

**AN EVALUATION OF THE SUCCESS OF THE VULINDLELA
WATER SUPPLY SCHEME**

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DECLARATION

I Thulani Victor Hlophe declare that this dissertation of the Degree of Master of Business Administration (Water Management) in the School of Business at the University of KwaZulu Natal (Pietermaritzburg) hereby submitted, has not previously been submitted by me for a degree at this or any other university, that it is my own work in design and execution and that all material contained herein has been duly acknowledged.

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ABSTRACT

The aim of this study is to focus on how the Vulindlela Community benefited from water supplied to them through DWAF and Umgeni Water funding with emphasis on the sustainability of the project. The study also aims to find out from Vulindlela Community whether the scheme met its objectives.

The sample consists of 2 888 respondents from Vulindlela area. The measuring instruments used are the interviews and questionnaire constructed by the researcher.

The results of this study indicate that all the objectives of the scheme were met and that the community especially women, unemployed men and local contractors all benefited from the project. The issue of sustainability of the scheme is the real problem. The community (Branch Officers, local plumbers, meter readers and committees) has been trained in handling water related issues but the community has not accepted the ownership of the scheme.

If the ownership of the scheme is lacking, there will be problems throughout. The non-payment of water used by the community will continue to be a problem if the community itself does not take the ownership of running and maintaining it. The community needs to be empowered and be trained on the operation and maintenance (O & M) of the scheme, cost recoveries and the tariff structure.

The results also indicate that the community understands the free water policy and that most of them are using less than 6 kilolitres per month. The willingness to pay from the community is low, to such an extent that most of the households are due for disconnections or restriction. This is supported by the fact that most of them are earning less than R1 000 – 00 per month and in some households the bread winner is an elderly person who is dependent on government grants. The 6 kilolitre free water is not sustainable under the conditions, which this community find themselves in. There are challenges facing the scheme and these are discussed under Chapter 5.

Since some limitations of this study were found, the results must be interpreted with caution and one should be cautious in applying them.

TABLE OF CONTENTS

ABSTRACT

CHAPTER 1.....	10
INTRODUCTION.....	10
1.1 OVERVIEW OF THE STUDY.....	10
1.2 THE THEORETICAL FRAMEWORK.....	10
1.3 THE OBJECTIVES OF THE STUDY	11
1.4 STRUCTURE OF CHAPTERS.....	12
 CHAPTER 2.....	 13
LITERATURE REVIEW.....	13
2.1 THE OBJECTIVES OF THE VULINDLELA SCHEME.....	13
2.2 RDP IN RURAL WATER SUPPLY.....	13
2.3 WATER LEGISLATION AND POLICY.....	15
2.4 FREE BASIC WATER POLICY (FBWP).....	16
2.4.1 Lifeline Support of Free Water.....	18
2.5 COST RECOVERY.....	19
 CHAPTER 3.....	 20
THE VULINDLELA WATER SUPPLY SCHEME.....	20
3.1 INTRODUCTION.....	20
3.2 VULINDLELA RURAL WATER SUPPLY SCHEME.....	21
3.2.1 Funding Plan.....	22
3.2.2 Operation and Maintenance (O & M).....	23
3.2.3 Tariff Structure.....	24
3.2.4 Sales and Income	25

3.2.5	Cost Recovery.....	26
3.2.6	Community and Social.....	26
CHAPTER 4.....		28
DETAILED DESCRIPTION OF RESEARCH METHODOLOGY.....		28
4.1	GOALS/OBJECTIVES OF THE PROJECT.....	28
4.2	AIMS OF THE STUDY.....	28
4.3	RESEARCH DESIGN.....	28
4.3.1	The Questionnaire.....	29
4.3.1.1	Structure of household survey (Appendix A).....	31
4.3.2	Qualitative versus Quantitative Questions.....	33
4.3.2.1	Qualitative Research.....	33
4.3.2.2	Quantitative Research.....	33
4.3.3	Sample Characteristics.....	34
4.3.4	Alternative Method Considered.....	35
4.3.5	The Research Instrument.....	35
4.4	PILOT STUDY.....	37
4.5	ADMINISTRATION PROCEDURE.....	37
4.6	METHODS OF ANALYSING DATA.....	38
4.7	INTERVIEWS WITH THE SCHEME MANAGEMENT.....	38
4.7.1	Debtors' Supervisor Interview.....	38
4.7.2	VWSC Chairperson Interview Questions.....	39
4.7.3	Branch Officer' Interview Questions.....	39

CHAPTER 5.....	41
DESCRIPTION OF RESULTS AND FINDINGS.....	41
5.1 REPORT ON HOUSEHOLD QUESTIONNAIRE.....	41
5.2 REPORT ON RESEARCH QUESTIONS.....	57
5.2.1 Research Question 1.....	57
5.2.2 Research Question 2.....	64
5.2.3 Research Question 3.....	65
5.2.4 Research Question 4.....	67
5.2.5 Research Question 5.....	69
5.2.6 Research Question 6.....	70
5.3 REPORT ON INTERVIEWS WITH SCHEME MANAGEMENT.....	74
5.3.1 Debtors' Supervisor Interview.....	74
5.3.2 VWSC Chairperson Interview.....	77
5.3.3 Branch Officers' Interview.....	78

CHAPTER 6.....	81
DISCUSSION.....	81
6.1 INTRODUCTION.....	81
6.2 INTERPRETATION OF RESULTS.....	81
6.2.1 The objectives of the Scheme.....	81
6.2.2 RDP Standards.....	82
6.2.3 How to meet objectives in similar RDP projects.....	82
6.2.4 Current challenges facing the Scheme.....	83
6.2.5 Cost Recovery.....	84
6.2.6 Free Basic Water Policy.....	85
6.3 CONCLUSIONS.....	88
6.4 RECOMMENDATIONS	92
CHAPTER 7.....	94
LIMITATIONS AND RECOMMENDATIONS FOR FUTURE STUDY.....	94
7.1 INTRODUCTION.....	94
7.2 LIMITATIONS OF THE STUDY.....	94
7.2.1 Sample Representative.....	94
7.2.2 Questionnaire.....	94
7.2.3 Respondents' Income.....	95
7.2.4 Budget for paying field workers.....	95
7.3 RECOMMENDATIONS FOR FUTURE RESERCH.....	95
7.3.1 Service Delivery.....	95

7.3.2	Communication Structures.....	96
7.3.3	Increased Intergovernmental Transfers.....	96
7.3.4	Integrated Water Management.....	96
7.3.5	Participation of Community.....	96
7.3.6	Women and Water Delivery.....	97
ACCRONYMS.....		98
REFERENCES.....		100
APPENDICES		
APPENDIX A	QUESTIONNAIRE (HOUSEHOLD SURVEY).....	i
APPENDIX B	VWSC CHAIRMAN INTERVIEW QUESTIONS.....	viii
APPENDIX C	BRANCH OFFICER'S INTERVIEW QUESTIONS...	xii
APPENDIX D	SUMMARY OF STATISTICS.....	xvi
APPENDIX E	INCOME AND EXPENDITURE REPORT.....	xvii

LISTS OF TABLES

TABLE 2.1:	BLOCK TARIFFS FOR CITY OF CAPE TOWN.....	18
TABLE 2.2:	BLOCK TARIFFS FOR MSUNDUZI MUNICIPALITY....	18
TABLE 3.1:	UMGENI WATER SUMMARY OF TARIFFS.....	24
TABLE 5.1:	GENDER.....	41
TABLE 5.2:	MARITAL STATUS.....	42
TABLE 5.3:	AGE.....	43
TABLE 5.4:	HIGHEST LEVEL OF EDUCATION.....	44
TABLE 5.5:	NUMBER OF DEPENDANTS.....	45
TABLE 5.6:	INCOME BEFORE TAXES.....	46
TABLE 5.7:	YARD TAP.....	47
TABLE 5.8:	ALTERNATIVES FOR GETTING WATER.....	48
TABLE 5.9:	PLAN TO GET YARD TAP.....	49
TABLE 5.10:	MONTHLY WATER CONSUMPTIONS.....	50
TABLE 5.11:	USES OF WATER.....	51
TABLE 5.12:	AVERAGE MONTHLY BILL.....	52
TABLE 5.13:	FREE WATER POLICY.....	52
TABLE 5.14:	NUMBER OF FREE KILOLITRES.....	53
TABLE 5.15:	WHO PAYS FOR FREE WATER.....	54
TABLE 5.16:	REPORTING OF LEAKS.....	55
TABLE 5.17:	PAYMENT OF ACCOUNTS.....	56

TABLE 5.18:	RDP STANDARDS.....	57
TABLE 5.19:	OBJECTIVES OF THE SCHEME.....	58
TABLE 5.20:	LOCALS HIRED.....	59
TABLE 5.21:	LOCALS TRAINED.....	60, 67
TABLE 5.22:	INVOLVEMENT OF WOMEN AND YOUTH.....	60, 68
TABLE 5.23:	JOB OPPORTUNITIES.....	61, 68
TABLE 5.24:	BENEFICIARIES OF THE SCHEME.....	62
TABLE 5.25:	O & M OF THE SCHEME.....	62, 65
TABLE 5.26:	HOW TO IMPROVE O & M.....	66
TABLE 5.27:	ACTUAL VS PLANNED O & M.....	69
TABLE 5.28:	CORRELATIONS.....	70
TABLE 5.29:	FREQUENCY TABLE.....	72

LIST OF FIGURES

FIGURE 3.1:	VULINDLELA SALES VS RECEIPTS.....	25
FIGURE 5.1:	GENDER.....	41
FIGURE 5.2:	MARITAL STATUS.....	42
FIGURE 5.3:	AGE.....	43
FIGURE 5.4:	LEVEL OF EDUCATION.....	44
FIGURE 5.5:	NUMBER OF DEPENDANTS.....	45
FIGURE 5.6:	INCOME BEFORE TAXES.....	46
FIGURE 5.7:	YARD TAP.....	47
FIGURE 5.8:	ALTERNATIVE SUPPLY OF WATER.....	48
FIGURE 5.9:	PLAN TO GET YARD TAP.....	49
FIGURE 5.10:	WATER CONSUMPTION.....	50
FIGURE 5.11:	USES OF WATER.....	51
FIGURE 5.12:	AVERAGE MONTHLY BILL.....	51
FIGURE 5.13:	FREE WATER POLICY.....	52
FIGURE 5.14:	HOW MANY KILOLITRES OF FBWP.....	53
FIGURE 5.15:	WHO PAYS FOR FREE WATER.....	54
FIGURE 5.16:	REPORTING OF LEAKS.....	55
FIGURE 5.17:	PAYMENT OF ACCOUNTS.....	56
FIGURE 5.18:	RDP STANDARDS.....	57
FIGURE 5.19:	OBJECTIVES OF THE SCHEME.....	58
FIGURE 5.20:	LOCALS HIRED.....	59
FIGURE 5.21:	LOCALS TRAINED.....	59, 67

FIGURE 5.22:	INVOLVEMENT OF WOMEN AND YOUTH.....	60, 67
FIGURE 5.23:	JOB OPPORTUNITIES.....	61, 68
FIGURE 5.24:	BENEFICIARIES OF THE SCHEME.....	61
FIGURE 5.25:	O & M OF THE SCHEME.....	62, 65
FIGURE 5.26:	HOW TO IMPROVE O & M.....	66
FIGURE 5.27:	CLUSTERED BAR CHART.....	71
FIGURE 5.28:	WATER SALES VS RECEIPTS.....	75
FIGURE 5.29:	WATER SALES BY VOLUME.....	75
FIGURE 5.30:	NUMBER OF CONSUMERS.....	76
FIGURE 5.31:	NUMBER OF RECEIPTS PER PAYPOINTS.....	77

CHAPTER 1

INTRODUCTION

1.1 OVERVIEW OF THE STUDY

Vulindlela, situated to the south west of Pietermaritzburg, covers an area of approximately 260 square kilometres. The present population of some 210 000 persons is expected to increase by the year 2010 to an estimated 310 000 persons (HIV/AIDS not taken into account). Taking HIV/AIDS into consideration, the population will stabilise by 2010 to 210 000 persons (Durban Metropolitan Transport Advisory Board Demographic Projections, 1996).

In 1993, Umgeni Water initiated a feasibility study for bulk water supply into Vulindlela. This became known as the Vulindlela Project and was presented, in 1994 to Central Government for funding under the Reconstruction and Development Programme (RDP). This was accepted as one of the Presidential Lead Projects. The primary objective of the Project was to provide a sustainable potable water supply of 20 – 30 litres/capita/day within 200m of every home by means of a people-driven programme. The other objectives of the project included:

- Providing job opportunities for the Community.
- Developing skills and capacity within the Community.
- Uplifting people through training.

The Vulindlela Executive Committee (VEC) represented five Tribal Areas of Vulindlela, and was elected by the Amakhosi and the Vulindlela Community to manage the project on their behalf. The Executive Committee comprised fifteen members from five Tribal Areas, namely

- Mpumuza
- Inadi
- Nxamalala
- Mafunze
- Ximba

The Community did not merely provide input but was a partner with Umgeni Water in the development and implementation of the Scheme.

1.2 THE THEORETICAL FRAMEWORK

Access to clean water supplies has been racially and geographically skewed in South Africa. In 1994, the newly elected Government estimated that more than 12 million South Africans lacked access to clean water (DWAF, 1994). The overwhelming majority of people without such service are black and live in rural South Africa. In South Africa a situation exists where the balance of power is skewed in favour of the rich. The South African water supply and environmental sanitation sector has made significant progress in redressing these imbalances since 1994. Potable water has been delivered to an estimated 7 million South Africans mainly in rural areas at a cost of R4.5 billion (DWAF, 2001).

This considerable achievement has, in many respects, propelled the water supply sector into the forefront of development delivery in the country (DWAF, 2000).

The South African water sector is praised in local and international circles for its progressive policies. The passage of the Water Services Act of 1997 and the National Water Act of 1998 are the most recent examples of world-renowned sector policy and legislations from South Africa. Despite the slow rate of delivery, there is broad recognition that the approaches promoted by government, with its emphasis on health rather infrastructure, is appropriate (Breslin, 2001).

Virtually all writing on the delivery of clean water to rural people around the world emphasises the point that it is rural women who benefit most from the provision of these supplies. The main benefit, apart from family health, is freeing women from drudgery and enabling them to engage in other activities. The World Bank's report in 1994 emphasised that such provision saved a considerable amount of time of women daily and allows more time for childcare or earning an income (World Bank, Water and Sanitation Program <http://www.wsp.org/English/>). Without water there can be no life and no development. Broadly water fulfils economic, social, cultural, political and ecological roles in improving people's quality of life. Water is important for development; for health (drinking and use for domestic consumption); to generate livelihoods (food production, mining, industrial use); saving on labour used to collect water; gender equity; environmental value and spiritual value.

1.3 THE OBJECTIVES OF THE STUDY

The study aims at focusing on how the Vulindlela Community benefited from water supplied to them through DWAF and Umgeni Water funding with emphasis on the sustainability of the project. The study also aims to find out from Vulindlela Community whether the scheme met its objectives. This study will try to determine the extent to which these objectives were met. Key research questions that the researcher has to find answers to are:

- To what extent were the objectives of the Vulindlela Water Scheme (VWS) met?
- How to meet these objectives in similar RDP projects in future?
- What are the current challenges/obstacles facing the VWS?
- How has the implementation process gone with respect to the community involvement?
- How have the actual operation and maintenance (O & M) costs worked out in practice related to planned O & M?
- How has the free basic water policy affected consumption patterns and income?

1.4 STRUCTURE OF THE CHAPTERS

A brief outline of the chapters will be enumerated. Chapter One contextualises the area that the researcher is going to investigate and outlines a brief overview of the study, the theoretical framework and the objectives of the study. Chapter Two consists of the literature review with reference to the Reconstruction and Development Programme (RDP) in rural water supply, water legislation, free basic water and cost recovery. Chapter Three presents the Vulindlela Water Supply project description. Chapter Four presents the research design and detailed description of methodological procedures used. The description of results and findings will be presented in Chapter Five. Chapter Six deals with the discussion of the results of this study and their relationships with literature review in Chapter Two. It also deals with the interpretation of results, conclusions and recommendations. The limitations of this study and recommendations for future research of this study are also discussed in Chapter Seven.

CHAPTER 2

LITERATURE REVIEW

2.1 THE OBJECTIVES OF THE VULINDLELA WATER SCHEME

The primary objective of the Vulindlela Water Scheme was to provide the sustainable potable water supply of 20 – 30 litres/capita/day within 200m of every home by means of a people-driven programme (Robinson, 2000). Other objectives of the Vulindlela Water Scheme included:

- Providing job opportunities for the Community.
- Developing skills within Community.
- Assisting in developing the capacity of the Community.
- Uplifting people through training.

2.2 RECONSTRUCTION AND DEVELOPMENT PROGRAMME (RDP) IN RURAL WATER SUPPLY.

The African National Congress (ANC) was elected in 1994 on the promise of “a better life for all”. An important goal of the post-apartheid government was to redress the legacy of apartheid by ensuring equitable distribution of public services. The Reconstruction and Development Programme (RDP) (ANC 1994) as an integrated socio-economic policy framework was drafted before the ANC became government through wide consultation throughout society. The RDP (ANC 1994:28) declared access to clean water as a right of all. The RDP further stipulated that decisions about water resources had to be transparent and justified (ANC1994: 29). It saw local government as responsible for water distribution and financing through appropriate tariff and tax mechanisms (ANC 1994:31). The RDP short term standard for provision of water was a safe water supply within 200m of people’s home: with the medium term aim of on-site water supply of 50 litres per person per day (ANC 1994:29). The RDP (ANC 1994:30) also referred to a lifeline water tariff to be charged: in urban areas progressive block tariffs were to be applied; and cross-subsidisation between urban and rural areas were to be implemented.

The Reconstruction and Development Programme (RDP) was an integrated, coherent socio-economic policy framework (Schmitz, 1999). It seeks to mobilise all South Africans and country’s resources toward the final eradication of the results of apartheid and the building of a democratic, non-racial and non-sexist future. It represented a vision for the fundamental transformation of South Africa. In particular, women were targeted as the beneficiaries of the policy both in terms of representation on water project steering committees and through easing the burden placed on them in the rural areas to provide water to their households. The RDP was a coherent socio-economic policy, which strived towards a non-sexist future. Throughout the policy document, specific emphasis was placed on the development and empowerment of women.

Water and sanitation projects are more sustainable when women have ongoing responsibility for their operations and maintenance, as they were more committed since they are adversely affected by project failure. Water policies, thus had to have a gender-based approach to ensure sustainability (Mjoli, 1998:40-42). The integrated process of transformation ensured that the country (Schmitz, 1999):

- Develops strong and stable democratic institutions and practices characterised by representation and participation.
- Becomes a fully democratic and non-racial society.
- Becomes a prosperous society, having embarked upon a sustainable and environmentally friendly growth and development path.
- Addresses the moral and ethical development of society.

Rural Water Supply and Sanitation was the RDP Presidential Lead Project implemented by DWAF. The lack of basic services, such as water supply and sanitation, is a key symptom of poverty and underdevelopment. The provision of such services is therefore regarded as central to reconstruction and development in South Africa. In addition, the need for running water is specific to women as it relates to their reproductive responsibilities. It is also women who are responsible for the collection of water. The basic policy principle emphasises the fact that development should be demand-driven and community-based. Duncker (1998:37) puts forward strategies to empower women in water delivery and makes the following points:

- That woman should be more involved in planning and operations as part of a strategy to build a more equitable society.
- That their involvement should be more than labour and include access to resources, decision-making and management.
- That care should be taken not to overburden women and to automatically perpetuate and reinforce the traditional roles of women.
- That a gender approach to development needs to be worked out.

Although it seems obvious that there should be a higher level of women's participation on the grounds of efficiency as much as equity, there still are serious problems about ensuring a high level of participation. Participation of women in a water project is multi-faceted: in planning, during construction phase, and later in operation and maintenance. The two main objectives of the RDP were to attain both equity and economical growth.

The participation by people and communities are important for the sustainable use of water. Each specific context, in which water is used, influences the rights to access of different people and how water is managed. Water should be managed at a local level. All stakeholders, governments, civil society, NGOs, the private sector must work together in partnerships to ensure access to water for all. At a local level, water user associations, watershed committees and co-operatives have been very successful in this.

2.3 WATER LEGISLATION AND POLICY

Water policy is the responsibility of the National Department of Water Affairs and Forestry (DWAF), while local government does the implementation. Since 1994 two white paper policy documents on water delivery have been released by DWAF: the 1994 White Paper on Water Supply and Sanitation (it contains principles for water delivery: community participation, sustainability, institutional capacity building and labour-intensive methods) and the 1997 White Paper on National Water Policy for South Africa (it focuses on national level management of water resources as a national asset).

The Water Services Act (108 of 1997) followed thereafter as it was formed by the lifeline approach of the RDP. The Act states that water is to be delivered by local government. The Act shifted responsibility for water and sanitation provision to local government.

According to the Water Services Act, local government is the Water Services Authority (WSA), with responsibility to provide access to water and sanitation services in their areas of jurisdiction. The Act also defines the Water Service Provider (WSP) as the structure that actually provides the water services. This may be the WSA itself, or a body contracted to do so on its behalf. In clause 19.2 it says that the private sector should only be considered as a service provider if all public sector options have been investigated and found not able to work. But in June 2000 the Minister of Water Affairs announced new regulations to amend the Act, known as clause 19.5. This defines a water provider as anything from local government to the private sector. This now allows for private sector involvement in water services.

The National Water Act (36 of 1998) establishes public trusteeship of water and specifically focuses on the responsibilities of local government in water supply. The purpose of the Act is to protect, use, develop, conserve, manage and control the nation's water resources in line with its underlying principles of equity and sustainability. The Act provides for the progressive establishment of catchment management agencies (CMAs) by the minister. The purpose of these agencies is to delegate water resources management to the regional or catchment level and to involve local communities, within the framework of the national water resources strategy. It focuses on the resource-side of water management. This Act also says that private sector water providers are only to be considered once all known public providers have been exhausted or found unwilling/incapable of providing water.

Both these Acts followed the supply-side approach to water management that was followed throughout the world until the 1980s (Jenkins et al, 2000). In supply-side water management, it is mainly government that subsidises capital expenditure to establish usually large-scale water infrastructure. Consumers then only pay a portion of the actual cost to supply water. Because of criticisms from international financial institutions and environmentalists, a shift occurred internationally in 1980s and 1990s from supply-side to demand-side water management. The shift towards a demand-driven approach is justified based on the so-called failure of the supply-driven approach and the inefficiency of public sector providers (Jenkins et al, 2000).

This shift and especially the privatisation of water, has been supported internationally by the World Bank (WB), the Global Water Partnership (GWP), the World Water Council (WWC), the World Commission on Water and Business Partners for Development (WCWBPD).

The argument is that water is an economic and tradable good that should be paid for based on market principles (Smith, 2000). This means that a socio-economic right is replaced as being a consumer right. The involvement of the private sector is seen as ensuring efficiency and providing the necessary investment in water. Providing water for free is thus seen as inefficient and uneconomic. The argument is that not recognising the economic value of water has led to wasteful and environmentally damaging uses of water. The assumption is that if water is priced, it will be valued more. The aim of demand-side water management is thus to reduce the demand for water by changing the behaviour of consumers through pricing, education and regulation. This approach has opened the way for the involvement of the private sector and communities in water delivery. But with this approach came the notion of cost-recovery and also the removal of cross-subsidisation (Smith 2000:3-6)

In South Africa this international shift, led to a change from a supply-side approach to a demand-side approach to water management. The National Water Conservation and Water Demand Management Strategy (of 2000) was the first policy document to reflect this shift. The main problem in South Africa is not over-consumption, but rather not having access to water and not being able to afford it. In 1995, a World Bank water expert, John Roome advised then Minister of Water Affairs, Kader Asmal, that cross-subsidisation would be in conflict with privatisation (Bond 2001:23). The private sector has been encouraged to become involved, according to government, so as to “speed up” water delivery. It is argued that full or partial privatisation will lead to more efficiency and productivity of state-owned enterprises. It also increases access to scarce resources like capital, technology and skills. With privatisation goes the acceptance of the principle of full cost-recovery for operation and maintenance.

