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School of Built Environment and Development Studies

Research Topic:

Assessing the rationale of linking housing delivery with the provision of clean water and proper sanitation in low-income settlements. Case study: Kennedy Road in Durban

By

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This dissertation is submitted in Partial Fulfilment of the requirements towards the degree of Master of Housing to the School of Built Environment and Development Studies, Howard Collage Campus, University of KwaZulu-Natal

Declaration of plagiarism

I, Abongile Mpofu hereby declare that this dissertation is my own unaided work, except where otherwise acknowledged in the text, and it has not been submitted in whole or part for any examination or degree at any University.

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Dedication

This Housing Master's dissertation is dedicated to my parents Mr. M.D and Mrs. EN Mpofu for their sacrifices, perseverance as well as support on the road to make this study a reality.

Abstract

This research study assesses the rationale of linking housing delivery with the provision of clean water and proper sanitation. This is achieved through assessing issues such as lack of access to adequate housing, clean water and proper sanitation using Kennedy Road informal Settlement as a case study.

Chapter one of this research paper introduces the topic based on delivery of housing and the provision of water and sanitation for a low income group in an urban setting. It further provides an overview of the research problem, research aims and objective. The chapter also defines fundamental concepts such as quality of Life in low income settlements, informal settlements, sustainable human settlements, and water-related diseases which are essential in the understanding the study. It also presents the methodology, which the research study adopted to collect data. This section looks at the research design, methods applied, sampling of the population, data collection as well as analysis methods. This study adopted a qualitative research method to collect data. Data was collected using household surveys, which were conducted in the selected case study area and interviews were conducted with the officials from the housing, water and sanitation units.

Chapter two looks at key elements of the research study namely theoretical framework. This chapter provides the theories on which the study is based. These theories or approaches are Basic Human Needs Approach, Human Rights Based Approach, Threshold Saturation Theory and Integration and Coordination Approach.

Chapter three provides a literature review on the delivery of housing with the provision of clean water and proper sanitation to the urban poor. Furthermore the literature helps to create a framework for understanding global trends on housing delivery together with the provision of clean water and proper sanitation for the urban poor. This chapter also looks at how these trends influence South African housing delivery and the provision of water and sanitation. International and local

case studies are provided to support the argument. This section analytically engages with the existing literature, it also analyses the work of researchers, scholars and the international and local legislative framework on housing, water and sanitation.

Chapter four presents an overview of the historical background of the case study, which is Kennedy Road. It also unpacks the characteristics of the area, by considering the geographical location, the historical background of the study area, plus the socio-economic status including valuable resources, employment level and the well-being of the occupants.

Chapter five presents the analysis of data followed by a discussion of the research findings and an explanation of how the research findings relate to the research questions that guided the study.

Chapter six deals with the findings and outlines the conclusion for the research paper. It concludes the research paper by providing a review of the entire research and further gives recommendations based on the findings of the research. Research findings reveal that lack of access to adequate housing, clean water and proper sanitation has a negative effect on the health and the well-being of the urban poor; the further show that lack of access to water contributes to ill health, environmental and socio-economic problems. The summary of the results and analysis were gathered from the interviews and questionnaires in the study area, during the site visits that were conducted. The summary of findings determines the degree to which the research paper has successfully answered the research question, sub-questions and objectives.

Acronyms and Abbreviations

ANC	African National Congress
AIDS	Acquired Immune Deficiency Syndrome
BNG	Breaking Ground New Ground
CoGTA	Cooperative Governance & Traditional Affairs
DHS	Department of Human Settlements
DWA	Department of Water Affairs
DWAF	Department of Water Affairs and Forestry
GDP	Gross Domestic Product
GWP	Global Water Partnership
HDB	Housing and Development Board
HIV	Human immunodeficiency Virus
KZNDHS	KwaZulu-Natal Department of Human Settlements
MDGs	Millennium Development Goals
NGOs	Non-Governmental Organizations
NWA	National Water Act 36 of 1998
PLHIV	People Living with HIV/Aids
RDP	Reconstruction and Development Programme
RSA	Republic of South Africa
UN	United Nations
UNHR	United Nations High Commissioner for Refugees
UNICEF	United Nations Children Fund
USD	United States Dollar
WASH	Water, Sanitation and Hygiene
WEDC	Water, Engineering and Development Centre
WHO	World Health Organisation
WSP	Water and Sanitation Programme
WSSCC	Water Supply and Sanitation Collaborative Council
WWC	World Water Council
VIP	Ventilated Improved Pit

