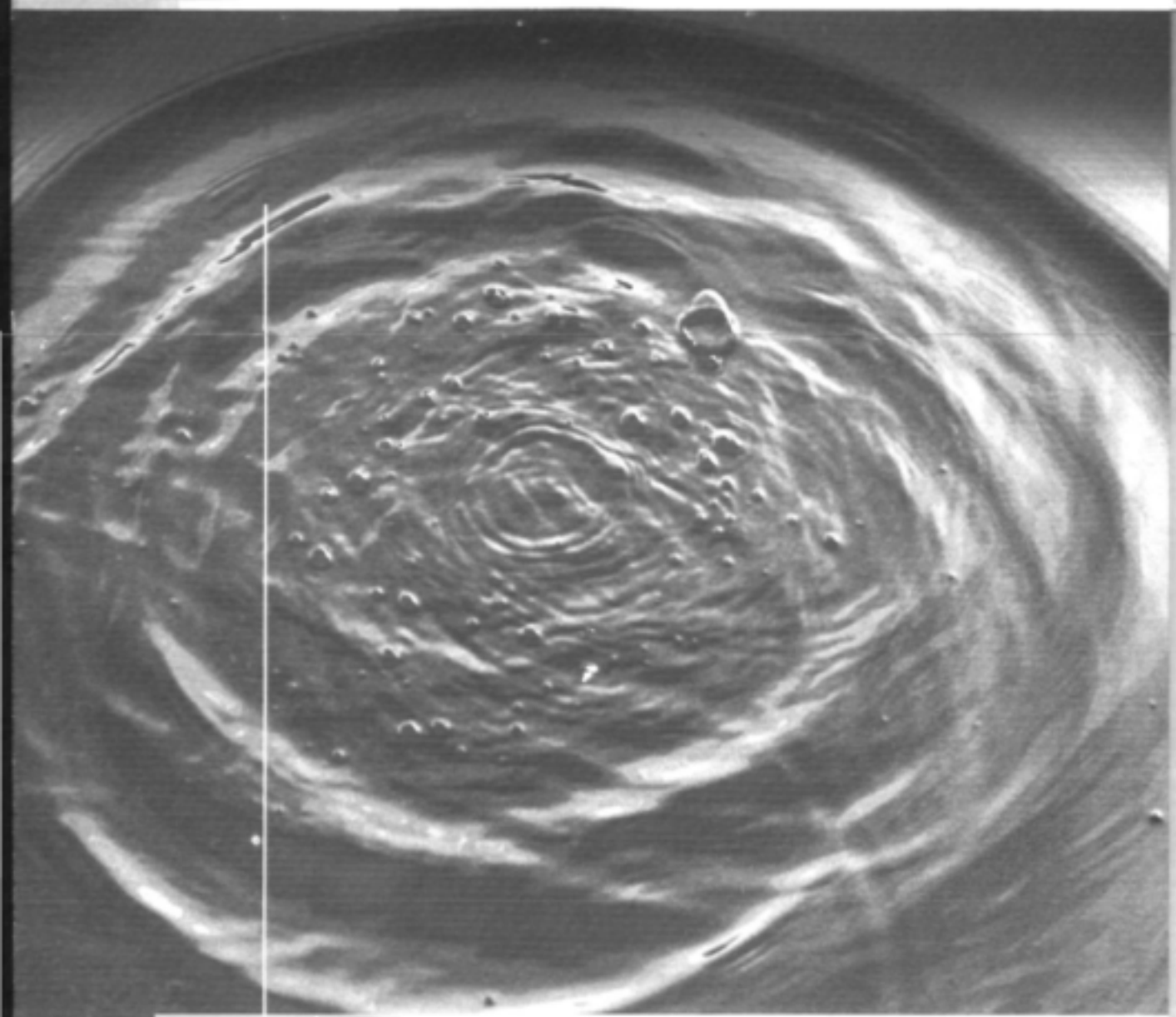
Ntsimba
eQolweni
eXeni
2
Nqabane School
Bhijolo
1
Nqabane School
eMatolweni
4
Stock Dam
eSihlabeni
Mhuku
Bolotwa Clinic
Nywara Clinic
Komkulu
Nywara
Medical Facilities
Springs
Educational Facilities
Roads
Streams
Rivers
Contours (100m)
Communities
Idutywa T R C
N
DWAF King William's Town
23 December 1998



Water Research Commission
PO Box 824, Pretoria, 0001, South Africa
Tel: +27 12 330 0340, Fax: +27 12 331 2565
Web: http://www.wrc.org.za