2.4 FREE BASIC WATER POLICY (FBWP)

The Free Basic Water Policy (FBWP) was announced in September 2000 by President Mbeki to set the pace for the fast tracking of addressing the needs of the poor. This is but one of the ways to ensuring poverty eradication. The Cabinet approved an implementation plan for 6000 litres of free water per household per month as part of the government’s integrated rural development strategy and urban renewal programme. The date for implementation by local government structures was 1 July 2001. Free basic water was to be funded using a combination of the Equitable Share Grant (the grant provided by national government to local government) and internal cross-subsidies from appropriately structured water tariffs in a manner which best reflects the specific situation in the respective local government area (DWAF, 2000 Free Basic Water – questions and answers).

The intended consequences of the free Water Policy are:

- More people should be served with water and no exclusions allowed.
- More water should be used by those served.
- Public health improvement.

Municipalities have discretion over the application of the S- transfer proportion of the “equitable share” funds. The S- transfer grants are intended for poverty alleviation and particularly for providing basic services. The DWAF estimates are that in most areas 30% of the equitable share will be enough to subsidise water services for the poor. However, in some cases, such as rural areas with scattered settlements where operating costs are very high, the equitable share may not be enough.

The allocation of equitable share has risen most rapidly, from R1867 million in 2000/01 to R2618 million in 2001/02 and is currently sitting at 3551 million in 2003/04. The formula for the horizontal distribution of the equitable share favours poor areas with limited revenue and thus the increased allocations will benefit those municipalities that have the most limited potential to cross-subsidies (DWAF, 2001).

For an average South African household of eight people, 6000 litres transfers to 25 litres of free water per person per day. This free water supply was supposed to be implemented from July 2001.

But by November 2003 only 27 million South Africans received the 6000 litres of free water/month/household (<http://www.dwaf.gov.za/freebasicwater>). The main reason for not receiving water is that 10 million South Africans (rural and urban) are still not served with infrastructure (<http://www.dwaf.gov.za/freebasicwater>). The second reason is that households with arrears do not qualify for free water (Cape Argus, 26 February 2002). Municipalities are claiming that they don’t have financial resources to provide free water (Sunday Times 20 January 2002) and are disputing which level of government should cover costs of the free water services. Currently there are 211 out of 262 local municipalities and metros that are providing free basic water in South Africa (<http://www.dwaf.gov.za/freebasicwater>). This increase indicates a drastic improvement from the 2001 figures.

Criticisms can also be raised against the government’s free water policy. Some say that the amount of 6kl of free water per household per month is not sufficient. With an average household size of eight people in South Africa, this means 25 litres of free water per day per person. This is half of the WHO’s recommended minimum of 50 litres (McDonald, 2002a). 6kl per household per month only allows for two flushes of a toilet a day for a household of eight people (Cottle 2001:25). The reality is that free water is benefiting the middle-income households, while the poor have their water cut off.

2.4.1 Lifeline Support of Free Water, Progressive Block Tariff and Cross-subsidisation.

Water is a human right and it is the public sector's obligation to ensure minimum water consumption for free. The South African government has adopted such a policy. And with these rights go responsibilities. This means that free water provision should not mean that water could be used at free will. The right to water implies the duty to maintain water resources. Progressive block tariffs can then be used to discourage over-consumption of water.

This simply means that lifeline water services are provided free of charge, but as consumption increases from that point upward, tariffs also increase steeply. In this way block tariffs act as a cross-subsidisation mechanism. Such block tariffs can curb over-consumption of a scarce resource.

An example of block tariffs is that of City of Cape Town in 2001:

Table 2.1: Block Tariffs for City of Cape Town

<i>Amount of water used</i>	<i>Price charged</i>
0 – 6kl	Free
7 – 20kl	R2.60/kl
21 – 40kl	R4.10/kl
41 – 60kl	R5.50/kl
61kl +	R7.00/kl

Source: City of Cape Town, Water Services Development Plan (WSDP), 2001

By making use of such progressive block tariffs, cross-subsidisation can then be used to cover the cost of the free water lifeline.

The block tariffs for Msunduzi Municipality for the year 2003 are as tabled in Table 2.2: (Barbara Sanderson, Msunduzi Municipality, 17 November 2003)

Table 2.2: Block Tariffs for Msunduzi Municipality

Amount of water used	Price charged
0 - <6kl	Free
First 6kl	R18.78 (basic charge)
Above 6kl and thereafter	R6.18/kl

Source: Msunduzi Municipality, City Treasurer Department, 2003.

2.5 COST RECOVERY

The principle of full cost-recovery, or user pays, adapted by the market-based approach, is based on the idea of economic efficiency. It means that consumers must pay O&M and capital costs of water systems. Through this revenue is supposed to be generated for service upgrades and extensions. This leads to decisions about water, especially its allocation, being based on commercial interests, and not humanitarian and moral reasons. Urban areas are then focused on, to the detriment of rural poor.

The reality of cost-recovery is that water is delivered to those who can pay for it. The problem for the poor with cost-recovery is affordability. McDonald (2002b: 9) indicates how of the seven million people who gained access to water since 1994, 1.26 million are unable to afford this water and another 1.2 million have to choose between paying for water and buying food. The average household income in black rural areas and townships is R1 000 per month (McDonald 2002a). In these poor households nearly a quarter of household income is already spent on basic services (Mc Donald 2002b: 6).

This means that because the poor cannot pay, water networks are not extended to them. The reality is that poor people are prepared to pay for water, but they lack the ability. Ability to pay is more important than willingness to pay.

Cost-recovery also gives justification for water cut-offs based on outstanding bills. It is especially the aggressive style of cost recovery that is leading to hardship for the poor. Disconnections and evictions are implemented if people are unable to pay for services. By blaming the poor and treating them as criminals, actions of cost-recovery treats water as a privilege, while it is a right. This is nothing else but economic genocide. People need to be educated on the issue of cost recovery so that they can be a part and parcel of the system. ***“From the reality that exists on the ground where many of poorest of the poor cannot pay rather than won’t pay for basic water. In many areas, particularly in rural areas, the poor do not pay at present. The problem is that when we try to implement cost-recovery, many of the poor cannot pay. The consequence when, they are excluded from the tap, has been seen with the cholera outbreak in KwaZulu-Natal”*** – Minister of Water Affairs and Forestry, Ronnie Kasrils, 13 October 2000.

CHAPTER 3

THE VULINDLELA WATER SUPPLY SCHEME

3.1 INTRODUCTION

Water demand projections for Vulindlela up to the year 2010 show the need for a water supply to the population of 16.7 ML/day (Lynn, 1993). The Vulindlela area is well served by natural springs, which in the past provided the main sources of water for the population. However, drought conditions reduce the magnitudes of spring yields such that a total assured yield of only 3.1 ML/day for the area can be adopted in respect of groundwater-based water supply systems. Two long-term bulk water supply schemes for Vulindlela were designed on a preliminary basis utilising the supply from Midmar water works. One scheme seeks to deliver the full 14.7 ML/day net water demand by means of bulk supply, whereas the other is an integrated design which takes account of the contributions available from groundwater-based sources such that bulk water supply compromises 11.6 ML/day (Lynn, 1993).

A cost analysis was carried out on the two long-term bulk water supply schemes based on supply from Midmar water works, together with a similar cost analysis of long-term bulk water supply schemes based on the Henley Dam. The results indicate that the scheme with the lowest project cost is the long-term integrated bulk water/groundwater scheme based on supply from the Midmar Dam (Lynn, 1993).

A discounted cash flow analysis was undertaken to determine the profit or loss in terms of Net Present Value (NPV) for operation of the various bulk water supply schemes over a period of 30 years. The most profitable scheme was found to be the long-term bulk water supply scheme for Vulindlela based on supply from the Midmar dam with no allowance made for contributions from groundwater schemes at a profit of R49, 629, 656 (Lynn, 1993).

It is considered that for the foreseeable future affordability levels of the Vulindlela population will be a critical factor in determining the maximum level of bulk water supply sales within Vulindlela. It appears that a not insignificant section of the population will continue to favour “free” supply of water from groundwater. Hence it was recommended that groundwater resources be upgraded and exploited to the full before bulk water supply is introduced to all areas of Vulindlela. The upgrading of groundwater resources would comprise:

- Protection of 160 springs.
- Sinking of not less than 20 water boreholes in areas of severe water shortage.
- A groundwater quality and spring yield monitoring programme.
- Investigation of the feasibility of utilising high yielding springs to supply reticulation systems to local communities.

The supply of potable water to Vulindlela Community was expected to greatly improve the living conditions in the area (Lynn, 1993).

3.2 VULINDLELA RURAL WATER SUPPLY SCHEME

Vulindlela lies immediately to the west and southwest of Pietermaritzburg and extends over an area of some 25 km x 20 km. The Vulindlela Water Supply Scheme serves the entire area. The area lies within the operational area of Umgeni Water and the area of jurisdiction of the Msunduzi Municipality. The Scheme serves an area for which the 1996 census produced a homestead count of 19 088 and a population of 122088 persons, for an average of 6.4 persons/household. It has been assumed that this population will grow at a rate that varies between 1.08% and -0.26% per annum over the next ten to fifteen years. This growth rate acknowledges the likely impact of HIV/AIDS in the area (Piesold, 2000).

The Scheme serves the tribal authorities of Inadi, Nxamalala, Mpumuza, Mafunze and Kimba. The Scheme is fed by a treated bulk water supply from the Midmar Waterworks via a pump station in Umgeni Water's Groenkloof area. The scheme includes for the supply of potable water in bulk into the area from a pump station that houses six pumps sets. Three are low lift pumps and three are high lift pumps. The pumps deliver to five large storage reservoirs. This section of the system is described as the bulk pumped system. The bulk pumped system comprising the Groenkloof pump station together with Reservoirs numbers 1 to 5, inclusive, the low lift rising main to reservoir number 1 and the high lift rising main to Reservoirs numbers 2 to 5, all form an integral part of a telemetry controlled pumping system. It has a construction value of R63m. The system runs automatically and the pump sets normally operate automatically depending upon reservoir levels. The system is monitored from the Midmar Waterworks.

From the five reservoirs, water is gravitated to a further 14 reservoirs and some reticulation. The large, high-pressure gravity pipelines and the remaining 14 reservoirs are described as the bulk gravity system. The bulk gravity system comprising Reservoirs numbers 6 to 19, inclusive, and the gravity mains to these reservoirs from Reservoir numbers 2 to 5 have a construction value of R56m. These reservoirs serve a total of 19 areas by gravity. The smaller diameter reticulation and pipelines downstream of the 14 reservoirs and their flow meters, up to the customers' flow meters, are described as the reticulation system. In the reticulation system, downstream of the storage reservoirs, a total of 19 Branch Offices have been built within Vulindlela. Six are incorporated into Indlovu Regional Council Community Halls. The remaining 13 offices are "stand alone" Branch Offices.

There is bulk flow meters installed at the outlets of all bulk storage reservoirs, and the supply to individual consumers is via metered house connections in all cases. The area served is divided into 19 smaller areas, each served by a Branch Office managed by a Branch Office Committee. The Vulindlela Water and Sanitation Committee that deals with Umgeni Water in turn, manages these.

The functions of the branch offices are:

- Dealing with application forms (new connections)
- Cash collection and receipting
- Banking
- Customer liaison
- Administrative functions
- Processing claims and cheques
- Providing information to stakeholders

The Vulindlela Water and Sanitation Committee (VWSC) were using funds provided by Umgeni Water to pay the Branch Officer's salary until June 2001. This was provided as a subsidy termed the "Injection Fund", set at R1200/month/branch office. The "injection Fund" was for the running of the branch offices including the Branch officers' salaries, telephone and electricity costs. From July 2001, the VWSC are taking 25% of the total funds (connection and account payment fees) collected at the branch offices. This amount is used in the running of branch offices, including Branch Officers' salaries, telephone and electricity costs.

The source of water for the Scheme is Midmar Dam and purification at Midmar Waterworks, which is the main works supplying the whole of the Greater Pietermaritzburg area. This works produces potable water of consistently high quality. Umgeni Water continually monitors the quality of the water at critical points within the scheme.

3.2.1 Funding Plan

The project cost was as follows:

RDP Allocation from DWAF	R71 800 000
Umgeni Water (Private Connections)	R11 909 000
Funding by others (loan)	<u>R77 291 000</u>
	R161 000 000
VAT @ 14%	<u>R 22 540 000</u>
Total Funding	<u>R183 540 000</u>

Umgeni Water had to fund the bulk supply to Groenkloof (estimated cost R24 000 000)

The high capital expenditure on the scheme was caused by Umgeni Water who took the initiative of funding the private connections and the bulk supply to Groenkloof pump station. The reason for such funding was that it was Umgeni Water's social responsibility to provide water to the rural community of Vulindlela.

3.2.2 Operation and Maintenance (O & M)

The Operations Division that is responsible for bulk and reticulated supplies in the hands of Umgeni Water carries out operation and maintenance. Maintenance of the bulk scheme is largely concentrated on breakdown maintenance associated with the new infrastructure. The Reticulation Superintendent and his staff, who also read meters, do operation and maintenance of the reticulation. This team also supervises the installation of new connections, which are done by local contractors.

The practice is for Umgeni Water to supply piping from the main off-take to the customer's boundary, together with the meter box, meter and valve at a cost of R450 including R50 deposit. The current connection fee is R600-00, including deposit.

The real cost of this service is in excess of R1500-00 and therefore this service is subsidised by Umgeni Water to a substantial extent. Umgeni Water pays the difference of R900-00 through the subsidy.

The demand on the system is very low compared to the full design flows. This is having a considerable impact on the operational procedures that are to be followed. The sizes of the reservoirs are such that the retention times in them are too long if they are operated at their full levels. They are therefore operated at levels less than half and even then, retention times are excessively long. This leads to water quality problems and there is a need to carry out supplementary dosing with sodium hypo-chlorite and ammonium hydroxide solutions.

Appropriate community structures have been established and the community trained to develop the technical skills to operate, maintain and administer the scheme.

3.2.3 Tariff Structure

The tariff structure in Vulindlela is such that all water is sold at a flat rate per kilolitre. The Umgeni Water bulk tariff is R2.75/kl and the reticulated tariff to Vulindlela is R6.08/kl, (both figures excluding VAT) for the 2002/2003 financial year ending. There is a minimum charge of R5.00 per account. These tariffs are calculated in accordance with historically acceptable procedures in use within Umgeni Water. Operating budgets are prepared each year, wherein the operating costs are compiled by zero-based budgeting. Vulindlela overheads are allocated at 10% of the cost centre operating costs. The table 3.1 below represents the summary of projected tariffs (Umgeni Water, 1999)

Table 3.1 Umgeni Water Projected Tariffs

Financial Year	Start Date	Bulk Tariff(R/kl)	Water	Consumer Tariff(R/kl)
1	2000	1.78		4.59
2	2001	1.96		5.42
3	2002	2.75		6.08
4	2003	2.79		7.55
5	2004	2.79		8.91
6	2005	2.79		9.71
7	2006	3.04		10.58
8	2007	3.31		11.54
9	2008	3.61		12.58
10	2009	3.94		13.71
11	2010	4.29		14.94
12	2011	4.68		16.29
13	2012	5.10		17.75
14	2013	5.56		19.35
15	2014	6.06		21.09
16	2015	6.60		22.99
17	2016	7.20		25.06
18	2017	7.85		27.31
19	2018	8.55		29.77
20	2019	9.32		32.45

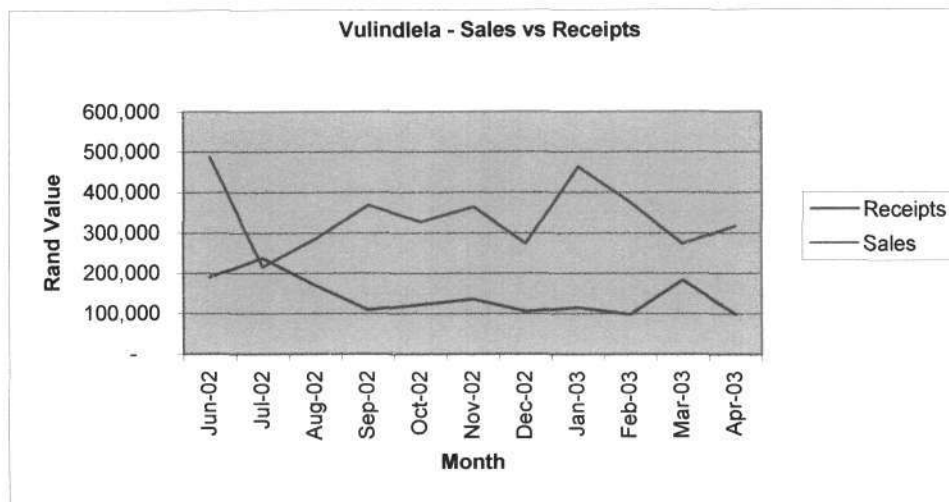
Source: Umgeni Water, projected tariff structure, 1999

The current bulk tariff (2003/2004 financial year) is R2.75/kl excluding VAT and the consumer tariff is R6.08/kl. Umgeni Water has decided not to increase its bulk and consumer tariffs because of the pressure from municipalities who are not prepared to pay higher tariffs (Umgeni Water, Restructure Document, 2002).

3.2.4 Sales and Income

An analysis of receipts is carried out by the Debtors Department of Umgeni Water (figure 3.1). These analyses give an overview of the performance of the Scheme with respect to the sales affected, consumption billed, and the revenue generated. These analyses also take into account the free basic water policy, which was instituted by Msunduzi Municipality from May 2002. Msunduzi Municipality pays Umgeni Water for the free basic water through the equitable share grant that comes from the central government. Unfortunately, the revenue contains some income for deposits and for payment for new connections and hence it is not strictly comparable with billings. Nevertheless, the comparisons are interesting and they reveal that the Scheme is not yet covering its operating costs. The trend can be viewed in a positive light, however, with 11 000 consumers registered under the Scheme, shows some improvement.

Figure 3.1 Vulindlela Sales vs. Receipts



The reports also reveal the large and unacceptable discrepancies between bulk and reticulated water outputs. This is as a result of large leaks occurring on both the bulk and the reticulated systems. Another problem with the reticulated system is that water balances are not done and hence leak detection cannot be feasible. These leaks are coming under control on the bulk system, but the problems are going on in the reticulated system. Unless water balances are done and benchmarked with similar reticulated systems, the unaccounted for water will increase as these cannot be easily detected.

3.2.5 Cost Recovery

Water flow is metered at all strategic points throughout the system. This includes the delivery from the pump station, delivery from the storage reservoirs, flows entering and leaving zones that have been set up to provide water balances, and the flows taken by each individual consumer. Meters are read monthly and accounts are sent out monthly. Water balances are calculated monthly for the bulk system. In case of reticulation, water balances are not done and this needs to be looked into, as a lot of water is lost through this failure to account for water losses. It is estimated that about 20% of bulk is lost.

3.2.6 Community and Social

Requirements regarding community participation and empowerment are key parts of Umgeni Water's approach to rural and semi-urban water and sanitation supply schemes. These are seen as some of the critical success factors in terms of the long-term sustainability of the projects.

Participation and empowerment occurred at individual, community, tribal and regional levels although the key mechanism was the Executive of the Steering Committee, the Steering Committee itself and the various Constituted Local Water Committees. All the communities and Tribal Authorities as well as other key stakeholders were represented on the Steering Committee.

The Executive of the Steering Committee was elected by the Community and was involved at a policy level and also made all key policy decisions with regards to the planning, design, implementation and administration of the scheme. During the years that Umgeni Water staff has been working in the Vulindlela area, considerable understanding has been engendered on the question of payment for services rendered. Current levels of payment are not good and also there are blurring of results by the fact that records are not accurately separated between payments for usage and for deposits made for water installations.

Branch Officers are trained on how to receive and attend to complaints from the public, and to forward reports of faults, leaks, etc to the appropriate authority. These systems are backed up by existing systems at Umgeni Water. Arrangements are in place for the receipt of customer complaints at each branch office. Branch Officers have been trained to accept such complaints and to undertake to have them dealt with. Proper resolution and management follow-up on complaints and for feedback to the originator are all in place.

The Vulindlela community has been intimately involved with the scheme since its inception. There is a good understanding of the issues and the operation of the democratic structures that have been carefully put in place. The community is participating to a meaningful degree in the decision-making and management of the scheme. Structures are in place to ensure a flow of information up and down the line, and between the community and Umgeni Water.

Vandalism has been a problem in the area and to the scheme. The Msunduzi Municipality and Umgeni Water are working closely to ensure that adequate resources are made available to address the problem and to heighten the awareness of the community in this regard. There are shared resources between Umgeni Water and Msunduzi Municipality to raise the awareness of the community on issues surrounding the efficient use of water, payment for services, and the safe and hygienic disposal of wastewater.

A budget of 2.7% of the construction cost was allocated for education, training and capacity building. This was made up of 1% for education, external training and capacity building and 1.7% for on the job training. Training in the areas of management and finance were addressed, but traditionally these tended to be more difficult areas considering the literacy levels in the area.

CHAPTER 4

DETAILED DESCRIPTION OF RESEARCH METHODOLOGY

4.1 GOALS/OBJECTIVES OF THE PROJECT

The aim of the study is to focus on how the Vulindlela Community benefited from water supplied to them through the DWAF and Umgeni Water funded project. The study also aims to find out from Vulindlela Community whether the scheme met its objectives. This study will try to determine the extent to which these objectives were met. Key research questions that the researcher has to find answers to are:

- To what extent were the objectives of the Vulindlela Water Scheme (VWS) met, as stated in 2.1?
- How to meet these objectives in similar RDP projects in future?
- What are the current challenges/obstacles facing the VWS?
- How has the implementation process gone with respect to the community involvement?
- How have the actual operation and maintenance (O & M) costs worked out in practice related to the planned O & M?
- How has the free basic water policy affected consumption patterns and income?

4.2 AIMS OF THE STUDY

The study aims at focusing on how the Vulindlela Community benefited from water supplied to them through the DWAF and Umgeni Water funded project. The study aims to achieve whether the scheme met its objectives. This research will try to determine the extent to which these objectives were met.

4.3 RESEARCH DESIGN

A questionnaire and interviews were used as tools to gather the required information to conduct this study. The researcher conducted interviews with Umgeni Water Debtors supervisor, Branch Officers and the Chairman of the Vulindlela Water and Sanitation Committee (VWSC). A questionnaire was sent to 2 970 Vulindlela households with the help from the trained field workers who were tasked to fill in the questionnaires with the household owners responses. The field workers were hired to cover the language barrier as most of those communities have a primary level of school education. The researcher interviewed the Debtors supervisor, the Branch Officers and the Chairman of VWSC. Copies of the various interview schedules used are included in the Appendix B and C.

Piloting of the questionnaire was done with 20 employees of Umgeni Water who were residing in the Vulindlela area and 5 field workers who were on the one-day training session. The questionnaire proved to generate the information required. No changes were made in the questionnaire after the analysis of the pilot study. A random sample of 2889 Vulindlela households responded to the questionnaire. There was 97.3% success rate.

4.3.1 The Questionnaire

Keeves (1988:478) says a questionnaire is a self-report instrument used for gathering information about variables of interest to an investigator. It consists of a number of questions on paper that have to be read and answered by the respondent. A questionnaire, as a self-report instrument, is based on three assumptions. These are:

- The respondent can read and understand the questions or items.
- The respondent possesses the information to answer the questions or items.
- The respondent is willing to answer questions or items honestly.

Keeves (1988) maintains that what can be included in a questionnaire is almost without limit. The content will however be limited by the interests of an investigator, what can reasonably be asked in a questionnaire, and time constraints. Each of these important factors is discussed below and reference can be made to the research questionnaire in Appendix A:

1. Evans (1968) points out that the first step in drawing up a questionnaire is to decide on the exact purpose of the research, as it is only possible to see clearly what information is needed, once this has been done. An investigator should limit the questions in a questionnaire to variables of primary interest. Each question should be explicitly or implicitly related to a particular research question or hypothesis.
2. The second constraint on what will be included in a questionnaire involves the sensitivity or delicacy of the content of particular questions. If highly personal questions are asked, respondents may simply refuse to answer, give what they believe to be socially desirable responses, or even worse consign the questionnaire to the nearest waste bin. It is also recognised that apparently straightforward and objective questions can create problems for a respondent.
3. The third constraint as to what will be included in a questionnaire is time. According to Evans (1968) a long questionnaire is daunting, and may go unanswered, whereas a shorter one is filled in more willingly. Respondents cannot be expected to spend a great deal of time answering a questionnaire. There are two issues here. One is that, answering questionnaire questions requires effort. After a while, respondents will tire and this can lead to careless or inaccurate responses. The second issue is more serious, and involves respondent cooperation.