Table of Content

Declaration of plagiarism	i
Acknowledgement.....	ii
Dedication.....	iii
Abstract.....	iv
Acronyms and Abbreviations	vi
Table of Content	
List of Maps	iii
List of Tables	iii
List of Charts.....	iii
List of Photographs.....	iv
1 Chapter One: Introduction and Research Methodology.....	1
1.1 Introduction	1
1.2 Problem Statement	4
1.3 Objectives	6
1.4 Main Research Question.....	6
1.5 Subsidiary Questions	6
1.6 Hypotheses	7
1.7 Definition of key concepts	7
1.7.1 Quality of Life in low income settlements	7
1.7.2 Informal settlements.....	8
1.7.3 Sustainable Human Settlement.....	9
1.7.4 Water-related Diseases.....	10
1.8 Study Justification	11
1.9 Research Methodology	11
1.9.1 Primary sources of data	12
1.9.2 Secondary Sources of Data	15
1.10 Data analysis.....	15
1.11 Limitations of the study.....	16
1.12 Structure of Dissertation	16
2 Chapter Two: Theoretical Framework.....	18
2.1 Introduction	18
2.2 Theoretical Framework	18

2.2.1	Basic Human Needs Approach	18
2.2.2	Human Rights Based Approach to Water and Sanitation.....	20
2.2.3	Human Rights Based Approach on access to safe water and sanitation services	23
2.2.4	Achievable goals of Human Rights Based Approach	24
2.2.5	Threshold-Saturation Theory	27
2.2.6	Integration and Coordination Approach	28
2.3	Conclusion	30
3	Chapter Three: Legislative Framework and Literature Review.....	31
3.1	Legislative and policy framework on water and sanitation	31
3.1.1	Constitutional Obligations.....	32
3.1.2	Different Levels of Government.....	33
3.1.3	The White Paper on Basic Household Sanitation 2001	37
3.1.4	The Housing Act (Act 107 of 1997)	37
3.1.5	The Reconstruction and Development Programme (RDP).....	38
3.1.6	The “BREAKING NEW GROUND” strategy	39
3.1.7	The National Sanitation Policy of 1996.....	40
3.1.8	The Water Services Act 108 of 1997	41
3.1.9	The National Water Act 36 of 1998	41
3.1.10	Local Government: Municipal Systems Act (2000)	42
3.2	An overview of water, sanitation and health	42
3.3	The Millennium Development Goals (MDGs) on Water and Sanitation.....	48
3.3.1	WaterAid/the World Bank:	49
3.3.2	Water and Sanitation Programme:	50
3.3.3	Water Supply and Sanitation Collaborative Council (WSSCC):	50
3.3.4	Global Water Partnership (GWP):	51
3.3.5	World Water Council (WWC):.....	51
3.4	Case Study: South Africa	52
3.5	Overview of low-income settlements.....	55
3.5.1	The state of Informal settlements in South Africa	55
3.5.2	Effects of Poor housing on inhabitants	62
3.5.3	State of housing in South Africa	62
3.5.4	The need for quality water supply and sanitation	63
3.5.5	The Supply of Clean water	64
4	Chapter Four: Historical Background of the Case Study.....	67

4.1 Introduction	67
4.2. Case Study	67
4.2.1 EThekweni Municipality	67
4.2.2 Kennedy Road informal settlement	69
4.3 Conclusion	75
5 Chapter Five: Research Findings, Data Analysis and Interpretation	77
5.2 Introduction	77
5.3 Section A: Findings and characteristics of respondents	78
5.4 Section B: Post 1994 housing situation in South Africa.....	98
5.4.1 Provision of water and sanitation in Kennedy Road.	99
5.4.2 Conditions of water supply and sanitation supply	102
5.4.3 Role of the Government in provision of water and sanitation	108
6 Chapter six: Summary of Findings, Recommendations and Conclusions.....	117
6.1 Introduction	117
6.2 Summary of the findings	117
6.3 Recommendations	121
6.3.1 Recommendations on Policy	122
6.3.2 Recommendations on Municipalities	123
6.4 Conclusion.....	125
References	126
Appendix A: Questionnaires for Beneficiaries	138
Appendix B: Ward Councillor' interview questions	142
Appendix C: Key Informants' interview questions	144
Appendix D: Informed Consent Form.....	146

List of Maps

Map 1: Locality map of the case study

List of Tables

Table 1: Gender Representation of the informants in the case study
Table 2: Ethnicity representation of the informants in the case study
Table 3: Language representation of the informants in the case study
Table 4: Current activity of the informants in the case study
Table 5: The Highest level of education achieved
Table 6: Size of households of the informants
Table 7: Duration of stay of the informants in the case study
Table 8: Main source of drinking water for households
Table 9: Do you usually have to join a queue to get water?
Table 10: Waiting duration to get water
Table 11: Duration to get there, get water and come back
Table 12: Who usually fetches water for your household?
Table 13: Do informants pay for water?
Table 14: Complaint related to drinking water service
Table 15: How soon was the complaint attended to?
Table 16: Overall, are the informants satisfied with drinking water services?
Table 17: Treatment of water to make it safe to drink?
Table 18: Maintenance water supply infrastructure
Table 19: Common illnesses in the case study
Table 20: Causes of the illnesses in the case study
Table 21: Kind of sanitation facilities the informants use
Table 22: Do informants share this facility with other households?