A lengthy time-consuming questionnaire may cause a respondent to cease to cooperate after a period of answering questions. Recognising this, as well as the fact that the community has a primary to secondary level of education and are IsiZulu speaking, the researcher in the present study intended his questionnaire to be answered in 20 minutes. Most of the respondents managed to complete it in 15 – 20 minutes.

The researcher further considered the following issues:

4. In the present study, the researcher included the names, address and telephone numbers of the respondents to encourage frank and truthful answers.
5. A well-devised questionnaire takes much time and effort. In the present study the target population were first language IsiZulu speakers, the questions were therefore phrased in simple English so that they could be easily be interpreted and understood by the field workers. The researcher aimed for a well-organised questionnaire, with clear questions, response options, which were easily selected, and there was a natural ordering or flow to the questions that kept the respondent moving towards completion of the questionnaire. These desirable attributes were a result of a great deal of painstaking developmental work, which the researcher put into his questionnaire construction.
6. Other factors that were considered were that the questionnaire should be attractive and present minimal problems for the respondents.
7. Attention was given to question wording so that subtle cues were not supplied suggesting that the respondents replied in a particular way, thereby aiming to avoid biased results.

It was also necessary for the researcher to write an introductory paragraph for the questionnaire. Placed on the first page of the questionnaire, this acted as a brief statement of the purpose of the research and helped to arouse interest and gain cooperation. Specific directions for answering were available in the questionnaire to help facilitate responses. This was done to gain a legitimate, unbiased respondent response.

In addition, throughout the questionnaire, the field workers were provided with a one day training session on how to fill in the questionnaires in the presence of the respondents, taking and writing only the answers from the respondents without adding or subtracting anything from the respondents' answers. At the beginning of the questionnaire, there was a paragraph about the strict confidentiality of the information from the respondents. Finally, situated at the end of the questionnaire was a question for any additional comment that the respondents might have. The questionnaire is attached as Appendix A.

4.3.1.1 Structure of household survey (Appendix A)

Questions 1 – 6 in the questionnaire dealt with the description of the sample. It was important for the researcher to understand the sample description, including age, marital status, gender, level of education, number of dependents and monthly household income. This information will help the researcher to determine the affordability and the impact that the free water policy has in such large families.

Questions 7 - 18 determined whether the sample had a yard tap or not. It was meant to determine how many households in the area have yard taps. These questions were important in determining the number of consumers currently having yard taps and other potential consumers that might have yard taps in the future. They also had to deal with the consumption patterns, the uses of water, the average monthly bill and the understanding of the free water policy. It is important to note that only households with yard taps get 6kl free water.

Questions 19 – 29 dealt with the extent of determining whether the objectives of the scheme and the RDP standards were met (research question 1). The objectives of the scheme and the RDP standards were discussed with the Vulindlela Community before the scheme was initiated (Thusi, 2003). Umgeni Water Rural Planning Officers held several meetings with the Vulindlela Executive Committee (VEC) discussing the objectives of the scheme and the RDP standards (Burgess, 2003). The committee was representing the five tribal authorities in the Vulindlela area. The VEC members went back to their structures, updating and reporting to them the objectives of the scheme and the RDP standards. Question 25 dealt with the comparison with other RDP schemes (research question 2).

Two other RDP schemes that were discussed with the VEC members were the Madlebe and Phungashe schemes, which are based in the northern KwaZulu Natal (Burgess, 2003).

Questions 29 – 30 dealt with the current challenges or obstacles facing the scheme (research question 3 & 5). The operation and maintenance (O & M) of the scheme was seen as one of the challenges. Comparison of the actual O & M costs with the planned O & M costs is attached as Appendix E. Umgeni Water recovers only the operation and maintenance costs. Interest and depreciation is not covered by sales.

Questions 22, 23 and 27 dealt with the implementation process with respect to the community involvement (research question 4). These questions covered the employment of local people, local contractors and women and youth involvement on the scheme. The researcher wanted to know from the respondents the extent to which the Vulindlela Community was involved in the scheme.

Questions 6, 13, 14 and 16 dealt with free water policy effects on the community related to the consumption patterns and income (research question 6). The researcher wanted to know the consumption patterns and the income of the respondents to determine whether the free basic water policy was benefiting the Vulindlela Community.

Each Branch Office Committee (BOC) had to select one field worker with a grade 12 or a standard 10 certificate. The field worker had to be an unemployed male or female, between 25 and 30 years old with a South African identity document and willing to work for three weeks in succession. The VWSC chairperson introduced the field workers to the researcher and a date was set for a one-day training session with all the field workers. The venue was at Umgeni Water Head Office, Human Resources Conference Room. The training session started at 08h30 and finished at 17h00 with an hour lunch break and two 30 minutes tea breaks.

The researcher conducted the one-day training session using the questionnaire attached as Appendix A. A brief introduction of the purpose for the training was spelled out and the questionnaires were distributed to the field workers. Each question on the questionnaire was dealt with and the researcher opened a platform for questions that the field workers had. The whole morning was devoted to the proper answering of all the questions in the questionnaire and how the field workers were suppose to ask the questions to the respective respondents. The field workers were also taught how to write down the answers and translating them from IsiZulu to English and vice-a versa. The main emphasis was that the field workers needed to write down the respondents' answers as they were and they were not allowed to further probe the answers.

The afternoon session was spent with the field workers used as a pilot study. Five field workers had households in the Vulindlela area and the researcher used them to conduct the pilot testing. The researcher was asking the questions in IsiZulu and writing down the answers in English. The rest of the field workers were asked to watch the pilot testing process, comments and questions were allowed during the piloting process. The pilot testing of the field workers helped in solving problems that the other field workers had.

Two out of five field workers did not understand the objectives of the scheme and the RDP standards. The researcher understood the reason for that: they were still young when the objectives of the scheme and the RDP standards were discussed with the Vulindlela Community 7 years ago. The other three were comfortable in answering all of the questions. The training was assisted by the fact that 70% of the field workers had been previously hired by Umgeni Water to educate the Vulindlela Community on the free basic water policy in the year 2001.

The field workers were initially given 50 copies of the questionnaire and were given 7 days to complete them. The researcher checked the answers from the respondents for accuracy and any inconsistencies with the different field workers. Four out of 18 field workers had to re-do 20 questionnaires because they did not ask the respondents without taps questions 13 - 16. They had to do the 20 questionnaires in two days without pay. They brought the questionnaires back to the researcher on the third day. The researcher checked the answers and a go-ahead was given to them. The next 115 questionnaires were given to all the field workers to complete in 14 days. The questionnaires were returned back to the researcher on the 15th day. The researcher checked all the responses from different field workers for inconsistencies and accuracy. The researcher was happy with the type of responses and the way the questionnaire were filled. The field workers were then paid R500-00 each for 165 questionnaire completed.

4.3.2 Qualitative Questions versus Quantitative Questions.

One of the issues in questionnaire design relates to the use of qualitative and quantitative questions. Can qualitative and quantitative questions be used in the questionnaire? Some people do use them together (Cronbach, et al 1980; Miles and Huberman, 1984; Reichardt and Cook, 1979). As the researcher decided to use both qualitative and quantitative questions, he had to achieve a delicate balance between their numbers for reasons, which will be enumerated below.

Cochran and Billig (1980) have likened the relation between the two methods to the tension between the depth and the breadth of the analysis respectively. Although both sets of techniques have their own advantages and limitations, social science has come to favour quantitative research as the main source of hard and rigorous data. Campbell (1978) argues that qualitative techniques are seen as subordinate methods, which could hardly be used as research techniques in their own right. However, researchers working in the past decade would challenge this. Qualitative research leads to greater detail in the data.

4.3.2.1 Qualitative Research

Qualitative research is descriptive and open-ended. The data collected is in the form of words rather than numbers. The researcher decided to use qualitative questions because he had some experience with water supply in rural communities, which helped him formulate most of the quantitative questions. Qualitative questions are more likely to reveal the views of the community than quantitative questions.

Open-ended responses frequently go beyond statistical data of factual material into the area of hidden motivations that lie behind attitudes, interests, preferences and decisions. That is why the researcher chose to include open-ended questions.

The qualitative research approach demands that the world be approached with the assumption that nothing is trivial, that everything has the potential of being a clue that might unlock a more comprehensive understanding of what is being studied. Nothing is taken as a given, and no statement escapes scrutiny (Bogdan and Biklen, 1992: 30).

The data is analysed as closely as possible to the form in which they are recorded and all spontaneous response material enhance the interpretation of results. This enables the researcher to learn the views, perspectives, opinions, prejudices and beliefs of some respondents and this helps him evaluate his preconceived ideas of the service rendered. This does not mean being naïve or credulous, but it means paying attention to the outlook of the people in the setting or culture you are studying (Delmont, 1999:7).

4.3.2.2 Quantitative Research

Quantitative questions are closed-ended questions, which provide categorised data that greatly facilitate the tabulating and summarising process. Quantitative techniques involve codifying data. In responses to quantitative questions, facts are assumed to exist external to the researcher, waiting to be discovered. The researcher is seen as an objective, apolitical and value-free being, who works at a distance from the object of study (Burgess, 1985).

The researcher used more structured items in the questionnaire than unstructured items, as Keeves (1988) maintains that the questionnaire should consist largely of structured items in which the respondent can easily find and check an appropriate response category. One useful device is a list of possible answers from which the most applicable can be chosen, but if this is employed, it is necessary to see that the list is as exhaustive as possible. The researcher checked this in the pilot study.

The researcher used "Yes" and "No" response categories only for structured questions because of his experience in the water field, is that response to those questions would most likely be "Yes" or "No" with no in-betweens. The pilot study also proved this to be correct since there were no respondents who indicated that some in-between responses were needed.

4.3.3 Sample Characteristics

In total 2 889 households responded to the questionnaire from 2 970 questionnaire distributed. This was a great achievement from the field workers. The population of Vulindlela was 210 000 persons (Durban Metropolitan Transport Advisory Board Demographic Projections) and an assumption was made that each household had an average of 8 people living in it. The population had increased from 122088 persons in 1996 to 210 000 persons in 2000. A large number of households moved in the Vulindlela area during the political turmoil (1996 – 2000) between the ANC and IFP, according to Robinson. An 11 % sample was representative of the Vulindlela population with or without yard tap.

The researcher instructed the field workers to fill in the questionnaire with household adults who were responsible for the payment of water provided. The strategy was to randomly cover the households with or without yard taps within each branch office by each field worker. The areas that were covered on this survey were from the 19 branch offices i.e. Songomncane, Magwenyane, Sisonke, Senzokuhle, Ubhaqa, Ntembeni, Thandokuhle, Bambanani, Mpiloyethu, Ndzondweni, Eshowe, Mandlesizwe, Nkanyiso, Awethu, Deda, Noshezi, Mpande, Siwelile, and Mbubu. These areas are shown on the map attached as: Reticulation Opportunity Identification (Msunduzi Municipality, p 2). Areas covered on the map appear as RDP (Vulindlela) in the legend.

4.3.4 Alternative Method Considered.

Bearing the aims of the study in mind, the researcher needed to consider other ways of gathering relevant information. One of the methods considered was interviewing. Interviewing is a useful way of gaining in-depth information about a topic. It is, however, time consuming, since one needs to build rapport, and can only work with one subject at a time.

The researcher used this method in getting more information about the current running of the Scheme from the Vulindlela Water and Sanitation Committee Chairperson (VWSC), Umgeni Water Debtors' Department and also from the Branch Officers who on regular basis have contacts with the Vulindlela Community. The researcher had personal interviews with Branch Officers in their respective offices. The chairman of VWSC accompanied the researcher for the purpose of identifying different branch offices within the Vulindlela area and the interviews were conducted with the Branch Officers only, the chairman was not involved at all. 16 Branch Officers were interviewed out of 19. The interviews were conducted over two days. The three Branch Officers that were not interviewed were because during the two days visit to branch offices, there was no one in attendance in those missed branch offices. The researcher had to clear this with the chairman of the VWSC, who stated that some of those offices only open twice in a week and close at 12h30 everyday.

4.3.5 The Research Instrument

In selecting research instruments, which would be appropriate for this particular study, the researcher was guided by a desire for methodological congruity. The methods should be carefully chosen to match the principles articulated and the philosophical assumptions, which underlie the research being planned. Essentially, this work was seen as a co-operative enterprise in which the subject joins the researcher in making an inquiry. The methods chosen, which would best serve the exploratory, descriptive nature of this co-operative endeavour, were the interview and questionnaire.

Gay (1987) points out that the use of a questionnaire is more efficient than an interview, in that it requires less time, is less expensive and permits the collection of data from a larger sample. The researcher opted for that measuring instrument because it allowed for larger samples. Ary, Jacobs and Razaveih (1990) believe that using questionnaires leads to more truthful responses by the participants than a personal interview. They also point out that it can be a disadvantage to use a questionnaire because the respondents may misinterpret the questions. To minimise this, the researcher used trained field workers to administer the questionnaires, in order to explain and write the answers from the participants.

Interviewing is more than gathering talk together. It is fundamentally a process of social interaction. The dynamic quality of this interaction can easily be lost as soon as it is collected. Whitehurst (in Powney & Watts, 1987:16) observes that it is “like catching rain in a bucket for later display. What you end up with is water, which is only a little like rain”. Kruger (1988) identifies three advantages of recorded interviews as a method of data collection:

- They are more spontaneous than written reports,
- They allow feedback and clarification of confusing data, and
- They allow the interviewer to remain as near as possible to the actual lived-experience.

Each interview is dependent on the skills of the interviewer and the willingness of the interviewee to participate. Ely (1991) suggests that the structure of a qualitative interview is shaped in the process. She says:

“While some believe that the interviewee can go in any direction, and that the interviewer is passive, nothing is further from reality. Actually, the interviewer knows the areas that need to be explored and sees to it that this occurs. It is how this is done that defines the difference between an ethnographic interview and others. The key is that the person interviewed is a full partner in the endeavour and often provides the surprising and useful directions not allowed by other, more researcher-centred interviews.

The tasks of an ethnographic interviewer include providing focus, observing, giving direction, being sensitive to clues given by participants, probing, questioning, listening, amalgamating statements and generally being as involved as possible” (Ely, 1991: 58)

The role of the interviewer is to trust oneself as a flexible instrument of observation. As the database grows, the questions and issues shift, and change in a cyclical process, and provide further direction for the study. It takes confidence in oneself as a participant observer to accept this mutability of questions as one play the roles of both insider and outsider simultaneously.

Getting access to an interview is an easier task than getting a good interview. Qualitative research writings offer the following characteristics of a successful interviewer:

- Intellectual flexibility as against a cognitive rigidity: the ability and willingness to remain open to the emerging data which may be unexpected or even un-welcomed. The notion of multiple realities requires a broadness of vision, which can accommodate a range of viewpoints rather than merely one single perspective.
- A flexibility of behaviour, particularly with regard to the planning and conducting of interviews. One should fit in with the needs of the subjects.
- Accepting ambiguity: one does not start with a set of fixed hypotheses and there is on-going uncertainty as to what will be uncovered, revealed or learned.

The researcher opted for the questionnaire and the alternative method (interviews with scheme management) in the collection of data from the Vulindlela Community (VC).

4.4 PILOT STUDY

Evans (1968) maintains that when the general plan of an investigation is complete, it is wise, if possible to try it out on a small scale. The researcher decided to engage in a trial run of the questionnaire before use, to gauge its usefulness. The following additional reasons were considered, and supported by Evans (1968) and Keeves (1988):

- The pilot study gives a chance to practice administering the test or making observations. In this way the chance of making a mistake, which would spoil the whole investigation is minimised.
- It may bring to light any weaknesses in the procedure of administration. Instructions to the subjects can be amended if they are found to be ambiguous or incomprehensible. The time needed can be checked. Unsatisfactory methods of recording information can be improved, and generally, the process of testing can be made as simple and foolproof as possible.
- The statistical procedures can be tried out to make sure they can be applied to the material gathered. Working out results of the pilot experiment will show whether all the necessary information has been gathered and will give some indication of the results to be expected from the main investigation.

The researcher did piloting of the questionnaire on 20 Umgeni Water employees residing in the Vulindlela area and 5 field workers who were on the one-day training. The responses were very good and hence the questionnaires were distributed to 18 field workers, each with 165 questionnaires.

4.5 ADMINISTRATION PROCEDURE

The research study was done between April and November 2003. There are 19 branch offices in the Vulindlela area. Each branch office had to nominate one field worker to cover randomly the households around that branch office. The target population was the whole of the Vulindlela households with or without yard taps. The strategy was to randomly cover the households with or without yard taps within each branch office by each field worker, for the sample to be representative.

The Branch Office Committees (BOCs) were very instrumental in the selection of field workers in their branch offices. The committees supplied the names of the chosen field workers to the VWSC chairperson. The chairperson introduced the field workers to the researcher and a date was set for a one-day training session with all the field workers. There was only one branch office that sent the chosen field worker after the one-day training session and the researcher felt that it would be impossible to use him as the training was over. Hence the number of field workers remained at 18.

The researcher gave the questionnaire to 18 field workers who were to cover randomly Vulindlela households with or without yard tap. The hiring of field workers was to speed up the process as the questionnaire was in English and the task of the field workers was to translate the questionnaire. This was done because most of the Vulindlela community had only achieved a primary level of education. The field workers were initially given 50 copies of the questionnaire and were given 7 days to complete their task. The researcher checked these questionnaires for accuracy and then the next 115 questionnaires were given again to the field workers to complete in 14 days. The task of filling questionnaires took 3 weeks to complete.

4.6 METHODS OF ANALYSING DATA

The field workers delivered the data and the researcher conducted the process of processing and checking up the data. The coding of qualitative and re-coding of quantitative data followed. The data was analysed using correlation, descriptive and graphical statistics to achieve the objectives of the study. The results of the data analysis are described in the next chapter (Chapter 5).

4.7 INTERVIEWS WITH SCHEME MANAGEMENT

The researcher used the interview method in getting more information about the scheme. The researcher drafted all the structured interview questions for the Vulindlela Water and Sanitation Committee (VWSC) Chairperson and Branch Officers. The interview with Umgeni Water Debtors' supervisor was not structured.

4.7.1 Debtors' Supervisor Interview

The interview with the Debtors' supervisor was unstructured. It was a one to one discussion about the Vulindlela Scheme. The main purpose for the interview was to find out the number of household connections to date, the number of up to date accounts and the effects of the free basic water policy on the receipts. Other issues came out like the non-payment of water and late deposit of money collected at the branch offices.

4.7.2 VWSC Chairperson Interview Questions (Appendix B)

There were 20 structured interview questions for the VWSC chairperson (Appendix B). Question 1 was about whether the scheme objectives were met or served (research question 1). The researcher wanted to know whether the objectives of the scheme were met and to compare that with the responses from the household survey (questionnaire).

Question 2 was about meeting the RDP standards of the scheme (research question 2). The researcher wanted to know whether the RDP standards were met and if exceeded why? The chairperson of the VWSC confirmed that Vulindlela Community was aware of the objectives of the scheme and the RDP standards as these were discussed before the scheme was initiated. It was the duty of the VEC to report back to their constituencies and he believed that was done years ago.

Question 5 was about the low number of households with yard connections (research question 3). The researcher wanted to know the problems associated with the low number of households with yard connections in the area, taking into consideration that the scheme had been in operation for the last 5 years.

Questions 3, 4, 8, 10, 11, 12, 13, 15 and 16 were about the community involvement in the running of the scheme (research question 4). The researcher wanted to know whether local contractors and local people were hired during and after the construction phase of the scheme; people have been trained to run the scheme and capacity building happening.

Question 7 was about the Vulindlela Community awareness that in order for the scheme to be sustainable, operation and maintenance costs are supposed to be paid by the community (research question 5). The researcher wanted to know whether there was cost recovery with the scheme.

Question 9 was about the education of the community on the free basic water policy and its effects (research question 6). The researcher wanted to address the issue of the free water in relation to household incomes.

4.7.3 Branch Officers Interview Questions (Appendix C)

There were 20 structured interview questions for the Branch officers. Question 6 was about yard connections meeting the RDP standards (research question 2). The researcher wanted to know whether the RDP standards were met and to what extent. The objectives of the scheme and RDP standards were discussed with the VEC and also the VWSC together with the Umgeni Water Rural Planning Officers so that these committees can report back to their constituencies (Burgess, 2003).

Question 2 dealt with the challenges currently facing the scheme (research question 3). The researcher wanted to understand the current challenges facing the scheme from the Branch Officers, as they are the ones liaising with the community on daily basis.

Questions 9, 10, 11 12 and 19 were about the community involvement with respect to the scheme (research question 4). The researcher wanted to find out the involvement of community regarding the scheme.

Question 12 dealt with the maintenance and breakdowns in the running of the scheme (research question 5). The researcher wished to understand whether the community was aware that they needed to pay for such services (maintenance and breakdowns).

Question 1 dealt with the education of the community regarding the free basic water policy (research question 6). The researcher wanted to find out whether the community was aware of the free water policy and that could affect their consumption patterns and incomes.

CHAPTER 5

DESCRIPTION OF RESULTS AND FINDINGS

The results of the responses to questions in the questionnaire were analysed by using correlation, descriptive and graphical statistics.

5.1 REPORT ON HOUSEHOLD QUESTIONNAIRE

The following questions were analyzed using bar graphs and frequency tables. The results for the questions 1-19 are as follows:

Description of the sample

1. What gender are you?

Figure 5.1: Gender

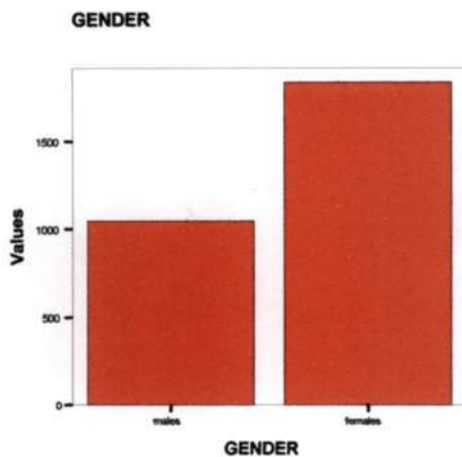


Table 5.1: Gender

		Frequency	Percent	Cumulative Percent
Valid	Males	1047	36.3	36.3
	Females	1841	63.7	100.0
	Total	2888	100.0	

2. What is your marital status?

Figure 5.2: Marital status

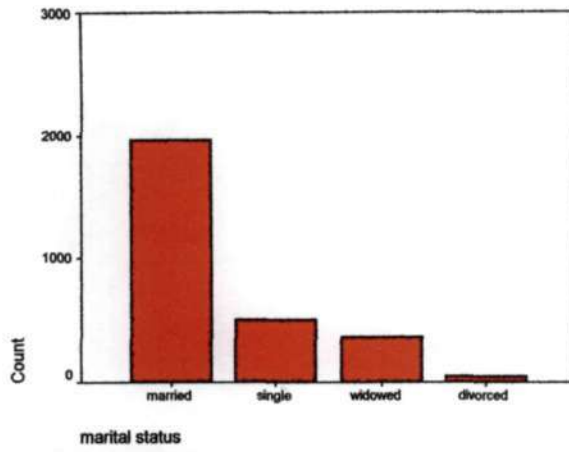
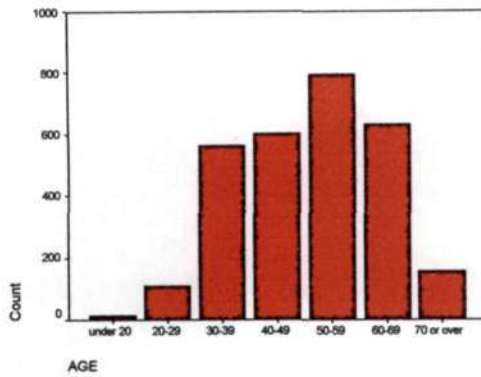


Table 5.2: Marital status

		Frequency	Percent	Cumulative Percent
Valid	Married	1963	68.0	68.0
	Single	502	17.4	85.4
	Widowed	369	12.8	98.1
	Divorced	54	1.9	100.0
	Total	2888	100.0	

3. What is your age?

Figure 5.3: Age**Table 5.3: Age**

		Frequency	Percent	Cumulative Percent
Valid	Under 20	14	0.5	0.5
	20-29	108	3.7	4.2
	30-39	563	19.5	23.8
	40-49	601	20.8	44.8
	50-59	796	27.6	72.5
	60-69	634	22.0	94.5
	70 or over	157	5.4	100.0
	Total	2873	99.5	
Missing	System	15	0.5	
Total		2888	100.0	

4. What is the highest level of education that you have completed?

Figure 5.4: Highest level of education

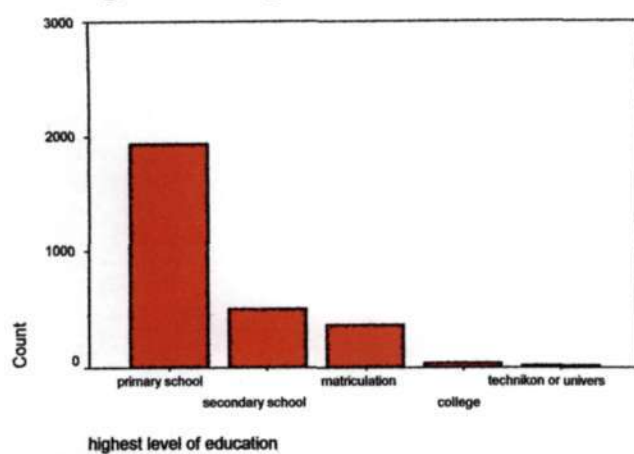
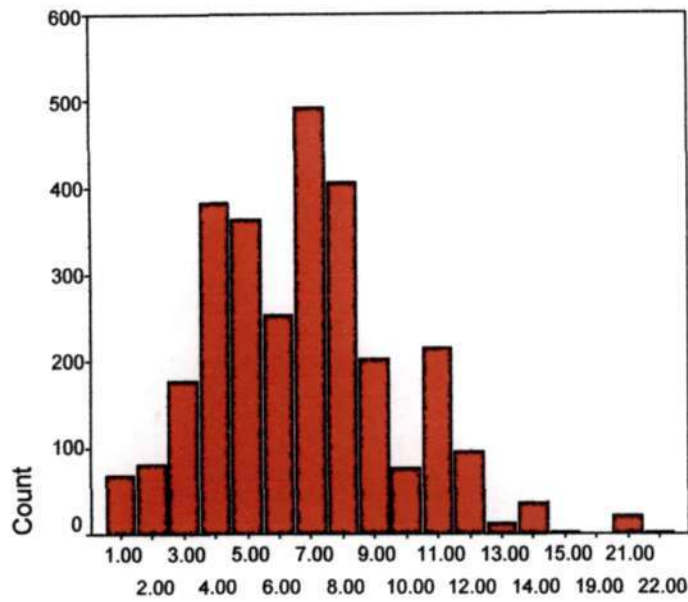


Table 5.4: Highest level of education

		Frequency	Percent	Cumulative Percent
Valid	Primary school	1938	67.1	67.5
	Secondary school	505	17.5	85.0
	Matriculation	366	12.7	97.8
	College	38	1.3	99.1
	Technikon or university	26	0.9	100.0
	Total	2873	99.5	
Missing	System	15	0.5	
Total		2888	100.0	

5. How many dependants, both adults and children are in your household?

Figure 5.5: Number of dependants

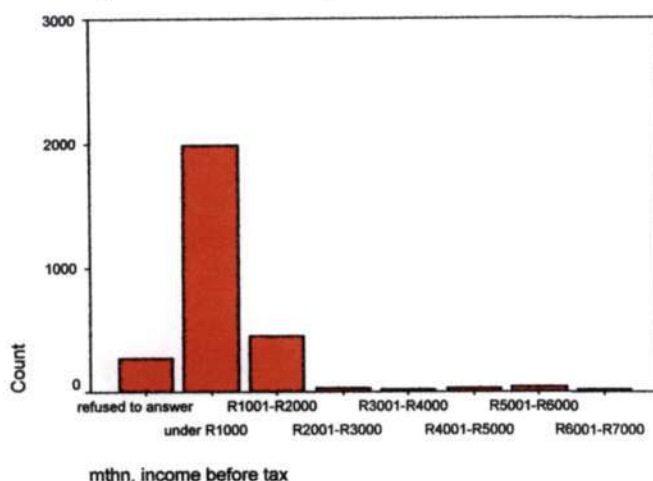


DEPENDAN

Table 5.5: Number of dependants

		Frequency	Percent	Cumulative Percent
Valid	1.00	68	2.4	2.4
	2.00	81	2.8	5.2
	3.00	177	6.1	11.3
	4.00	383	13.3	24.6
	5.00	363	12.6	37.1
	6.00	254	8.8	45.9
	7.00	492	17.0	63.0
	8.00	405	14.0	77.0
	9.00	202	7.0	84.0
	10.00	76	2.6	86.7
	11.00	215	7.4	94.1
	12.00	96	3.3	97.4
	13.00	13	0.5	97.9
	14.00	35	1.2	99.1
15.00	2	0.1	99.2	
19.00	1	0.0	99.2	
21.00	21	0.7	99.9	
22.00	2	0.1	100.0	
	Total	2886	99.9	
Missing	System	2	0.1	
Total		2888	100.0	

6. How much is your household monthly income before taxes?

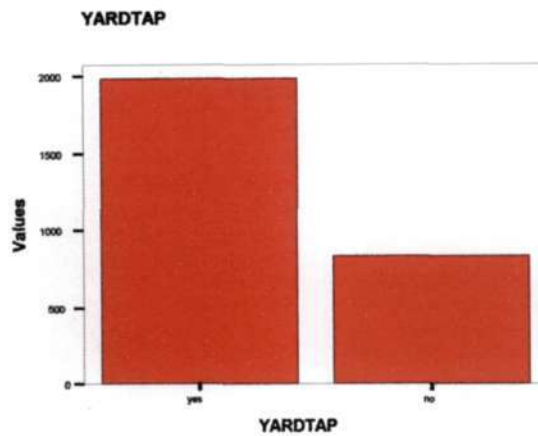
Figure 5.6: Monthly income**Table 5.6: Monthly income**

		Frequency	Percent	Cumulative Percent
Valid	Refused to answer	272	9.4	9.6
	Under R1000	1983	68.7	79.2
	R1001-R2000	453	15.7	95.1
	R2001-R3000	31	1.1	96.2
	R3001-R4000	19	0.7	96.8
	R4001-R5000	34	1.2	98.0
	R5001-R6000	37	1.3	99.3
	R6001-R7000	19	0.7	100.0
	Total	2848	98.6	
Total		2888	100.0	

Description of the sample summary: (Questions 1 – 6)

Firstly there were nearly twice as many females as there were males involved in this survey. 68% of the people that participated in this survey were married and 90% of the respondents were in the age group from 30-69 years. 67.1% of the respondents had only a primary school education and thus the educational literacy is low. Majority of the respondents have about 4, 7 or 8 dependents per household. 69% of the respondents in this survey earn an untaxed monthly income of under R1000 per month.

7. Do you have a yard tap?

Figure 5.7: Yard tap**Table 5.7: Yard tap**

		Frequency	Percent	Cumulative Percent
Valid	Yes	1991	68.9	70.4
	No	837	29.0	100.0
	Total	2828	97.9	
Missing	System	60	2.1	
Total		2888	100.0	

8. If you have no yard tap, where do you always get your water?

Figure 5.8: Alternatives for getting water

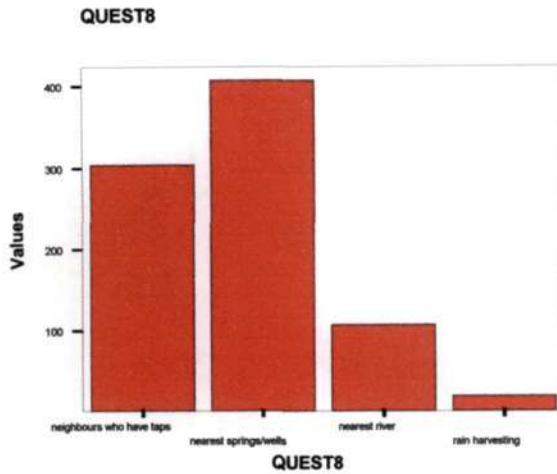


Table 5.8: Alternatives for getting water

		Frequency	Percent	Cumulative Percent
Valid	Neighbors who have taps	304	36.3	37.1
	Nearest springs/wells	407	48.6	85.3
	Nearest river	107	12.7	97.8
	Rain harvesting	19	0.02	100.0
	Total	837	29.7	
Missing	System	1991	70.3	
Total		2888	100.0	

9. If you have no yard tap, when are you planning to get one for your household?

Figure 5.9: Plan to get yard tap

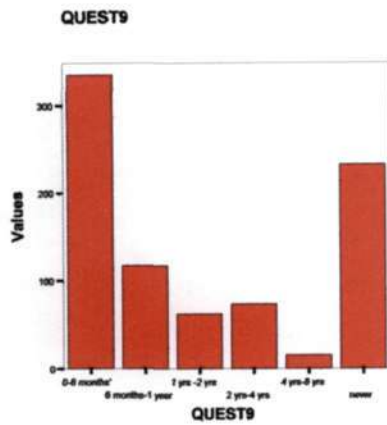


Table 5.9: Plan to get yard tap

		Frequency	Percent	Cumulative Percent
Valid	0-6 months	365	43.6	39.9
	6months-1 year	117	13.9	53.2
	1 yrs -2 yrs	63	7.5	64.8
	2 yrs-4 yrs	74	8.8	72.9
	4 yrs-8 yrs	15	1.8	74.5
	Never	233	26.6	100.0
	Total	837	31.6	
Total		2888	100.0	

10. What is your household water consumption in kilolitres per month?

Figure 5.10: Monthly water consumption

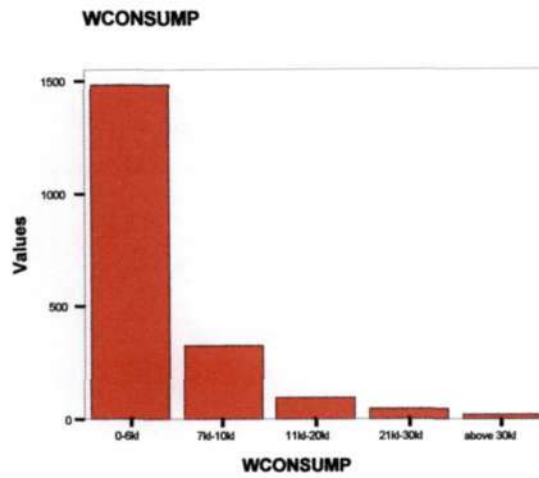


Table 5.10: Monthly water consumption

		Frequency	Percent	Cumulative Percent
Valid	0-6kl	1484	74.5	76.5
	7kl-10kl	332	16.7	91.3
	11kl-20kl	99	5	96.2
	21kl-30kl	52	2.6	98.5
	Above 30kl	24	1.2	100.0
	Total	1991	78.0	
Missing	System	837	22.0	
Total		2888	100.0	

11. What do you use your yard tap for?

Figure 5.11: Uses of water

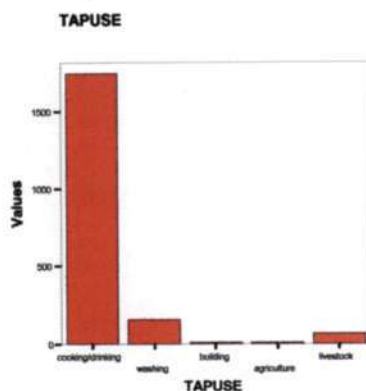


Table 5.11: Uses of water

		Frequency	Percent	Cumulative Percent
Valid	Cooking/drinking	1745	87.6	87.7
	Washing	158	7.9	94.5
	Building	8	0.4	95.6
	Agriculture	11	0.55	96.1
	Livestock	69	3.5	100.0
	Total	1991	82.5	
Missing	System	837	17.5	
Total		2888	100.0	

12. What is your household average monthly bill for water?

Figure 5.12: Average monthly bill

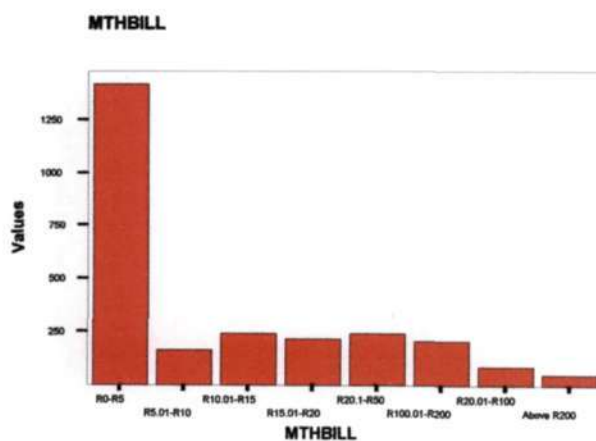
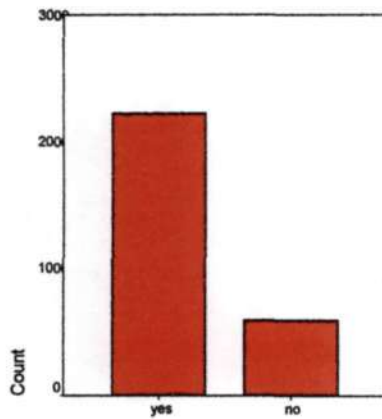


Table 5.12 Average monthly bill

		Frequency	Percent	Cumulative Percent
Valid	R0-R5	1419	71.2	34.1
	R5.01-R10	161	8.1	41.3
	R10.01-R15	239	12.0	54.2
	R15.01-R20	96	4.8	70.5
	R20.1-R50	41	2.1	84.6
	R50.01-R100	22	1.1	94.0
	R100.01-R200	8	0.4	97.7
	Above R200	5	0.3	100.0
	Total	1991	78.0	
Missing	System	837	22.0	
Total		2888	100.0	

13. Do you understand the free water policy?

Figure 5.13: Free water policy

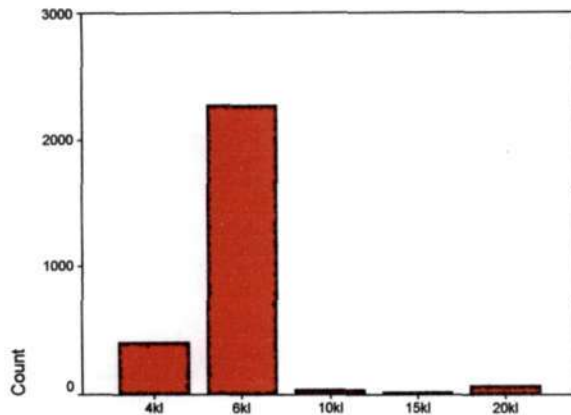
QUEST13

Table 5.13 Free water policy

		Frequency	Percent	Cumulative Percent
Valid	Yes	2229	77.2	79.0
	No	592	20.5	100.0
	Total	2821	97.7	
Missing	System	67	2.3	
Total		2888	100.0	

14. How many kilolitres are you getting free per month from the policy?

Figure 5.14: Number of free kilolitres

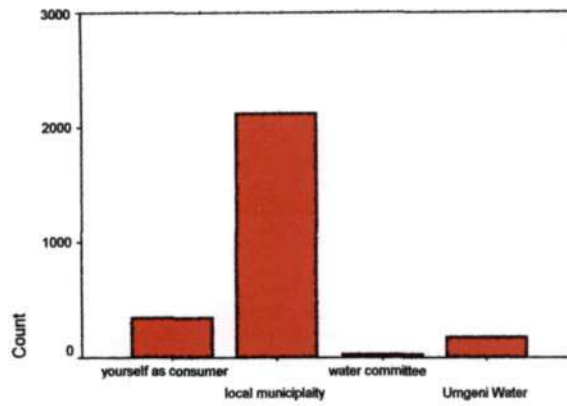


QUEST14

Table 5.14: Number of free kilolitres

		Frequency	Percent	Cumulative Percent
Valid	4kl	442	15.3	14.4
	6kl	1419	49.1	95.4
	10kl	42	1.4	96.9
	15kl	23	0.8	97.7
	20kl	65	2.3	100.0
	Total	1991	68.9	
Missing	System	837	31.1	
Total		2888	100.0	

15. Who pays for the free water?

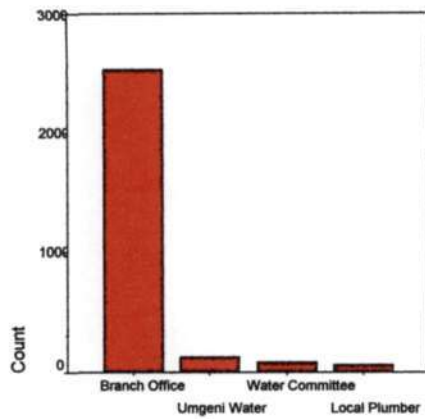
Figure 5.15: Who pays for free water**Table 5.15:**

QUEST15

		Frequency	Percent	Cumulative Percent
Valid	Yourself as consumer	348	12.0	13.0
	Local Municipality	2125	73.6	92.0
	Water Committee	31	1.1	93.2
	Umgeni Water	183	6.3	100.0
	Total	2687	93.0	
Missing	System	201	7.0	
Total		2888	100.0	

17. When you notice your water leaking/illegal connection where do you report it?

Figure 5.16: Reporting of leaks



QUEST17

Table 5.16: Reporting of leaks

		Frequency	Percent	Cumulative Percent
Valid	Branch Office	2527	87.5	90.3
	Umgeni Water	124	4.3	94.7
	Water Committee	87	3.0	97.8
	Local Plumber	61	2.1	100.0
	Total	2799	96.9	
Missing	System	89	3.1	
Total		2888	100.0	

18. Where do you normally pay your water accounts?

Figure 5.17: Payment of accounts

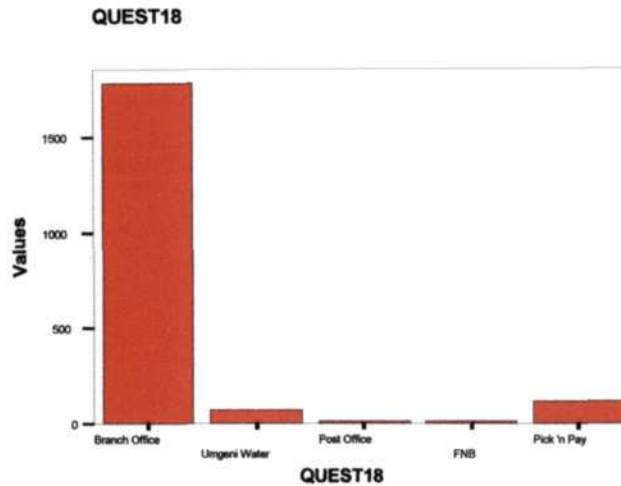


Table 5.17:

		Frequency	Percent	Cumulative Percent
Valid	Branch Office	1784	89.6	84.5
	Umgeni Water	72	3.6	89.2
	Post Office	14	0.70	89.7
	FNB	9	0.45	90.0
	Pick 'n Pay	112	5.6	100.0
	Total	1991	91.3	
Missing	System	837	8.7	
Total		2888	100.0	

Summary of questions 7-18

70% of the people responded that they have a yard tap whilst 30% do not have a yard tap. The majority of them get their water from spring/wells or from their neighbors who have taps. The respondents that do not have yard taps plan to get a yard tap within the next 6 months. The water from the yard taps is used primarily for cooking/drinking. 15% of the respondents use 0 - 6kl of water per month. The modal class monthly water bill is R0-R5. The people in Vulindlela do understand the free water policy. 49% of the respondents indicated that they are receiving 6kl free water per month. The local municipality pays for the free water. Most accounts are paid at Branch Offices. Also, complaints are dealt with at the Branch Offices.

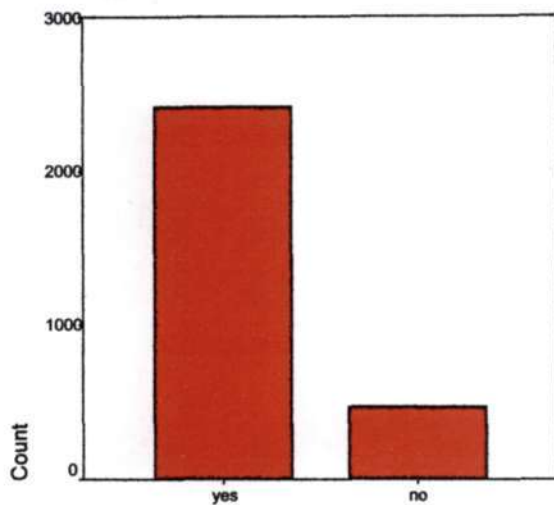
5.2 REPORT ON RESEARCH QUESTIONS

5.2.1 To what extent were the objectives of the Vulindlela Water Scheme met?

To answer this question we need to look at questions 19-29 of the questionnaire in order to assess whether the objectives of the Vulindlela Water Scheme were met. We will look at the associated figures and frequency table for each of the questions and then draw up a summary.

19. Do you feel that the RDP standards are met with the Vulindlela Scheme?

Figure 5.18: RDP standards



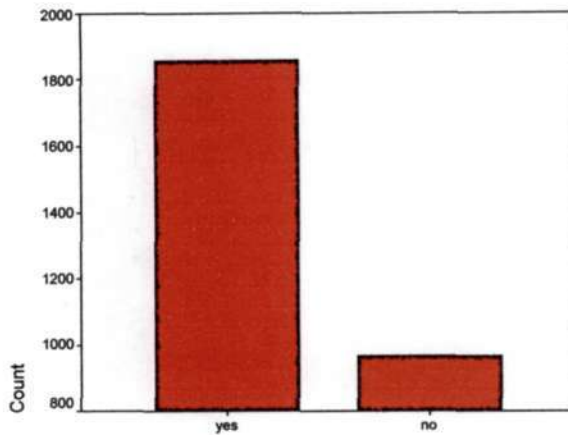
QUEST19

Table 5.18: RDP standards

		Frequency	Percent	Cumulative Percent
Valid	Yes	2409	83.4	83.8
	No	465	16.1	100.0
	Total	2874	99.5	
Missing	System	14	0.5	
Total		2888	100.0	

20. Do you feel that the objectives of the scheme were met?

Figure 5.19: Objectives of the scheme



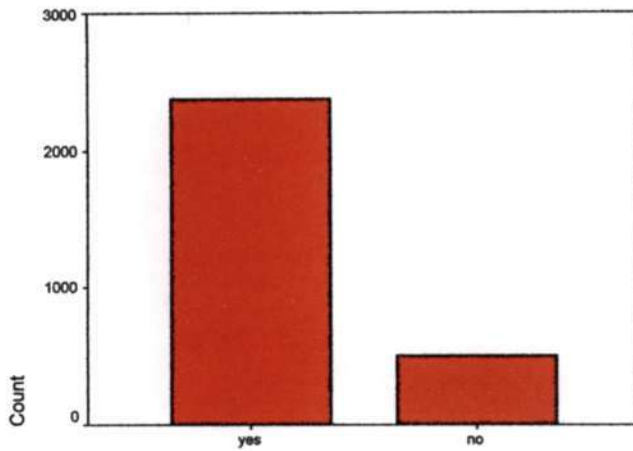
QUEST20

Table 5.19: Objectives of the scheme

		Frequency	Percent	Cumulative Percent
Valid	Yes	1855	64.2	65.8
	No	966	33.4	100.0
	Total	2821	97.7	
Missing	System	67	2.3	
Total		2888	100.0	

21. Were local contractors and local communities hired during the construction phase of the scheme?

Figure 5.20: Locals hired



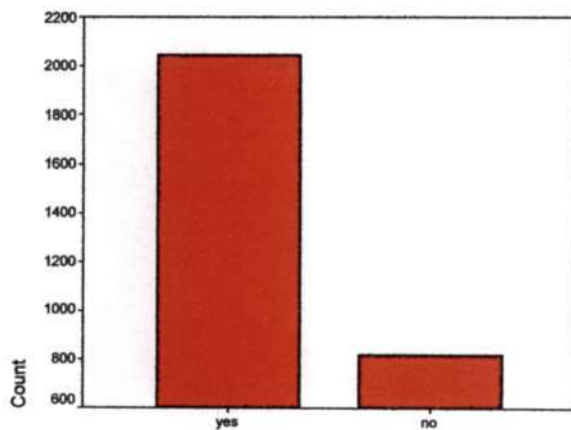
QUEST21

Table 5.20: Locals hired

		Frequency	Percent	Cumulative Percent
Valid	Yes	2370	82.1	82.5
	No	502	17.4	100.0
	Total	2872	99.4	
Missing	System	16	0.6	
Total		2888	100.0	

22. Do you feel local communities have been trained to run the Scheme on their own?

Figure 5.21: Locals trained

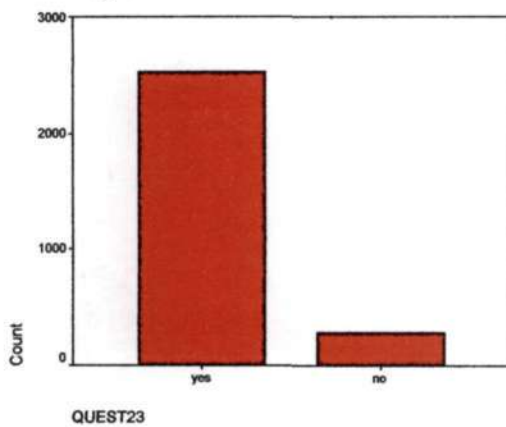


QUEST22

Table 5.21: Locals trained

		Frequency	Percent	Cumulative Percent
Valid	Yes	2045	70.8	71.3
	No	825	28.6	100.0
	Total	2870	99.4	
Missing	System	18	0.6	
Total		2888	100.0	

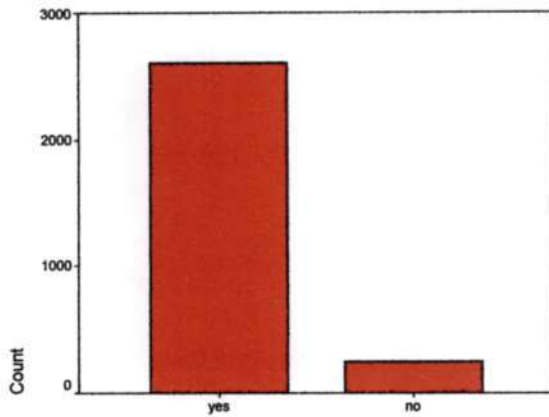
23. Do you feel women and youth were and are involved in the running of the scheme?

Figure 5.22: Involvement of women and youth**Table 5.22: Involvement of women and youth**

		Frequency	Percent	Cumulative Percent
Valid	Yes	2519	87.2	89.7
	No	288	10.0	100.0
	Total	2807	97.2	
Missing	System	81	2.8	
Total		2888	100.0	

27. Do you feel that enough job opportunities were created for locals during the construction phase?

Figure 5.23: Job opportunities



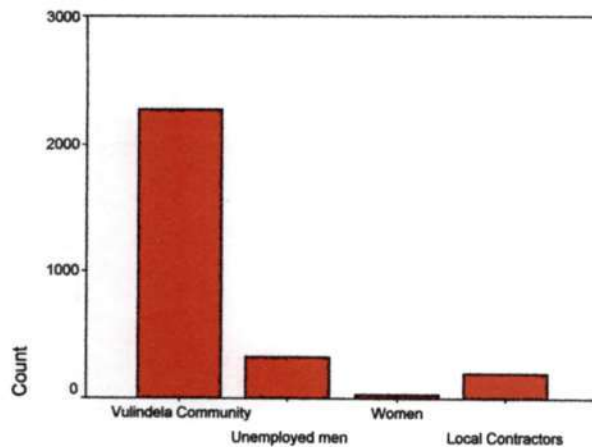
QUEST27

Table 5.23: Job opportunities

		Frequency	Percent	Cumulative Percent
Valid	Yes	2606	90.2	91.2
	No	252	8.7	100.0
	Total	2858	99.0	
Missing	System	30	1.0	
Total		2888	100.0	

28. Who benefited most from the project?

Figure 5.24: Beneficiaries of the scheme

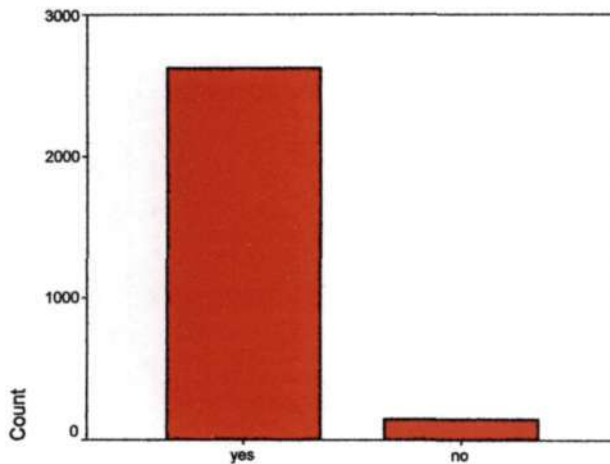


QUEST28

Table 5.24: Beneficiaries of the scheme

		Frequency	Percent	Cumulative Percent
Valid	Vulindela Community	2267	78.5	80.0
	Unemployed men	330	11.4	91.7
	Women	35	1.2	92.9
	Local Contractors	200	6.9	100.0
Missing	System	56	1.9	
Total		2888	100.0	

29. Do you think Umgeni Water is doing enough in the operation and maintenance of the scheme?

Figure 5.25: O & M of the scheme

QUEST29

Table 5.25: O & M of the scheme

		Frequency	Percent	Cumulative Percent
Valid	Yes	2618	90.7	94.5
	No	151	5.2	100.0
	Total	2769	95.9	
Missing	System	119	4.1	
Total		2888	100.0	

Summary of the research question 1: To what extent were the objectives of the Vulindlela Water Scheme met?

It seems that the objectives of the Vulindlela Water Scheme selected for evaluation by this study were met. Question 19 indicates that the Vulindlela Water Scheme has definitely met the RDP standards. 83% of the respondents indicated "yes" to the fact that the Vulindlela Water Scheme has definitely met the RDP standards. Question 20 indicates that 64 % of the respondents indicated that the objectives of the Vulindlela Water Scheme have been met whilst 33% indicated that the objectives have not been met. The 33% who responded that the objectives were not met might have been caused by the lack of understanding the objectives of the Scheme. There is a need to educate the community about the objectives of the Scheme. There were other respondents that are illiterate and the question about objectives might have been misinterpreted.

Question 21 shows that 82% of the respondents indicated that the local community was given employment as part of the objectives of the Vulindlela Water Scheme. Questions 22 and 23 indicated a strong favorable response towards the fact that the local community was trained and equipped to run the Vulindlela Water Scheme as well as the involvement of youth and women in running the scheme. Question 27 shows that the respondents were of the opinion that job opportunities were created for the local community. From Question 28, it is clear that the Vulindlela Community at large benefited from the water Scheme. As far as the maintenance and operation of the Vulindlela Water Scheme is concerned, 91% of the respondents felt that Umgeni Water is doing well in this regard. Hence it is clear from the responses above, that the objectives of this Vulindlela Water Scheme have been met.

The scheme has shown an improvement in ensuring sustainability in that:

- A long term working relationship between Umgeni Water, Vulindlela Executive Committee, Amakhosi and the community since 1994 has been achieved and maintained.
- There are ongoing monthly meetings, site meetings and workshops to discuss progress and other contentious issues with Umgeni Water.
- Umgeni Water has a close working relationship with the community hence the relationship has improved the level of vandalism to the property and illegal connections.

5.2.2 Summary of research question 2: How to meet these objectives in similar RDP Projects in future?

The Vulindlela Water Scheme could act as a possible prototype model in meeting these objectives in similar RDP Projects in the future. In other words, all that was done in this project must be implemented as a system of core values for future implementation. One of the shortcomings about the scheme is that it was over designed and under utilized such that the retention time of water in the reservoirs is too long. This sometimes leads to manual dosing of the reservoirs using sodium hypo-chlorite (HTH) and ammonium hydroxide solutions (Debtors' supervisor, 2003). The local community involvement especially women must be encouraged to participate in decision making from the project design stage until the implementation stage. The local community can be proud of the project and take ownership through empowerment and being involved in all decision-making processes throughout the phases of the project.

5.2.3 What are the current challenges/obstacles facing the VWS?

Questions 29 and 30 are crucial in answering these questions.

29. Do you think Umgeni Water is doing enough in the operation and maintenance of the scheme?

Figure 5.25: O & M of the scheme

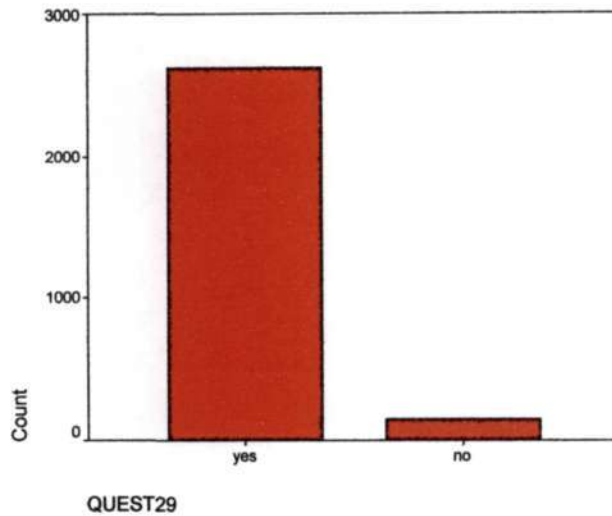
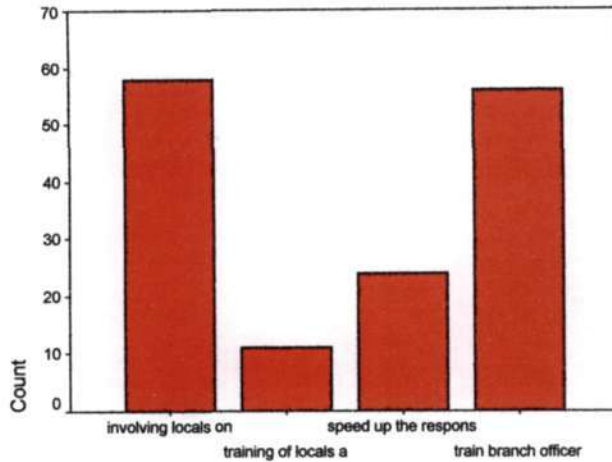


Table 5.25: O & M of the scheme

		Frequency	Percent	Cumulative Percent
Valid	Yes	2618	90.7	94.5
	No	151	5.2	100.0
	Total	2769	95.9	
Missing	System	119	4.1	
Total		2888	100.0	

30. If no, how should they improve?

Figure 5.26: How to improve O & M



QUEST30

Table 5.26: How to improve O & M

		Frequency	Percent	Cumulative Percent
Valid	Involving locals on maintenance	58	2.0	38.9
	Training of locals as artisans/handyman	11	0.4	46.3
	Speed up the response time	24	0.8	62.4
	Train branch officers	56	1.9	100.0
	Total	149	5.2	
Missing	System	2739	94.8	
Total		2888	100.0	

Summary of research question 3: What are the current challenges facing the scheme?

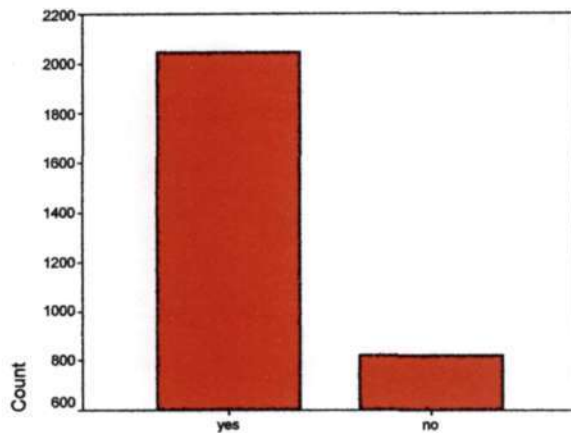
The 5.2% of the respondents indicated “No” to question 29, 2% suggested the involvement of locals on the operation and maintenance of the Scheme, 1.9% suggested the training of Branch Officers. Some respondents believe that they are not getting much from the branch offices. It should be said that this is a very small percentage of respondents (5.2%) who have indicated further improvements. 46% of the respondents suggested that Umgeni Water needed to speed up the response time on the operation and maintenance of the scheme.

5.2.4 How has the implementation process gone with respect to the Community involvement?

In order for us to answer this question we need to look at questions 22, 23 and 27

22. Do you feel local communities have been trained to run the scheme on their own?

Figure 5.21: Locals trained



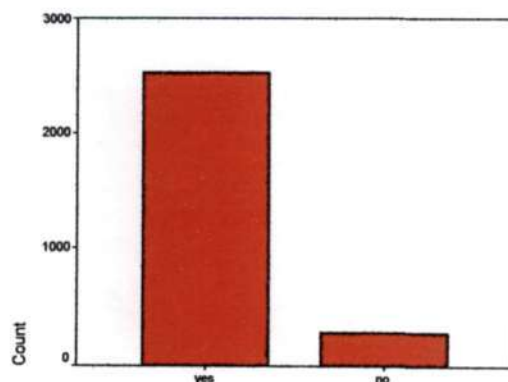
QUEST22

Table 5.21: Locals trained

		Frequency	Percent	Cumulative Percent
Valid	Yes	2045	70.8	71.3
	No	825	28.6	100.0
	Total	2870	99.4	
Missing	System	18	0.6	
Total		2888	100.0	

23. Do you feel women and youth were and are involved in the running of the scheme?

Figure 5.22: Involvement of women and youth

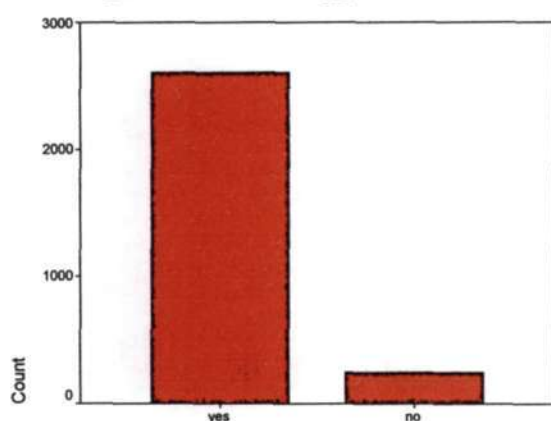


QUEST23

Table 5.22: Involvement of women and youth

		Frequency	Percent	Cumulative Percent
Valid	Yes	2519	87.2	89.7
	No	288	10.0	100.0
	Total	2807	97.2	
Missing	System	81	2.8	
Total		2888	100.0	

27. Do you feel that enough job opportunities were created for locals during the construction phase?

Figure 5.23: Job opportunities

QUEST27

Table 5.23: Job opportunities

		Frequency	Percent	Cumulative Percent
Valid	Yes	2606	90.2	91.2
	No	252	8.7	100.0
	Total	2858	99.0	
Missing	System	30	1.0	
Total		2888	100.0	

Summary of research question 4: How has the implementation process gone with respect to the community involvement?

From the above questions it seems clear that there is a strong sense of community involvement. There were job opportunities created for men, women and youth during and after the construction phase of the Scheme. 70% of the respondents indicated that the local community has been adequately trained to run the Scheme on their own. The credit should be given to Umgeni Water for the effort they have put in the training and development of the Vulindlela Community. It might be advisable for Umgeni Water to go back to Vulindlela Community to re-train them in order to cater for the 30 % who felt that local communities have not been trained to run the Scheme. The other two questions i.e. 23 and 27 indicate a favorable community involvement in the implementation of the process with regards to community involvement.

5.2.5 Summary of research question 5: How have the actual operation and maintenance (O &M) costs worked out in practice in relation to planned O &M?

The figures in the table 5.27 below were taken from the income and expenditure report for Vulindlela Scheme 2002/2003 financial year (Attached as Appendix E).

Table 5.27: Actual vs. planned O & M

	Actual	Planned Budget	Percentage used
Maintenance Cost	R1, 526,051	R1, 637,491	93
Total Income	R3, 568,420	R2, 124,436	168
Total Expense	R29, 554,965	R28, 285,303	104

Source: Umgeni Water Income and Expenditure Report June 2003.

It is seen from the above table that the actual maintenance costs did not exceed the planned maintenance costs. This is not true for the actual total income and the planned total income with a profit of 68%. The actual total expenses differ from the planned total expense by just 4%, which is not bad. The high total expenses are caused by the high interest rate (R18.3m) and high depreciation – immovable (R7.7m). These numbers obtained from the Vulindlela Income and Expenditure Report for June 2003 (Appendix E).

There is a slight difference in the expenses planned and actual O &M costs whilst there is a huge difference in the incomes between the planned and actual O &M costs. It must be stated that there is no O & M recovery costs from the community and Umgeni Water is paying these costs including the capital costs.

The scheme is not sustainable at this point in time and is costing Umgeni Water from the operation and maintenance (O & M) point of view. Umgeni Water needs to hand over the scheme to Msunduzi Municipality so that it can concentrate at the bulk water supply as Section 29 in the Water Services Act (108 of 1997) stipulates.

5.2.6 Summary of research question 6: How has the free basic policy affected consumption patterns and income?

We need to firstly look at the relationship between the household monthly income before taxes, the household water consumption and number for free kilolitres from the policy per month. This linear relationship can be measured using a correlation analysis.

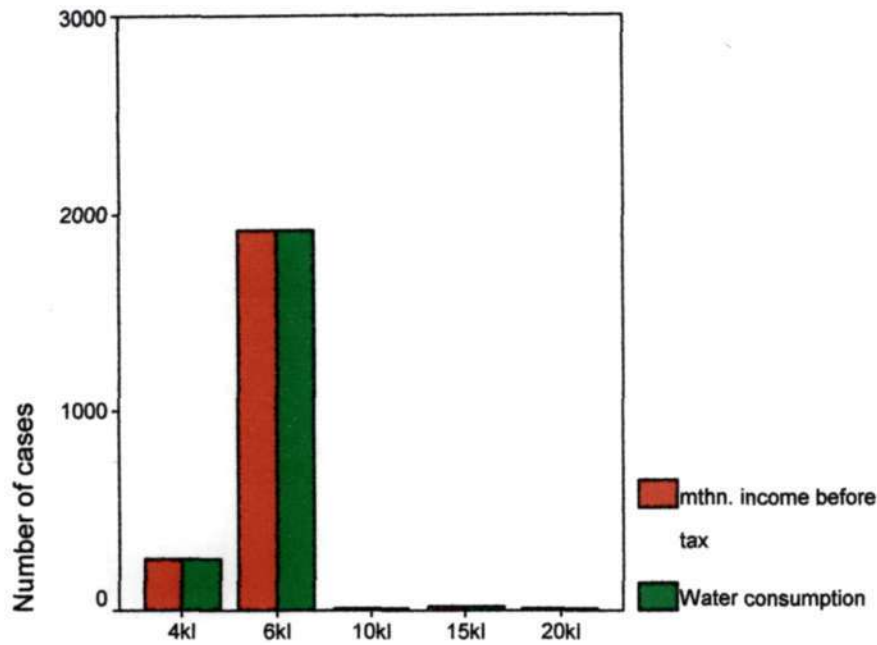
Table 5.28 Correlations

			Monthly income before tax	Water consumption per month	Free kilolitres of water per month
Spearman's rho	Monthly income before tax	Correlation Coefficient	1.000	0.052	-0.051
	Water consumption per month	Correlation Coefficient	0.052	1.000	0.014
	Free kilolitres of water per month	Correlation Coefficient	-0.051	0.014	1.000

From the above table 5.28, value between 0.6 and 1 or -1 and -0.6 would indicate the presence of a linear relationship. The above values do not indicate the presence of a linear relationship between the household monthly incomes before taxes, the household water consumption and number for free kilolitres from the policy per month. If there is a relationship, it is not a linear one hence the table tells that there is no linear relationship between the three variables.

The clustered bar figure 5.27 below also confirms the fact that there is no linear relationship regarding income, consumption and free kilolitres per month as the table 5.28 above. There is no linear relationship between the three variables.

Figure 5.27: Clustered bar chart



QUEST14

The number of free kilolitres is on the x-axis as a grouping variable whilst the bars represent the monthly income before taxes and the water consumption per month. It is seen that households who use only 4kl free every month earn very little monthly income (under R1000). Households who use the full 6kl free every month use a lot of water and earn under R2000. The frequency table 5.29 below indicates this fact.

Table 5.29: Frequency table

Monthly income before tax				4kl	6kl	10kl	15kl	20kl	
Refused to answer	<i>0-6kl</i>	Count		7.0	179		4.0		
		Table %		0.3	8.1		0.2		
	<i>7kl-10kl</i>	Count		2.0	8.0				
		Table %		0.1	0.4				
	<i>11kl-20kl</i>	Count			10.0				
		Table %			0.5				
	<i>21kl-30kl</i>	Count			1.0				
		Table %			0.0				
	<i>Above 30kl</i>	Count			2.0				
		Table %			0.1				
	Under R1000	<i>0-6kl</i>	Count		120	1017	4.0	7.0	
			Table %		5.4	45.9	0.2	0.3	
		<i>7kl-10kl</i>	Count		17.0	227	6.0	6.0	
			Table %		0.8	10.2	0.3	0.3	
<i>11kl-20kl</i>		Count		9.0	57.0			4.0	
		Table %		0.4	2.6			0.2	
<i>21kl-30kl</i>		Count		17.0	34.0				
		Table %		0.8	1.5				
<i>Above 30kl</i>		Count			8.0				
		Table %			0.4				
R1001-R2000	<i>0-6kl</i>	Count		28.0	270				
		Table %		1.3	12.2				
	<i>7kl-10kl</i>	Count		6.0	45.0				
		Table %		0.3	2.0				
	<i>11kl-20kl</i>	Count			27.0				
		Table %			1.2				
R2001-R3000	<i>0-6kl</i>	Count			17.0	4.0			
		Table %			0.8	0.2			
	<i>11kl-20kl</i>	Count						4.0	
		Table %						0.2	
	<i>Above 30kl</i>	Count			1.0				
Table %				0.0					
R3001-R4000	<i>0-6kl</i>	Count			2.0				
		Table %			0.1				
	<i>7kl-10kl</i>	Count				11.0	6.0		
		Table %				0.5	0.3		
R5001-R6000	<i>0-6kl</i>	Count		37.0					
		Table %		1.7					
R6001-R7000	<i>Above 30kl</i>	Count		13.0					
		Table %		0.6					

From the above table 5.29, 46% of the respondents in this sample get 6kl free water, earn under R1000 and use 0 - 6kl water per month. 5.4% of the people get 4kl free water per month earn under R1000 and use 0 - 6kl water per month. The free water policy has affected more of the respondents who earn under R1000 and get either 4 or 6kl free water per month and use up to 0 - 6kl water per month. 10.2% of the respondents in the sample, who earn under R1000, get 6kl free water per month use between 7 - 10kl water per month.

Appendix D gives the summary of statistics for the household survey (questionnaire). It gives a summary of mean, median and mode for each question in the questionnaire.

5.3 REPORT ON INTERVIEWS WITH SCHEME MANAGEMENT

5.3.1 Debtors' Supervisor Interview

The information presented below was a discussion between the researcher and Umgeni Water Debtors' supervisor.

The problem that Umgeni Water faces at the moment is the non-payment of water in the Vulindlela area. Currently there are 90% of the households at Vulindlela who are due for water disconnection or restriction (9 900 households) taking into account that there are 11 000 households with yard taps in the area. These accounts have been outstanding for 90 days and even longer (Debtors Section, Umgeni Water, 04 November 2003). The reason why Umgeni Water has not restricted them is because Umgeni Water does not have the manpower to go and disconnect those that are due for disconnection. This implies that only 10% of the households in Vulindlela are paying for the water used. This translates to only 1100 households.

The legislation does not allow people to be disconnected. *"We cannot deprive people of basic water supplies. Where there are problems, the municipalities may restrict flow to the free basic water level rather than cutting it off completely. But people who use more than their free basic allowance have to pay and if they don't, they will face restrictions"* (Ronnie Kasrils Budget Vote Speech, 6 June 2003). The only alternative Umgeni Water has, is to restrict the water flow using restriction washers. The situation may get out of hand if Umgeni Water continues with these restrictions/disconnections. There may be political interferences from political parties and local plumbers may be in danger of being attacked or there may be vandalising of the infrastructure. The solution to this is that Umgeni Water must concentrate on bulk supply and hand over the reticulation to the local municipality concerned.

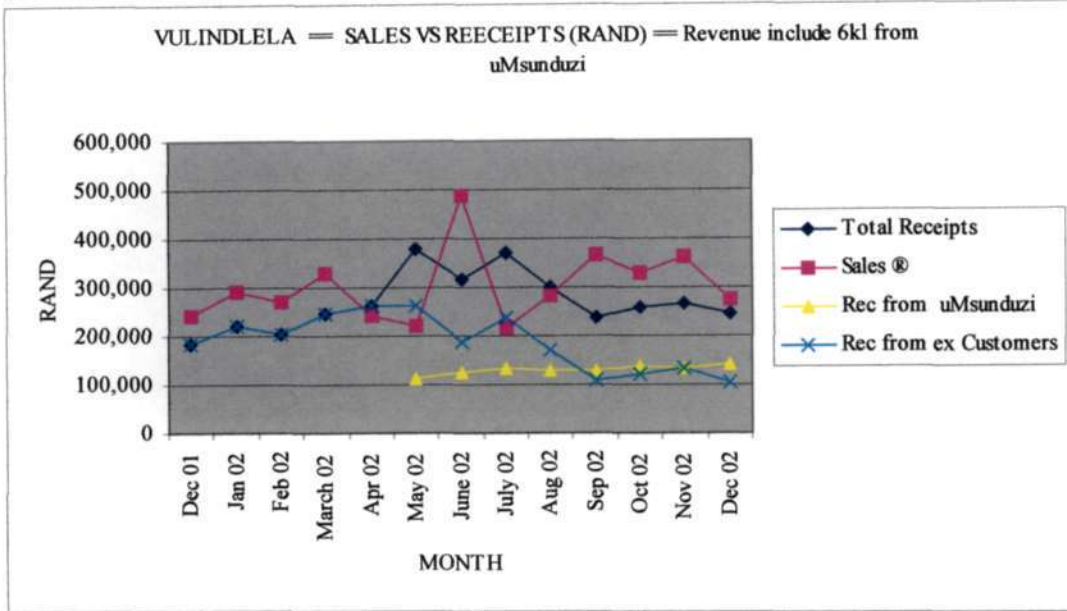
The scheme should have been handed over to Msunduzi Municipality as from 1st July 2002, he said. The Msunduzi Municipality has asked Umgeni Water to continue with the operation and maintenance of the scheme and Umgeni Water will invoice them on the agreed amount on a monthly basis. The amount is unknown at this stage as negotiations are on the table.

The Vulindlela Community is currently paying a tariff of R6 –08/kl. Umgeni Water recovers only the operation and maintenance costs. Interest and depreciation is not covered by sales. Umgeni Water can only charge the use of his assets once the scheme has been transferred to Msunduzi Municipality.

One of the shortcomings about the scheme is that it was over designed and under utilised such that the retention time of water in the reservoirs is too long, he said. This sometimes leads to manual dosing of the reservoirs using sodium hypo-chlorite (HTH) and ammonium hydroxide solutions.

In relation to the free 6kl water that is given to the community, there has been a drop in water sales to the Vulindlela area. Data in figure 5.28 below was collected from Dec 2001 to Dec 2002 and graphed as follows:

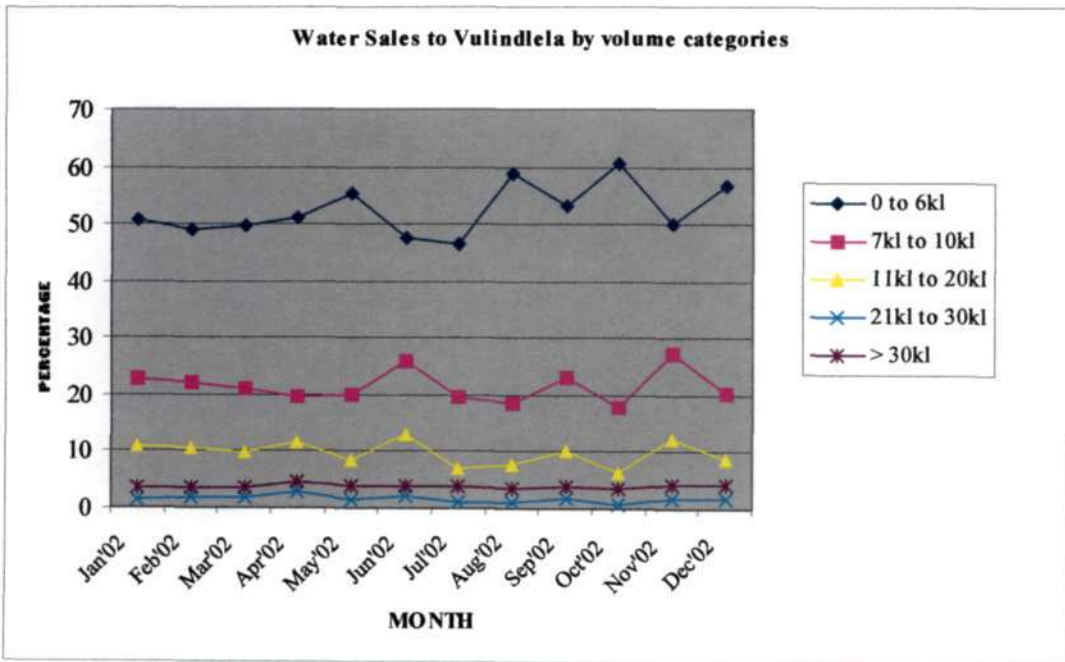
Figure 5.28: Vulindlela Sales vs. Receipts



The yellow line (rec from Msunduzi) indicates that the 6 kilolitre free water was implemented in May 2002 and Msunduzi Municipality is paying Umgeni Water every month. The pink graph (sales) shows a drop in sales (overall) caused by the free water policy which was implemented in May 2002. The blue graph (total receipts) indicates the drop in receipts due to the free water policy which was implemented in May 2002.

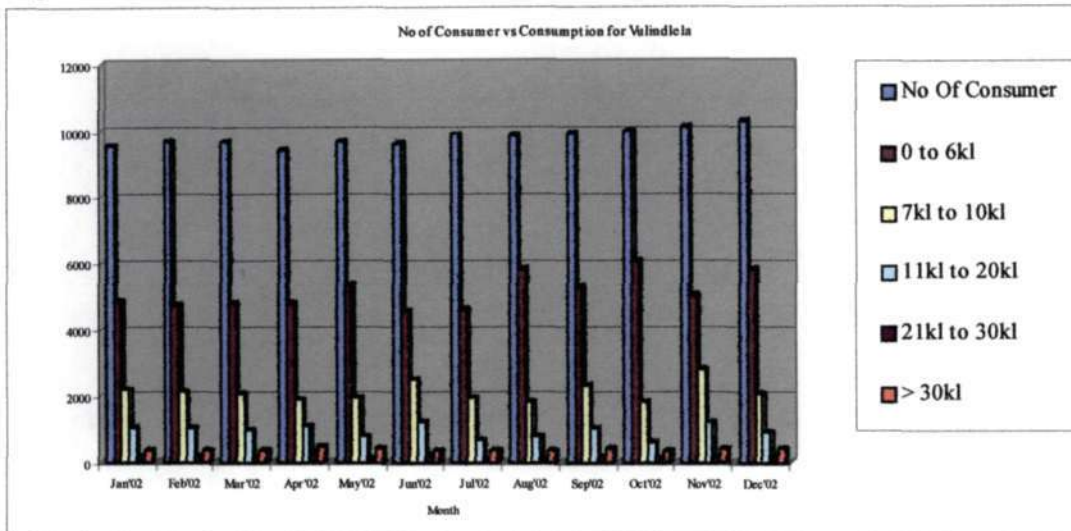
Summary: Not everybody appreciates that free basic water is only up to 6 kilolitres as there is a decrease in the number of total receipts.

Figure 5.29: Water Sales to Vulindlela



The blue line (0 – 6kl) on figure 5.29 above indicates that since the introduction of the free water policy in May 2002, there has been an increase in volumes of water sold from 50% to about 60% on average. This shows that the majority of the Vulindlela Community is using 0 – 6kl and the sales have gone up by 10% on average (0 – 6kl). Hence Vulindlela Community understands the free basic water policy. It is also interesting to note that there has been a steady percentage increase for consumers using 7 – 10kl (pink line on figure 5.29). The 11 – 20kl (yellow line) has decreased steadily with the introduction of the free basic water policy. The 21 – 30kl (brown line) and above 30kl have not changed much with the introduction of the free basic water policy.

Figure 5.30: Number of consumers vs. consumption



From figure 5.30 above, on average 6000 consumers are using less than 6 kilolitres per month out of 10291 (December 2002) consumers in the Vulindlela area. 58% of the Vulindlela Community is making use of the free basic water policy. 21% of the Vulindlela Community is using 7 - 10kl per month. 10% of the Vulindlela Community is using 11 - 20kl per month. 6% are using 21 - 30kl per month and only 5% use above 30kl per month.

The overall picture about figure 5.30 above is that there are very few high water consumers in the Vulindlela area. This might be caused by the fact that there are no formal industries and large scale farming in the area. The lack of industries and farming in the area has aggravated the high rate of unemployment, the Chairman of VWSC said.

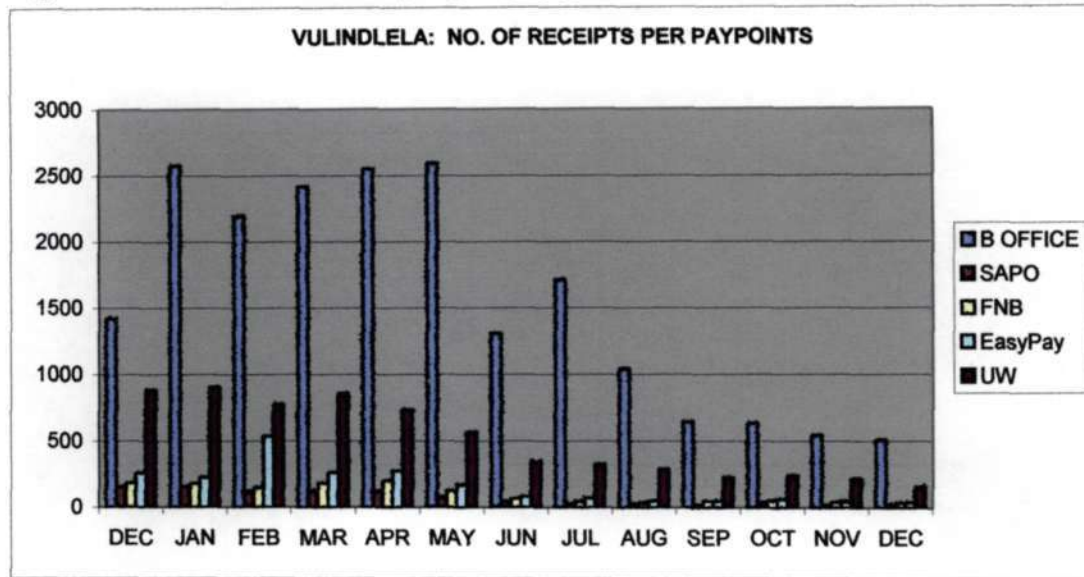
Figure 5.31: Number of receipts per pay points

Figure 5.31 above represents the payment centres from December 2001 to December 2002. The figure above indicates that most payments are made at branch offices. There has been an 80% decrease in the number of receipts that are paid at branch offices since the introduction of the free basic water policy.

The majority of the Vulindlela Community are using less than 6kl per month but also there are people who think that the free basic water policy means that they need not pay for water used. A lot of effort will be needed in future to educate the community about payment of water used above 6kl per month. This figure also shows the increase in arrears, as the majority have not paid their outstanding accounts, some dating back as far as the free water policy was introduced in May 2002.

5.3.2 Chairman of VWSC Interview

The researcher conducted the interview with the chairman of VWSC at his house in Vulindlela. The chairman believes that the objectives of the scheme were met and even exceeded, in that the walking distance is within 50m in all the households with yard taps. According to him the scheme has empowered many people within the Vulindlela area especially women and youth. 80% of Branch Officers are females and 65% of local plumbers are male youth, he said. Job opportunities were created for the Vulindlela Community during and after the construction phase, which included local contractors, local men, women and youth. The community skills and capacity were developed in the plumbing, meter reading areas and the running of the branch offices by Branch Officers. Local contractors have been trained in laying the pipes and fixing minor leaks in the area.

The chairman also felt that the Vulindlela Water Scheme could act as a prototype model in meeting objectives in similar RDP Projects. All that was done in this project can be implemented as a system of core values for future implementation. The Vulindlela Community are proud of the scheme and they are ready to take the ownership from Umgeni Water.

Asked about the low figures of households with yard taps, the chairman emphasised that it was due to economic factors, citing high rate of unemployment as a major contributor to this effect. Although the scheme helped to alleviate poverty during the construction phase, today the situation has not changed much. The unemployment rate is on the increase as there are no business ventures or large scale farming in the area. *“People in the Vulindlela area cannot afford to pay R600-00 connection fee as the majority of them depend on the government grants for survival”* Chairperson of the VWSC said.

Regarding the cost recovery (O & M) on the scheme, the chairman had not much to say as he was not aware that the community has a responsibility to pay for such a service. He thought it was Umgeni Water responsibility to maintain the O & M of the scheme.

About the free water policy, the chairman was excited in that the majority of households are benefiting from the policy. He mentioned that the field workers educated the community in the year 2001 about the free water policy. The community were told to fill in 200 litre drums everyday in order to fall within 6 kilolitres. The majority of households are doing that on a daily basis and there has been a change in the consumption patterns. The whole community especially the poor are benefiting from the policy, he said. Some households have not paid for water as far back as in September 2001 because they are using less than 6 kilolitres of water per month, he said.

The Branch Officers are performing at their best to address and solve the problems faced by the scheme. The VWSC is paying the salaries of the Branch Officers, telephone and electricity costs. The VWSC is getting 25% of the total funds collected at the branch offices and they use that to pay the Branch officers and other costs involved in running the branch offices.

5.3.3 Branch Officers' Interview

The objectives of the scheme and the RDP standards were communicated to the Vulindlela Community in the early stages of the construction phase of the scheme. The Vulindlela Executive Committee (VEC) members, who were representing five tribal authorities, had to report to their constituencies or structures the main ideas of the initiation of the scheme, all Branch Officers confirmed that it was done. They said that the objectives of the scheme and the RDP standards were exceeded because the yard taps are within 50m walking distance in all the households in the Vulindlela area.

The Branch officers were interviewed about the current problems facing the scheme (research question 3); their responses were the following:

- Most people in the Vulindlela area are unemployed and hence they cannot afford to pay for water used. This could lead to the disconnection of most households. The break-ins in the branch offices and vandalizing of property increased recently because of the high rate of unemployment in the area.
- There are no computers in the branch offices; as a result the Vulindlela community is not getting their statements on time since there are always delays from Umgeni Water (Debtors Department) in giving Branch Officers the “age analysis”.
- There are delays in the connection of new applicants after they have paid the full connection fee. Sometimes the material (meter box, meter and valve) is not available from Mkondeni stores. It takes up to 3 months to be connected, which is too long and unacceptable to the community.
- There is confusion about the “free water policy” Most people think that they do not have to pay for the water used. Also, since the “free water policy” was introduced, there has been a decrease in the amount of cash that the Branch Officers collect on monthly basis. This is an indication that most people are using under 6 kilolitres of water.
- Umgeni Water does not give prior notice for disconnecting those people who have outstanding amounts. Neither does it communicate with relevant Branch Officers to notify them. Also, when there are pipe repairs, Umgeni Water fails to notify the community that they will be without water for a certain number of hours or days so that they can make contingency plans, hence there is lack of communication.

With regards to the community involvement in the running of the scheme (research question 4), Branch Officers unanimously stated that they have been trained in the running of the scheme, cited a number of courses that they have attended such as finance and bookkeeping, asset management and monthly workshop meetings.

The maintenance and breakdowns attendance by Umgeni Water (research question 5), all Branch Officers were happy with the service from Umgeni Water. Umgeni Water responds within 48 hours if there is a pipe burst or leaking water or a problem with the meter. But they were not aware that they as Vulindlela Community needed to pay for such a service.

The education of community on the free basic water happened in 2001 where field workers were hired by Umgeni Water to educate only those households with yard taps. The households consumption patterns have changed with the introduction of the free water policy (figure 5.29) especially those households using 0 – 6 kilolitres (research question 6).

Other comments that they all agreed upon were:

- The Vulindlela Community is using the branch offices for payment of accounts, reporting of water leaks, queries relating to their accounts and application for new connections. They liaise with Umgeni Water Debtor's department regarding the late arrival of statements and age analysis.
- The Branch Officers attend meetings and workshops every month to help them in solving water-related problems and queries from the Vulindlela Community.
- They unanimously stated that there has been a decrease in the number people paying account at the branch offices since the free basic water policy was instituted (figure 5.31). Also the amount of cash they collect on weekly basis has decreased, which varied from 10% to 30% in some branch offices.
- Some of the community without water were concerned about the high connection fee that Umgeni Water charges and they were suggesting that at least Umgeni Water should allow them to pay the connection fee in three instalments of R200-00 each. They may be connected once the first R200-00 has been paid.

CHAPTER 6

DISCUSSION

6.1 INTRODUCTION

The purpose of this chapter is to link findings of Chapter 5 with literature review in Chapter 2. This chapter is divided into three sections:

- Interpretation of results,
- Conclusions, and
- Recommendations.

6.2 INTERPRETATION OF RESULTS

6.2.1 The objectives of the Vulindlela Scheme

One of the objectives of this study was to find out whether the Vulindlela Water Scheme met the objectives as laid down in the beginning of Chapter 2. The findings from Chapter 5 indicate that the objectives were met and even exceeded. Households have yard taps within 50m walking distance, while the normal walking distance should be within 200m.

64% of the respondents in the household survey felt the objectives of the scheme were met while 33% said "No". The 33% was caused by the fact that some of the respondents failed to understand the question and the low level of education. The findings in Chapter 5 states that the objectives were communicated to the community through the VEC members before the construction phase of the scheme started. It may happen that some respondents have forgotten what happened 7 years ago or some respondents arrived after the objectives had been communicated. The Branch Officers and the chairman unanimously stated that the objectives were even exceeded, citing a 50m walking distance in all the households with yard taps.

The provision of job opportunities, development of skills and capacity and the uplifting of people through training were achieved with the Vulindlela Scheme. 90% of the respondents in the household survey felt that job opportunities were created for locals during the construction phase. Only 9% felt "No". The chairman felt that job opportunities were created for the community during and after the construction phases. 80% of Branch Officers are females and 65% of local plumbers are males, the chairman said. The community skills and capacity were developed in the plumbing, meter-reading areas and in the running of the branch offices, the chairman said. Also, local contractors have been trained in laying the pipes and fixing minor leaks in the area.

Based on the above-mentioned facts, one can conclude that the objectives of the scheme were met and somehow exceeded.

6.2.2 Reconstruction and Development Programme (RDP) Standards

At the grassroots level, there is a limited formal knowledge of the Growth, Employment and Redistribution (GEAR) framework and its prescriptions. Instead, the Reconstruction and Development Programme (RDP) and its principles remain as the beacon for mobilisation, organisation and planning. Conceived as a blueprint for the manufacture of a post-apartheid society, the RDP was an ambitious programme to meet the socio-economic needs of communities that have come to be termed “previously disadvantaged” (Rural Development Services Network, 2002). The RDP focuses on several strategic areas, including human resources development, economic restructuring, and provision of mass infrastructures and services, and job creation [Congress of South African Trade Union (COSATU) President, World Economic Forum, Johannesburg, 12 May 1995].

The standard of the RDP projects in the rural water supply was: **“to have potable water within 200m walking distance and secondly, women and youth involvement, empowerment and development of skills in rural water supplies”** [White Paper on the Reconstruction and Development Programme (WPRDP), 1994].

Question 19 on the questionnaire witnessed the fact that the community was aware of the RDP standards. 83% felt that the RDP standards were met and only 16% said “No”. The 16% respondents may have been caused by the fact that some respondents have forgotten what the RDP standards were. Question 23 on the households survey indicated strong response towards the fact that locals especially women and youth were and are involved in the running of the scheme. Development of skills was also an RDP standard. Question 22 indicates that 70% of the community were positive in that they have been trained to run the scheme. The Branch Officers and the chairman also felt that the RDP standards were met and these standards were communicated to the community through the Vulindlela Executive Committee by the Umgeni Water Rural Planning Officers before the Vulindlela construction phase started.

The RDP standards were met in that the yard taps are within 200m walking distance. The Vulindlela Community was trained and developed in running the scheme and job opportunities were created for locals including women and youth empowerment in the area.

6.2.3 How to meet objectives in similar RDP Projects?

The Vulindlela Water Scheme could act as a possible prototype model in meeting RDP objectives in the future. All that was done in this project can be implemented as a system of core values for future implementation. There are however concerns regarding this project:

- The size of the scheme was exaggerated, over-designed (too big), and hence under-utilised and currently has revenue short falls (Debtors’ supervisor, 2003).
- Cost recovery in the O & M exists, but interest and redemption are not covered by sales.

- Low consumption patterns with 58% of Vulindlela households using 0 – 6kl per month (figure 5.30). This is typical of other schemes where people do not have in-house plumbing. Vulindlela community mainly use water for cooking and drinking purposes (question 11 on the questionnaire).

The local community involvement especially women and youth must be encouraged to participate in decision making from the project design stage until the implementation stage. The local community can be proud of the scheme and take ownership through women and youth empowerment, and involve them in all decision-making processes throughout the phases of the project.

6.2.4 Current challenges facing the Scheme

The Branch officers were interviewed about the current problems facing the scheme; their responses were the following:

- Most people in the Vulindlela area are unemployed and hence they cannot afford to pay for water used (above 6kl). This could lead to the disconnection of most households in the area. The break-ins in the branch offices and vandalizing of property increased recently because of the high rate of unemployment in the area.
- There are no computers in the branch offices; as a result the Vulindlela community is not getting their statements on time since there are always delays from Umgeni Water (Debtors Department) in giving Branch Officers the “age analysis”.
- There are delays in the connection of new applicants after they have paid the full connection fee. Sometimes the material (meter box, meter and valve) is not available from Mkondeni stores. It takes up to 3 months to be connected, which is too long and unacceptable to the community.
- There is confusion about the “free basic water policy” Most people think that they do not have to pay for the water used. Also, since the “free basic water policy” was introduced, there has been a decrease in the amount of cash that the Branch Officers collect on monthly basis. This is an indication that most people are using under 6 kilolitres of water.
- Umgeni Water does not give prior notices for disconnecting those people who have outstanding amounts. Neither does it communicate with relevant Branch Officers to notify them. Also, when there are pipe repairs, Umgeni Water fails to notify the community that they will be without water for a certain number of hours or days so that they can make contingency plans, hence there is lack of communication from the Umgeni Water side.

The chairman also reiterated the high rate of unemployment in the area as one of the challenges facing the scheme. The unemployment rate is on the increase as there are no business ventures or large scale farming in the area, he said. The unemployment in the area has a negative impact on the payment of water accounts.

The statement above is supported by the discussion with debtors' supervisor where he mentioned that there are about 90% households in the Vulindlela area who are due for disconnection/restriction. One has to remember that the 90% are households using more than 6kl, as households using less than 6kl/month are not billed.

6.2.5 Cost Recovery

The principle of full cost-recovery or user pay was adapted by the market-approach and is based on the idea of economic efficiency, meaning that consumers must pay the O & M costs of the scheme and the capital costs of water systems (McDonald, 2002). The Vulindlela Scheme is one of the Presidential Schemes on the RDP. Umgeni Water recovers only the operation and maintenance costs. Interest and depreciation is not covered by sales. Once the Scheme has been transferred to Msunduzi Municipality, it is only then that Umgeni Water can charge for the use of its assets. There are negotiations taking place currently between Umgeni Water and Msunduzi Municipality, as the Scheme should have been handed over on 1st July 2003. Msunduzi Municipality has asked Umgeni Water to continue with the O & M of the Scheme and Umgeni Water will invoice them based on the agreed amount on a monthly basis, which is unknown at this stage as negotiations are on the table (Debtors' supervisor, 2003).

The Vulindlela Community is currently paying a tariff of R6-08 per kilolitre. This tariff excludes the capital costs, and also interest and depreciation is not covered by sales (Debtors' supervisor, 2003). The whole Vulindlela Community is benefiting because Umgeni Water has run the scheme as a social responsibility and not as a business entity. 27% of the respondents pay an average bill of R0 – R5 (Question 12 on the questionnaire). This indicates that the free water policy is working and households are using less than 6 kilolitres per month.

From the Branch Officers and the Chairman interviews, it is worth noting that the community is not aware that they need to pay for the operation and maintenance of the scheme. They think it is Umgeni Water' responsibility to absorb these costs including the capital cost of the scheme.

The actual total expenses differ from the planned total expenses by 4% (table 5.27). The high total expenses are caused by the high interest rate (R18.3) and the high depreciation/immovable (R7.7). These figures were obtained from the Income and Expenditure Report for June 2003 (Appendix E).

6.2.6 Free Basic Water Policy

77% of the respondents understand the free basic water policy (Question 13 on the questionnaire). This is because Umgeni Water took an initiative to educate the Vulindlela Community about the free water policy. Umgeni Water employed field workers to visit all households with yard taps in the area to educate them about the policy. Unfortunately they did not include people without yard taps. The 20% response from the respondents comes from those people who do not have yard taps. Umgeni Water should have included every household in the area **as the case with this study**. The questionnaire in this study included households with or without yard taps. The reason for including the households without yard taps was to make this survey representative of the whole Vulindlela Community.

78% of the respondents know that one gets 6 kilolitres free water per month (Question 14 on the questionnaire). Also, 73% of the respondents know that it is the local municipality that is paying for the free water (Question 15 on the questionnaire). This indicates the work well done by the field workers who were employed by Umgeni Water to educate the community.

There is evidence that since the introduction of the free basic water policy, 58% of the households are using just under 6 kilolitres per month (Question 10 on the questionnaire). This was the main concern for the Branch Officers. They unanimously stated that the policy has decreased the amount of cash they take on a daily basis since most people are no longer invoiced because they use less than 6 kilolitres per month and figure 5.30 confirms the statement above. There are very few high water consumers in the area. This might be caused by the fact that there are no formal industries and large scale farming in the area. The lack of industries and farming has aggravated the high rate of unemployment in the area, the chairman said.

Some people also think that they do not have to pay for the water used and that has resulted in an increase in the number of consumers with unpaid or outstanding accounts (figure 5.28). This increase in the number of consumers with outstanding accounts is a problem to the Branch Officers' since they fear that they might lose their jobs. The amount of cash they collect monthly have decreased significantly since the introduction of the free basic water policy.

The free water policy is one of the ways of ensuring poverty eradication. If one looks at the Vulindlela area, the average number of dependants living in the household is between 4, 7 and 8 (Question 5 on the questionnaire). 17% of the respondents have dependents of 7, 14% have dependents of 8 and 13% have dependents of 4. This averages to 6.4 persons per household in the Vulindlela area. The question that one may ask is whether the 6 kilolitres is sufficient for such large families? The answer is definitely No! There are criticisms raised against the free basic water policy in that 6kl free water/household/ month is not sufficient (McDonald, 2002a). In cases like Vulindlela, where there is an average household size of 6.4 people, 90% of the households are due for disconnection because of the outstanding accounts that have not been paid.

The reality is that there are some people who are benefiting from the free basic water policy but some are not because their income is very low (below R1000-00 per month). Hence, not all Vulindlela Community appreciate the 6 kilolitre free water and it is the reason for growing arrears of outstanding accounts. This could lead to a situation where cut-offs or restriction might be implemented and hence the effect of the policy would have been less than hoped for.

The Branch Officers were concerned about the non-payment of water in the Vulindlela area. This has been aggravated by the free water policy, they said. The reason for the non-payment of water in the area is affordability. 69% of the community live below R1000-00 per month (Question 6 on the questionnaire). This is a reality of the conditions under which the Vulindlela Community is living. People have to choose between paying for water and buying food. The reality is that the majority of the Vulindlela Community is prepared to pay for water, but they lack the ability.

70% of the survey respondents have yard taps and only 30% have not (Question 7 on the questionnaire). But in reality the researcher knows that there are only 40% households in the entire community with yard taps and 60% without yard taps (Sirenya, 2003).

There is high rate of unemployment, low incomes (Question 6 on the questionnaire), low level of education (Question 4 on the questionnaire) and most of the respondents are senior citizens (Question 3 on the questionnaire), who are relying on government grants for survival. It is interesting to note that those who have no yard taps in their households were prepared to have yard taps within 0 – 6 months (Question 9 on the questionnaire). This is because people have heard that Msunduzi Municipality borders will be extended to include the Vulindlela area, and hence people anticipate that the connection fee will increase from R 600 -00 to R 1 200 -00 when the Municipality takes over. This was also confirmed on the interview with the Branch Officers and the Chairman of VWSC.

Also, 8% of the respondents indicated that they would never put a yard tap in their households (Question 9 on the questionnaire). One has to look at the current situation in the Vulindlela area. Affordability is a problem in this area, as most of them cannot afford to pay R600 -00 for water connection (chairman's interview). One has to choose between getting water and putting food on the table. The choice is that they would rather have food and get water either from neighbours or from the springs/wells. 14% of the respondents indicated that they get water from the nearest springs and wells, 11% are getting water from neighbours and 4% from the river. One should note that there are 160 protected springs in the Vulindlela area and Umgeni Water upgraded these before the scheme was initiated. One should expect some of the households in the Vulindlela area not to have yard taps because of other secondary reliable sources of water available to them.

The introduction of the free basic water policy in the area has had an impact on the household consumption patterns. There has been an increase in the number of consumers using 0 – 6kl per month (figures 5.29 & 5.30). It is interesting to note that the total number of consumers in the area has not increased with the introduction of the free water policy. There has been a steady increase (3%) in the number of consumers from 9978 to 10291 between May 2002 and December 2002 (figure 5.30). This steady increase is caused by the fact that some households have secondary reliable sources of water (springs, wells and getting water from neighbours).

The sales have decreased overall with the introduction of the free water policy (figure 5.28, pink line) except in the month of June 2002. There has been a significant decrease in receipts due to the free water policy implementation as from the May 2002 (figure 5.28, blue line). This is caused by the fact that households using less than 6kl are not billed, hence a decrease in the number of receipts.

It is also interesting to note that there has been a steady increase in the number of consumers using water from 7 - 10kl per month (figure 5.29, pink line). The consumers using 11 - 20kl per month have decreased steadily with the introduction of the free water policy (figure 5.29, yellow line). The consumers using water from 21- 30kl and above 30kl per month have not changed much with the introduction of the free water policy (figure 5.29, maroon line and light blue line).

The above evidence shows that the consumption patterns have changed significantly with the introduction of the free basic water policy. The incomes of the Vulindlela Community has not changed because of unemployment, high number of dependents, low levels of education and low monthly incomes (Questions 4, 5 and 6 in the questionnaire), and most of the households bread winners are senior citizens who depends on the government grants for survival.

6.3 CONCLUSIONS

The Department of Water Affairs and Forestry (DWAF) has moved at great speed to correct the imbalances of the past. But monitoring and evaluating projects and new institutional solutions as well as encouraging public participation require time, which has been in short supply. In community water supply, the high speed of delivery has ensured new supply systems in many areas, but local institutional strength and human resource capacity remain in dire need of support. The sustainability of water supply projects is related to the appropriateness in matching service levels to ability and willingness to pay. The conclusions that follow below are based on the research questions on the objectives of the study:

To what extent were the objectives of the Vulindlela Water Scheme met?

One of the key goals of the Vulindlela Scheme was a sustainable potable water supply of 20 - 30 litres/capita/day within 200m of every home by means of a people-driven programme. The households with yard taps are getting 6 kilolitres free water every month and the Msunduzi Municipality is paying Umgeni Water for this free basic water provision to Vulindlela community through the equitable share grant that municipalities receive from the government. However, the reality of the scheme is that every household has not yet received water. There are only 40% of the Vulindlela households with yard taps and one can conclude that only 40% of the Vulindlela Community definitely receive water within 200m walking distance. There are 60% of Vulindlela households with no yard taps (Sirenya, 2003). The reasons for such a low number of households with yard taps are that most of the Vulindlela Community live below R1000-00 per month on income. Secondly, some of them are getting water from the springs and wells, which were upgraded by Umgeni Water before the scheme was initiated and some get water from their neighbours. This means that Vulindlela Community has other reliable sources of water besides the scheme. There is little hope that there will ever be 100% household connections within the Vulindlela area but at least 60% might be targeted in future.

How to meet these objectives in similar RDP projects in future?

The Vulindlela Water Scheme (VWS) could act as a possible prototype model for similar RDP projects in that:

- The Scheme improved the quality of life for many in a short period of time. This can be witnessed by the fact that there was no cholera incidences reported since the inception of the Scheme (Zungu, 2003).
- The Scheme has provided a high quality of water and a reliable water service to the Vulindlela Community.
- The partnership between the community, government institutions and Umgeni Water laid a foundation for growth and development. At some branch offices, the Post Office has installed boxes for the community to receive their mail from.

The only concern about the scheme is that it was over-designed and is under-utilised at this stage (taking into considerations that only 40% of the Vulindlela households are connected to date). The number of household connections might increase in future but with the HIV/AIDS pandemic and poverty on the increase, this is unlikely to happen. The population was expected to increase by 2010 to 310 000 from 210 000 but with the pandemic this population will stagnate and remain at 210 000 by 2010 (Durban Metropolitan Transport Advisory Board Demographic Projections, 1996). In future a feasibility study must be conducted to determine the number of consumers that will be utilising the scheme. The ability/willingness to pay from the community must be done to ensure the sustainability of the scheme.

What are the current challenges/obstacles facing the Scheme?

The current problems facing the Scheme are numerous as findings from Chapter 5 indicate. The following problems were identified:

- Most people in the Vulindlela area are unemployed and hence they cannot afford to pay for water used. This could lead to the disconnection of most households. The break-ins in the branch offices and vandalizing of property increased recently because of the high rate of unemployment in the area.
- There are no computers in the branch offices; as a result the Vulindlela community is not getting their statements on time since there are always delays from Umgeni Water (Debtors Department) in giving Branch Officers the “age analysis”.
- There are delays in the connection of new applicants after they have paid the full connection fee. Sometimes the material (meter box, meter and valve) is not available from Mkondeni stores. It takes up to 3 months to be connected, which is too long and unacceptable to the community.
- There is confusion about the “free water policy” Most people think that they do not have to pay for the water used. Also, since the “free water policy” was introduced, there has been a decrease in the amount of cash that the Branch Officers collect on monthly basis. This is an indication that most people are using under 6 kilolitres of water.
- Umgeni Water does not give prior notice for disconnecting those people who have outstanding amounts. Neither does it communicate with relevant Branch Officers to notify them. Also, when there are pipe repairs, Umgeni Water fails to notify the community that they will be without water for a certain number of hours or days so that they can make contingency plans, hence there is lack of communication.

A partnership between the community, Umgeni Water and Msunduzi Municipality might be a vehicle in solving such problems. Umgeni Water must hand over the scheme to the local municipality in accordance with the Municipal Systems Act and the community has an obligation to work with the local municipality in solving these problems. There is a strong sense of community involvement including women and youth in the running of the scheme. The creation of job opportunities for locals in the area might help in the alleviation of poverty and unemployment.

How has the implementation process gone with respect to the community involvement?

The provision of job opportunities, development of skills & capacity building and the uplifting of the people through training have been achieved with the scheme. The following are the facts supporting the above statement:

- All unskilled labour (men, women and youth) required for the project were recruited from the Vulindlela area.
- The spring protection programme undertaken by local contractors.
- 4 out of 11 Bulk Supply contracts were awarded to locally emerging contractors.
- Local sub-contractors constructed all reticulation pipe-work.
- The branch offices were built by emerging local contractors.
- Local contractors did all the water connections.
- Local contractors do meter readings.
- Local plumbers do water connections.
- Branch Officers who are employed from the local community process application forms; handle billing queries and collection of money.
- There is now more productive use of time by women instead of wasting it collecting water.

Umgeni Water has committed itself in the training & development and capacity building of this community.

How have the actual operation and maintenance costs worked out in practice related to planned O & M costs?

Operation and maintenance (O & M) costs of the scheme expenses are high because of the interest and redemption charged on the capital project of the scheme [Income and Expenditure Report 2002/2003 (Appendix E)]. Umgeni Water is not charging the community the O & M costs and also the interest and depreciation is not charged because the Vulindlela Water Scheme was initially seen as a social responsibility project. For the Msunduzi Municipality to sustain the scheme, they need to recover the O & M costs plus the interest and depreciation costs from the community. Currently the Vulindlela Community is paying R6.08/kl, and this might change on initiating the recovery costs as other RDP schemes are charged the interest and depreciation costs in the tariff and also capital costs.

The financial aspects of water provision are about cost-recovery policies for water services. This means that water users must pay for all the costs related to water systems, including capital expenditure and O & M costs. The O & M costs are increasing as the infrastructure gets older. The projected O & M cost for the year 2003 was R2, 854,932 and the actual cost was R3, 568,420 for the Vulindlela Scheme. This increase is caused by a number of breakdowns on the reticulation of water in the area.

How has the free basic water policy affected consumption patterns and income?

The consumption patterns have changed significantly with the implementation of the free basic water policy (FBWP). Most consumers are using less than 6 kilolitres per month. There was 10% increase in the number of consumers using 0 – 6kl. Contrary to this, the number of consumers with outstanding balances increased with the introduction of the free basic water policy. Some consumers think that they do not have to pay for water irrespective of how much they have used. The non-payment of services is something that the local municipality has to work on and it might need to hold community meetings where the Vulindlela Community is told about the payment of water service.

In conclusion, it is obvious that the delivery of water to poor rural areas will not always be attractive. The poverty is too entrenched and in many instances, the willingness/ability to pay for water is much too low. The potential for cost recovery and dividends to shareholders is unrealistic in these poor communities; one has to look at other alternatives.

Umgeni Water and DWAF through the RDP have done a lot to bring clean water to the people of Vulindlela. It is important to note that Umgeni Water cannot continue with the running of Scheme forever. The municipality must eventually take ownership of the Scheme. Whether the Scheme is transferred to the local municipality or not, the Vulindlela Community has to take the ownership of Scheme in order to eliminate problems like vandalism, non-payment and politics in the area.

The scheme has improved the quality of life for many people in a short period of time. This is supported by the fact that there have been no cholera incidences that have been reported in the area of Vulindlela since 1998 when the scheme was officially opened (Dr Zungu, Community Health Officer). The scheme benefited the whole community in that women are spending less time in collecting water and they can use that time for childcare and in social and economic events. Local contractors, women and youth, all benefited from this project in that there were job opportunities created during and after the construction phase. It is noteworthy that 80% of Branch Officers are females and 65% of local plumbers are male youth (Thusi, 2003).

It is important to direct more responsibility and control towards community-based structures and greater consideration must be given to decentralised water management (Water Services Act 107 of 1997). The Act states that water is to be delivered by local government. The Act makes provision for management of water delivery at the lowest level i.e. Msunduzi Municipality in this case. Unless this happens, the considerable work of Umgeni Water will be compromised.

6.4 RECOMMENDATIONS

The following recommendations are based on the research questions as stated in the objectives of the study:

- Umgeni Water/Msunduzi Municipality must use local structures [Vulindlela Executive Committee (VEC), Vulindlela Water and Sanitation Committee (VWSC), local councillors, Branch Office Committee (BOC) and Izinduna/Amakhosi] to re-educate the community on the objectives of the scheme and the RDP standards for rural water supplies.
- Umgeni Water/Msunduzi Municipality must train the community on the followings: operation and maintenance, capital cost recovery and financial management of the scheme. This will help the community in understanding the core functions of running the scheme.
- Vulindlela structures especially councillors/Izinduna must encourage and educate the community to pay for the services (water, electricity and telephone) rendered to them. This will help on increasing revenue shortfalls.
- Msunduzi Municipality must be encouraged to provide or create job opportunities for the unemployed locals. The Vulindlela area has fallen under Msunduzi Municipality as from 1st July 2003 and hence Msunduzi Municipality has the responsibility to ensure poverty eradication in their area.
- For the scheme to be sustainable, Msunduzi Municipality must encourage consumers to pay outstanding accounts on regular basis. 90% of the Vulindlela households were due for disconnection/restriction because they have not paid their accounts (Debtors' supervisor, 2003).
- Community must be involved in all stages of the scheme development, including planning & organising, construction phase and in all decision-making processes.
- Local structures must encourage households without taps to pay the required connection fee, currently R600-00, so that the scheme can be better utilised by the majority of the community. With more consumers, there will be improvement in the quality of life for the majority of the people within the Vulindlela area. Also, Umgeni Water/Msunduzi Municipality must encourage more households to be connected into the scheme. The free basic water policy can be used as an incentive for more households to be connected.
- Msunduzi Municipality must educate the community continuously about the free basic water policy (FBWP) to emphasise that if one uses more than 6kl/month, a rate of R6.18/kl used is charged to the consumer. The FBWP only applies to consumers using less than 6 kl/month and the consumer only pays a basic charge which is R18.78. The Msunduzi Municipality can hire field workers to educate the entire community with or without yard taps.

- **Holistic, integrated water management is needed to ensure sustainability of the scheme. Government departments such as Health, Agriculture, Education, Sports & Recreation, DWAF and Business Enterprises could play important roles in alleviating poverty in the area. Clinics could be used to educating community on hygiene (washing of hands after using the toilet). Agricultural Advisors could help the community by encouraging them to plough vegetables in their gardens to alleviate poverty and unemployment and educate them about small-scale farming. Schools could be used to educate children about saving water. Youth could be encouraged to take part in sports. Business enterprises could also play an important role in the creation of job opportunities for the unemployed. The DWAF could play a role by involving local stakeholders in the formation of catchment management agency (CMA).**

CHAPTER 7

LIMITATIONS OF THIS STUDY AND RECOMMENDATIONS FOR FUTURE RESEARCH

7.1 INTRODUCTION

The purpose of this chapter is to discuss the limitations of this study and the recommendations for future research.

7.2 LIMITATIONS OF THE STUDY

There are various factors that need to be taken into account when interpreting and applying the results of this study.

7.2.1 Sample Representative

Despite efforts to get a demographically representative sample, for whatever reasons the field workers surveyed approximately 70% of the households with yard taps and 30% without yard taps. But in reality the researcher knows that in the scheme as a whole there are 40% households with yard taps and 60% without yard taps (Sirenya, 2003). The researcher expected more responses from the households without yard taps than with yard taps as they are in a majority. In this survey the opposite in fact happened.

7.2.2 Questionnaire

It was time consuming to analyse the data on the questionnaire. The questionnaire consisted of qualitative and quantitative questions. When analysing qualitative questions, the researcher found it time consuming. This was because content analysis had to be done and qualitative responses demand that one should tabulate and summarise responses cautiously and this was time consuming. Scoring of quantitative responses was also time-consuming, although statistical analysis helped the researcher to fast track the proceedings. Hence the research project took longer than anticipated.

7.2.3 Respondents' Income

The respondents' income was requested on the questionnaire although it is a sensitive and delicate issue. In this study, the respondents' income was used to determine their socio-economic status and as a yardstick to determine the ability/willingness to pay within the Vulindlela Community. It is of concern that 69% of the respondents are earning less than R1000-00 per month. Most of the respondents were pensioners or unemployed who relied on government grants for survival. Also the lack of formal job opportunities and the low levels of education in the Vulindlela area contributed to the very low incomes. Some respondents refused to answer the question about their income, which is a limiting factor for this study.

7.2.4 Budget for paying Field Workers

The questionnaire was in English and the respondents were all IsiZulu speaking and most could not read or write, hence there was a need to employ trained field workers. Their task was to ask the questions in IsiZulu and write down the answers as they are. The field workers translated the questions from English to IsiZulu and vice-a versa. There was a limited budget for paying field workers and that budget was made available through a Water Research Commission (WRC) funded project. The field workers were allowed to work three weeks including weekends to complete the survey. Although the field workers were trained to conduct the survey, the interpretation of words from IsiZulu to English may lose the meaning at the end. Some respondents were evasive, the field workers said.

7.3 RECOMMENDATIONS FOR FUTURE RESEARCH

The researcher hopes that the results and discussions presented in this study may stimulate further research and development in rural water supply schemes and also other RDP projects.

7.3.1 Service Delivery

In Africa, more than half of the population is without access to safe drinking water (World Bank, 2002). In South Africa alone, approximately 8 million people are without water and approximately 20 million without adequate sanitation (DWAF, 2002). The researcher believes that the lack of water is at the heart of the poverty trap as it is the poor who suffer most in terms of daily living conditions, disease and untapped economic opportunities. The South African government, through its reconstruction and development programme committed itself to provide every person with an adequate supply of water and sanitation.

The Water Services Act (Act 108 of 1997) makes provision for management of water and sanitation delivery at the lowest level. In the case of the Vulindlela Scheme, the lowest level for water delivery is the Msunduzi Municipality. Future researchers must be aware that the service delivery will no longer be handled by Umgeni Water, but instead the local municipality. According to Section 29 of the Water Services Act, Umgeni Water is mainly responsible for the provision of bulk water to the consumers.

7.3.2 Communication Structures

It is important to note that Vulindlela falls under 5 Tribal Authorities headed by Amakhosi. The elderly people in Vulindlela have strong belief in their traditional leaders, Amakhosi and Izinduna. The youth in the area believe that service delivery will be through the elected Councillors. It is recommended that future researchers to be able to communicate with both (Amakhosi/Izinduna and locally elected Councillors) structures available in the area. The other structures that future researchers need to communicate with are:

Vulindlela Executive Committee (VEC)
 Vulindlela Water and Sanitation Committee (VWSC)
 Branch Office Committee (BOC), and
 Msunduzi Municipality

7.3.3 Increased Intergovernmental Transfers

A more equitable distribution of public resources as guaranteed in our Constitution should be demanded. Part of this should involve increases in the equitable share grants allocated to local government. Future researchers should be aware that with more funds at local government level, backlogs and service delivery could be speeded up substantially.

7.3.4 Integrated Water Management

Integrated water management means that ring-fencing cannot be allowed and also not segregating water supply to urban and rural areas. In future there will be catchment management agencies (CMAs) responsible for the water and sanitation for the regions. The CMAs will help to support and ensure better water and sanitation delivery thus ensuring better quality of life for all.

7.3.5 Participation of Community

The participation by communities is important for the sustainable use of water. In future all stakeholders at a local level, i.e. governments, civil society, NGOs, the private sector need to work together in partnerships to ensure access to water for all.

7.3.6 Women and Water Delivery

The provision of water to rural households and the maintenance of family well-being relate closely to gender issues in South Africa. Rural mothers (and grandmothers) and their daughters invariably take exclusive responsibility for bringing water to the family and for family health. Women should be involved in all stages of the project because of the role they play and they also benefit most from water supplies.

Strategies should be put forward to empower women in water delivery. The following points are taken from Duncker 1998:37

- Women should be more involved in planning and operations as part of a strategy to build equitable society.
- Women involvement should be more than labour, should include access to resources, decision-making and management.

ACRONYMS

AIDS	: Acquired Immune Deficiency Syndrome
ANC	: African National Congress
BOC	: Branch Office Committee
CAPEX	: Capital Expenditure
CEO	: Chief Executive Officer
CMAs	: Catchment Management Agencies
COSATU	: Congress of South African Trade Union
DWAF	: Department of Water Affairs and Forestry
FBWP	: Free Basic Water Policy
FWP	: Free Water Policy
GEAR	: Growth, Employment and Redistribution
GWP	: Global Water Partnership
HIV	: Human Immune Virus
HTH	: Sodium hypochlorite
IFP	: Inkatha Freedom Party
kl	: Kिलolitre
m	: Million
NGOs	: Non-Governmental Organisations
NPV	: Net Present Value
NWC	: National Water Conservation
O & M	: Operation and Maintenance
PID	: Partners in Development
RDP	: Reconstruction and Development Programme
VC	: Vulindlela Community

VEC	: Vulindlela Executive Committee
VWSC	: Vulindlela Water and Sanitation Committee
VWS	: Vulindlela Water Supply
WRC	: Water Research Commission
WSA	: Water Service Authority
WSP	: Water Service Provider
WB	: World Bank
WCWBDP	: World Commission on Water and Business Partners for Development
WDS	: Water Demand Strategy
WHO	: World Health Organisation
WSDP	: Water Services Development Plan
WTP	: Willingness to pay
WWC	: World Water Council

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APPENDIX A

VULINDLELA QUESTIONNAIRE

1. Objective of Questionnaire

The objective of this questionnaire is to facilitate an investigation project as part of a dissertation in partial fulfilment of the requirements of the MBA degree in Water Management being undertaken through the University of Natal, Pietermaritzburg, by the student, Victor Hlophe

2. Title of Dissertation

An evaluation of the success of the Vulindlela Water Supply Scheme (VWSS).

3. Participation in Questionnaire

Vulindlela community are being approached for their assistance in completing this questionnaire.

4. Objective of Dissertation

- Ascertain the extent of Vulindlela Water Scheme objectives
- Meet the objectives in similar RDP projects in future
- The challenges/obstacles facing the scheme.
- Assessment of the implementation process with respect to community involvement.
- Assess the actual operation and maintenance costs in relation to the planned O & M
- Ascertain the extent to which the free water policy has affected the consumption patterns and income.

5. Information/Data source utilised to date

The Vulindlela Water Supply close-out report, operation and maintenance business plan.

Reconstruction and Development Programme Policy Framework Document.

Introduction to research

Developmental aspects of municipal infrastructure

World Economic forum Conference

Demographic projections

Free basic Water Policy

Municipal Systems Act

Water Services Act

National Water Act

White Paper on Water Supply and Sanitation

Planning and design Guidelines for Community Water Supply

Restructure Document - Umgeni Water

To: Participants in this Project:

Your participation in this Project, by giving of your valuable time, and sharing your knowledge and experience, is appreciated and valued.

V. HLOPHE

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MBA INVESTIGATION PROJECT

QUESTIONNAIRE

PARTICULARS OF VULINDLELA COMMUNITY/HOUSEHOLDS

Surname and Name:.....

Ward Number:.....

Tribal Area and iNkosi:.....

Address:.....

Telephone Number:.....

Branch Office Name/Number:.....

QUESTIONS

These questions will help us to understand how well our sample represents the Vulindlela community. Your answers are strictly confidential and will only be used for statistical purposes. You will not be identified in any way.

1. What gender are you?

- A Male
- B Female

2. What is your marital status?

- A Married
- B Single
- C Widowed
- D Divorced

3. What is your age?

- A Under 20
- B 20 – 29
- C 30 – 39
- D 40 – 49
- E 50 – 59
- F 60 – 69
- G 70 or over

4. What is the highest level of education that you have completed?
- A Primary school (SSA – STD 5 or Grade 1 – 7)
 - B Secondary school (STD 6 – 8 or Grade 8 – 11)
 - C Matriculation (STD 10 or Grade 12)
 - D College (Apprenticeship)
 - E Technikon or University
5. How many dependants, both adults and children (you included) live in your household?
- Number:.....
6. How much is your household monthly income before taxes? Please include all forms of income generated by individuals contributing to the household.
- A Refused to answer
 - B Under R1 000
 - C R1 001 – R2 000
 - D R2 001 – R3 000
 - E R3 001 – R4 000
 - F R4 001 – R5 000
 - G R5 001 – R6 000
 - H R6 001 – R7 000
 - I R7 001 – R8 000
 - J R8 000 or over
7. Do you have a yard tap?
- A Yes
 - B No
8. If you have no yard tap, where do you always get water?
- A Neighbours who have yard taps
 - B Nearest spring/wells
 - C Nearest river
 - D Rain harvesting
9. If you have no yard tap, when are you planning to get one for your household?
- A 0 – 6 months
 - B 6 months – 1 year
 - C 1 year – 2 years
 - D 2 years – 4 years
 - E 4 years – 8 years
 - F Never

10. What is your household water consumption in kilolitres per month?

- A 0 – 6kl
- B 7kl – 10kl
- C 11kl – 20kl
- D 21kl – 30kl
- E Above 30kl

11. What do you use yard tap water for?

- A Cooking/drinking
- B Washing
- C Building
- D Agriculture
- E Livestock

12. What is your household average monthly bill for water?

- A 0 – R5
- B R5.01 – R10
- C R10.01 – R15
- D R15.01 – R20
- E R20.01 – R50
- F R50.01 – R100
- G R100.01 – R200
- H Above R200

13. Do you understand the free water policy?

- A Yes
- B No

14. How many kilolitres are you getting free per month from the policy?

- A 4kl
- B 6kl
- C 10kl
- D 15kl
- E 20kl

15. Who pays for the free water?

- A Yourself as consumer
- B Local Municipality
- C Water Committee
- D Umgeni Water

16. What happens when you use more than 6kl?

Answer:.....

17. When you notice water leaking/illegal connection, where do you report?

- A Branch Office
- B Umgeni Water
- C Water Committee
- D Local Plumber

18. Where do you normally pay your water accounts?

- A Branch Office
- B Umgeni Water
- C Post Office
- D FNB
- E Pick 'n Pay

19. Do you feel the RDP standards are met with the Vulindlela scheme?

- A Yes
- B No

19. What are the RDP standards?

Answer:.....

20. Do you feel the objectives of the scheme were met?

- A Yes
- B No

21. Were local contractors and local communities hired during the construction phase of the scheme?

- A Yes
- B No

22. Do you feel local communities have been trained to run the scheme on their own?

- A Yes
- B No

23. Do you feel women and youth were and are involved in the running of the scheme?

- A Yes
- B No

24. If not, what are the causative factors?

Answer:

25. Do you feel the Vulindlela Water Scheme is better than other RDP schemes? Please specify.

Answer:.....
.....
.....
.....
.....

26. Do you feel all structures within the Vulindlela community supported or support the scheme to relieve poverty within the Vulindlela community? Structures are form Amakhosi, Izinduna, Women and youth, politicians and religious institutions.

Answer:.....
.....
.....
.....

27. Do you feel that enough job opportunities were created for locals during the construction phase?

- A Yes
- B No

28. Who benefited most from the project?

- A Vulindlela community
- B Unemployed men
- C Women
- D Local Contractors

29. Do you think Umgeni Water is doing enough in the operation and maintenance of the scheme?

- A Yes
- B No

30. If not, how should they improve?

- A Involving locals on maintenance
- B Training of locals as Artisans/handyman
- C Speed up the response time
- D Train Branch Officers

31. Do you have any additional comments?

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

APPENDIX B

INTERVIEW WITH CHAIRMAN OF VULINDLELA WATER AND SANITATION COMMITTEE (Mr MH Thusi)

This interview is completely confidential and the information will only be used for the project purposes. You will not be identified in any way. There are no right or wrong answers.

1. The Vulindlela Scheme is one of the RDP project that was designed to help in the water supply backlogs in the country. In your opinion, do you think the scheme serves its objectives?

Water supply is not sustainable in that leaks/breakdowns are not attended to immediately. Sometimes it takes two to three days to fix a leak. Maintenance section must attend to the leaks/breakdowns within 24 hours.

2. Do you think that the standards set by DWAF on RDP projects were met on the Vulindlela Scheme? If not, what were the factors for exceeding these? Give reasons.

Everybody was involved in the project, including women, local contractors and youth.

3. During the construction phase, were local contractors given project work to do (subcontracted)? If so, name a few that you can remember.

Yes. BP Ntshela, Izibusiso Contract and Transport. Those are the ones that I can remember.

4. Job opportunities were created to local community during and after the construction period; do you think that local community standard of living improved during the construction period? If so, how?

Yes. Some families had no income but with the Vulindlela scheme they were able to get an income.

5. The number of households that have yard connection to date are 10921, out of 32500 households within the Vulindlela area. What are the causes for the low number of connections, considering the fact that the scheme has been in operation for the last 5 years?

Economic factors, affordability and unemployment are the causes for such a low number of connections. People are suggesting that the connection fee be paid in instalments rather than the full payment.

6. Do you feel that the scheme improved the level of health in the area? If so, how?

Yes. No cholera cases were reported since the scheme was installed.

7. Are people aware that in order for the scheme to be sustainable, operation and maintenance (O & M) costs must be covered by the beneficiaries of the scheme?

Yes. We always discuss this in our meetings. O & M costs are included in the tariff.

8. Do you think the community has been trained to run the scheme cost effectively and efficiently? If so, what type of training have they received?

Yes. Only plumbers and branch officers have been trained.

9. Has the community been educated about the free water policy? If so, how?

Yes. Each household gets 200 litres per day, which is equal to 6 kl per month. People have been told to collect 8 X 25 litres per day.

10. Do the Vulindlela Water and Sanitation Committee (VWSC) meet on regular basis? If so, how often?

Yes. First week of the month.

11. Are there any other sub-committees under the VWSC? If so, what are their functions?

Yes, the branch Office Committee. They resolve minor issues at branch office level, like reporting of leaks, queries regarding the statements etc.

12. Are the community treating the scheme as their own? If not, what are their feelings about the scheme?

Yes. People are paying for the water used, they are reporting water leaks to the branch office and they help in finding culprits in cases of branch office break-ins.

13. Community capacity building is it happening or did it happen? If so, whom were/are involved and what type of training have they received?

Plumbers are trained to handle the leaks; branch officers are trained on the income and expenditure report.

14. The scheme started to operate before the local government elections. What is the relationship between the VWSC and locally elected councillors and between VWSC and AmaKhosi/Izinduna?

Relationship with local councillors is very poor. We report to councillors any meeting that we have with community but it's a one-way traffic. They do not tell us anything. We have repeatedly asked the Municipal Manager Mr Bheki Nene to address this by calling a meeting between the two parties, but even to date there has been no response from him.

The relationship with Amakhosi is genuine and is looking very well in that we work together and they are represented in our committee with five seats.

15. There are 19 branch offices within Vulindlela area. Do you feel the Branch Officers can be able to handle any type of issues that are related to the scheme? If so, what are the most frequently reported issues to them and how do they handle such issues?

Yes. Water shortages, burst pipes and statements queries are mainly reported to branch office. Water shortages and burst pipes are reported to Umgeni Water using the toll free number and the statements queries are explained to the consumers by the branch officers.

16. As a chairman, do you think Umgeni Water as an Implementing Agent (IA) has done enough training and capacity building to make sure that the community can run the scheme on their own?

Only plumbers and branch officers have been trained. The VWSC should be given training to enable them to handle and address all type of issues and problems.

17. As from the 1 July 2003 the scheme will be handed over to Msunduzi Municipality, are people aware of this change and what are their feelings?

Yes there are aware. There is a fear that the connection fee will be increased. The number of connections will eventual drop due to increase in the connection fee. There has been rumours that the connection fee will increase from R600 to R1200.

18. In your opinion, do you think that there will be changes in the way the scheme is run when Msunduzi Municipality takes over? If so, how?

Yes. The number of new connections will drop significantly due to high connection fee.

19. Service provision has been rolled down to local municipalities, how do people feel about this?

With the taking over of the municipalities, the community feel they will pay more for the same service. Two things were mentioned, the increase of the tariff and the increase in the connection fee.

20. There are new households that have settled in after the scheme was completed. Are there any plans of extending the service to these households? If so, how?

Yes. There has been a promise that a capital cost of R500 000 from DWAF will help those communities that are without water supply by year 2004.

21. Do you have any additional comments about the Vulindlela Scheme that are not covered on the above questions?

There has been an increase in the number of households without water supply in the past three years. The plan is to visit those communities and find out where they get water from and then make a plan for the provision of water services.

APPENDIX C

BRANCH OFFICE NUMBER:.....

BRANCH OFFICERS INTERVIEW

1. What measures are taken by Branch Officers to educate Vulindlela community on the free water policy?

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.....
.....

2. What are the current problems facing the scheme? If any.

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.....

3. Estimate the number of connections per month within your area during the past 12 months.

.....
.....

4. How many applications for new connection have you processed in the last 12 months?

.....
.....

5. Would you say there has been an increase in the rate of new applications when comparing the last 12 months and the last 36 months?

.....
.....

6. With yard connections, do you feel the standards set for RDP projects have been exceeded?

.....

7. Are there any households that have been disconnected as a result of non-payments or outstanding accounts? If so what reasons do they give for not paying?

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

8. Has there been a cholera outbreak in your area in the last 36 months? If so what were the factors and courses of the outbreak?

.....
.....

9. Do you feel the Vulindlela community has been trained to run the scheme on their own in the future?

.....
.....

10. Do you feel the community is reporting the water leaks all the time? If so how many of these leaks are reported to you weekly?

.....
.....

11. Are there any illegal connections that have been reported to you? If so how often are they occurring and what action do you take on the offenders?

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.....

12. Maintenance and breakdowns, do you think they are attended to on time? If not what do you think are the reasons for delays?

.....
.....

13. Do you think the scheme is operating at a loss or profit? Give reasons for your answer.

.....

14. Do you know that the scheme will be handed over to local municipality as from 1 July 2003? What does that mean to you?

.....
.....

15. How many accounts payments do you get on average per day?

.....

16. Do you think the scheme has improved the quality of life of the Vulindlela community? If so how?

.....
.....

17. Would you say the Vulindlela Scheme is sustainable at this point in time? If so how do you measure sustainability?

.....
.....

18. How much cash do you deposit on a weekly basis including connection fees?

.....
.....

19. Do you think that the community is using the branch office effectively as they should? If not, what are the causes for it?

.....

20 How would you rate your relationship with Umgeni Water Debtors department, Maintenance and the Rural Planning Officers?

.....
.....

21. Do you have any other comments that you would like to add?

.....
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.....

APPENDIX D

SUMMARY OF STATISTICS

Table 5.30: Statistics

	N		Mean	Median	Mode
	Valid	Missing			
Gender	2888	0	1.6375	2.0000	2.00
Marital status	2888	0	1.4855	1.0000	1.00
Age	2873	15	4.5966	5.0000	5.00
Level of education	2873	15	1.5064	1.0000	1.00
Dependents	2886	2	6.7928	7.0000	7.00
Monthly income	2848	40	2.2581	2.0000	2.00
Yard Tap	1991	837	1.2810	1.0000	1.00
Question 8	837	1991	1.699	2.0000	2.00
Question 9	837	1991	2.9475	2.0000	1.00
Consumption	1991	837	1.3588	1.0000	1.00
Tap Use	1991	837	1.2623	1.0000	1.00
Monthly Bill	1991	837	3.2364	3.0000	1.00
Question 13	2821	67	1.2099	1.0000	1.00
Question 14	2812	76	1.9566	2.0000	2.00
Question 15	2687	201	2.0182	2.0000	2.00
Question 17	2799	89	1.1718	1.0000	1.00
Question 18	1991	837	1.4659	1.0000	1.00
Question 19	2874	14	1.1618	1.0000	1.00
Question 20	2821	67	1.3424	1.0000	1.00
Question 21	2872	16	1.1748	1.0000	1.00
Question 22	2870	18	1.2875	1.0000	1.00
Question 23	2807	81	1.1026	1.0000	1.00
Question 27	2858	30	1.0882	1.0000	1.00
Question 28	2832	56	1.3531	1.0000	1.00
Question 29	2769	119	1.0545	1.0000	1.00
Question 30	151	2729	2.5235	3.0000	1.00

The mean is the sum of all the values/observations divided by the total number of observations, the mode is the most frequent value or in the context of the data, the most frequent feeling and the median is the middle most value when the data is arranged in ascending (or descending order). The mode and median is the statistics that is of great interest to us in this survey. The mean is somewhat distorted seeing that you cannot get a mathematical average of opinions/feelings and will not be

considered. The mode for example in question 18 is in this case is "1" while the median is also "1". The response "1" represents the response "Branch Office".

APPENDIX E**Detail Income and Expenditure Report**

Vulindlela Rural Scheme

Version B

Business Unit	135800	Current Period				YTD				Total Budget
		Actual	Budget	Variance	Var%	Actual	Budget	Variance	Var%	
L 23020	6 Treated Water	448,696.99-	177,197.00-	271,499.99	-153.22	3,568,420.49-	2,124,436.00-	1,443,984.49	-67.97*	2,124,436.00-
010		448,696.99-	177,197.00-	271,499.99	-153.22	3,568,420.49-	2,124,436.00-	1,443,984.49	-67.97*	2,124,436.00-
010 Revenues / Recoveries		448,696.99-	177,197.00-	271,499.99	-153.22	3,568,420.49-	2,124,436.00-	1,443,984.49	-67.97*	2,124,436.00-
I 60320	6 Temporary Staff		424.00	424.00	100.00*		5,000.00	5,000.00	100.00*	5,000.00
	Semi Skilled		424.00	424.00	100.00		5,000.00	5,000.00	100.00	5,000.00
020	Total Manpower		424.00	424.00	100.00		5,000.00	5,000.00	100.00	5,000.00
N 64660	5 Safety		1,250.00	1,250.00	100.00*		15,000.00	15,000.00	100.00*	15,000.00
	Maintenance Costs		1,250.00	1,250.00	100.00		15,000.00	15,000.00	100.00	15,000.00
N 41010	5 Electricity & Water		1,250.00	1,250.00	100.00*		15,000.00	15,000.00	100.00*	15,000.00
53030	5 Plant/Equipment-hired		5,837.00	5,837.00	100.00*	5,170.00	70,000.00	64,830.00	92.61*	70,000.00
55010	6 Maint.Contract-Plant	15,524.50	1,250.00	14,274.50-	-1141.96*	36,263.50	15,000.00	21,263.50-	-141.76*	15,000.00
L 55290	6 Materials & Spares-Maint J/C	9,400.00		9,400.00-	0.00*	10,890.61		10,890.61-	0.00*	
N 55300	6 Materials-Small Tools		1,674.00	1,674.00	100.00*		20,000.00	20,000.00	100.00*	20,000.00
N 55330	6 Operating Capital Expenses		1,674.00		100.00*		20,000.00	20,000.00	100.00*	20,000.00
N 55340	6 Pipe Specials				0.00*	4,394.33		4,394.33-	0.00*	
61010	5 Renewals	3,660.00		3,660.00	0.00*	3,660.00		3,660.00-	0.00*	
63020	5 Fuel & Lubricants		49.00	49.00	100.00*		500.00	500.00	100.00*	500.00
64150	5 Contribution Rural Offices	14,528.10		14,528.10-	0.00*	143,698.00		143,698.00-	0.00*	
050	Other Direct Expenditure	43,112.60	11,734.00	31,378.60-	-267.42	204,076.44	140,500.00	63,576.44-	-45.25	140,500.00
020 Direct Expenditure		43,112.60	13,408.00	29,704.60-	-221.54	204,076.44	160,500.00	43,576.44-	-27.15	160,500.00
55490	6 Superintendent-Inland Distr.	779.13	120,481.00	119,701.87	99.35*	1,524,407.91	1,445,728.00	78,679.91-	-5.44	1,445,728.00
55610	6 Workshop-Buildings (I)		2,634.00	2,634.00	100.00*		31,586.00	31,586.00	100.00*	31,586.00
55630	6 Workshop-Electrical (I)		13,349.00	13,349.00	100.00*		160,177.00	160,177.00	100.00*	160,177.00
55670	6 Workshop-Mechanical (I)				0.00*	682.00		682.00-	0.00*	
55710	6 Workshop-Vehicle ©				0.00*	961.31		961.31-	0.00*	
040	Maintenance Costs	779.13	136,464.00	135,684.87	99.43	1,526,051.22	1,637,491.00	111,439.78	6.81	1,637,491.00
51110	6 Depreciation - Immovables	1,011,592.06	646,741.00	364,851.06-	-56.41*	12,139,104.12	7,760,837.00	4,378,267.12-	-56.41*	7,760,837.00
51150	6 Amortisation of Govt Grant	751,147.54-		751,147.54	0.00*	751,147.54-		751,147.54	0.00*	
64280	5 Insurances	98,497.89-	33,544.00	132,041.89	393.64*	270,445.74	402,484.00	132,038.26	32.81*	402,484.00
81020	5 Interest-External	1,198,244.85	1,527,002.00	328,757.15	21.53*	16,166,435.08	18,323,991.00	2,157,555.92	11.77*	18,323,991.00
060	Other Indirect Expenditure	1,360,191.48	2,207,287.00	847,095.52	38.38	27,824,837.40	26,487,312.00	1,337,525.40-	-5.05	26,487,312.00
030	Indirect Expenditure	1,360,970.61	2,343,751.00	982,780.39	41.93	29,350,898.62	28,124,803.00	1,226,095.62-	-4.36	28,124,803.00
	Total Expense	1,404,083.21	2,357,159.00	953,075.79	40.43	28,285,303.00	28,285,303.00	1,269,662.06-	-4.49	28,285,303.00

**Reticulation Opportunity
Identification**

Umselezuzi Municipality

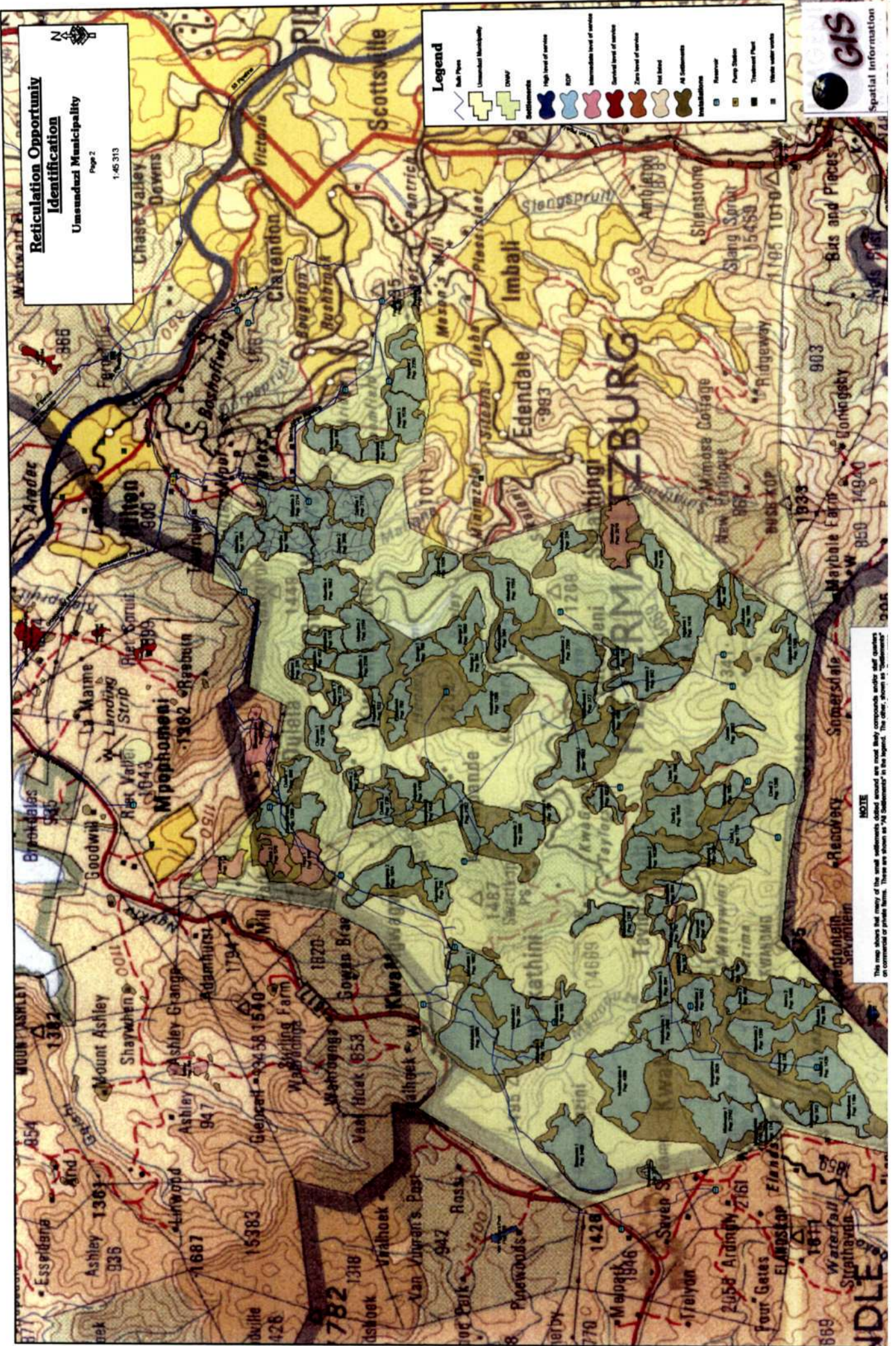
Page 2

1:45 313



Legend

- Red line: Bulk Pipe
- Yellow outline: Unsewered Municipality
- Green outline: DWAF
- Blue outline: Sewerage
- Light blue: High level of service
- Light green: DTP
- Light yellow: Intermediate level of service
- Light orange: Lowest level of service
- Light red: Zero level of service
- Light purple: Not Served
- Light brown: All Served
- Light grey: Infrastructure
- Blue square: Reservoir
- Yellow square: Pump Station
- Black square: Treatment Plant
- Black square: Water works



NOTE
This map shows the areas of the road reticulation. Areas around the road that corresponds with old gardens or agricultural plots etc. These are shown as 'No Sewerage' in the legend. The other, shown as 'Intermediate'.