List of Charts

Graph 1: Gender Representation of the informants in the case study
Graph 2: Ethnicity representation of the informants in the case study
Graph 3: Language representation of the informants in the case study
Graph 4: Current activity of the informants in the case study
Graph 5: The Highest level of education achieved
Graph 6: Size of households of the informants
Graph 7: Duration of stay of the informants in the case study
Graph 8: Main source of drinking water for households
Graph 9: Do you usually have to join a queue to get water?
Graph 10: Waiting duration to get water
Graph 11: Duration to get there, get water and come back
Graph 12: Who usually fetches water for your household?
Graph 13: Do informants pay for water?

Graph 14: Complaint related to drinking water service
Graph 15: How soon was the complaint attended to?
Graph 16: Overall, are the informants satisfied with drinking water services?
Graph 17: Treatment of water to make it safe to drink?
Graph 18: Maintenance water supply infrastructure
Graph 19: Common illnesses in the case study
Graph 20: Causes of the illnesses in the case study
Graph 21: Kind of sanitation facilities the informants use
Graph 22: Do informants share this facility with other households?

List of Photographs

Photograph 1: Ablution facilities
Photograph 2: Stand Pipes
Photograph 3: VIP toilets 1
Photograph 4: VIP toilets 2
Photograph 5: Ablution blocks
Photograph 6: Outside sinks on facilities
Photograph 7: illegal water connection
Photograph 8: Water leak
Photograph 9: Ablution broken toilet door
Photograph 10: Ablution black broken urinal
Photograph 11: Inaccessible VIP toilet

1 Chapter One: Introduction and Research Methodology

1.1 Introduction

Access to both water and sanitation is central to living a life with dignity and upholding human rights (UNHR, 2012). Yet billions of people globally still do not enjoy these fundamental basic necessities. According to the World Health Organization (WHO) (2008) clean water together with proper sanitation and decent hygiene are important for survival, health, development and growth. After 20 years of democracy millions of South Africans still lack access to human basic services namely clean water and proper sanitation (Gahan, 2014). Section 27(1) (b) of the Constitution of the Republic of South Africa stipulates that *“everyone has the right to have access to sufficient food and water”*. To add to that, Section 24 (a) of the South African Constitution states, *“Everyone has the right to have access to an environment that is not harmful to their health or well-being. This includes a constant supply of clean, safe drinking water”*. Furthermore this obligation is highlighted in section 27 (2) of the Constitution of the Republic of South Africa, where it is stated that *“the state must take reasonable legislative and other measures, within its available resources, to achieve the progressive realization of these rights”*. SAHRC (2014) also states that the right to clean water interconnects with environmental rights and it further supports the right to the enjoyment of basic human rights such as education, safety and health.

The highest percentage of the world’s population, which still lack access to clean water and proper sanitation, are the low-income communities, which mostly reside in informal settlements. The term ‘Informal settlement’ has been described in many ways based on the planning and legal context of the country where it exists. According to Mohammed *et al.* (2006) informal settlement is well defined as residential buildings built in “planned” and “unplanned” areas, which do not have formal planning approval. Furthermore, it is argued that the informal settlements are predominantly characterized with low quality houses and the lack of basic services, namely sufficient water and appropriate sanitation. According to Srivas

(2005) and Todaro (1994) informal settlements are perceived as both a problem and a solution to the housing sector for fast growing populations in cities mainly in developing countries

Srinivas (2005) argues that informal settlements have been a dilemma of the developing world. Most cities in developing countries like South Africa are challenged with rapid urbanization which results in population growth in urban areas. Rapid urbanization and population growth are the two factors which cause the existence of informal settlements. People move to urban areas for economic reasons like seeking better employment opportunities. Most of the people who migrate to urban areas live in informal settlements because they are the cheapest form of housing available for the urban poor (World Bank, 2005). However, in contrast, informal settlements create several challenges such as social segregation, bad living conditions, decreasing land value, poverty, reducing and polluting underground water source.

South African urban areas are challenged with a housing backlog and this situation could be attributed to numerous concerns such as the lack of proper land for housing and the existence of informal settlements (Tshikoshi, 2010). In several cases lack of suitable land for housing has led to invasion of unsafe land. Mostly, these settlements commonly lack infrastructure namely water, proper sanitation, drainage, waste disposal and proper road access. Cairncross *et al.* (1990) and Hardy & Satterthwaite (1990) state that urban poor often have no other choice than to live in these unpleasant surroundings, which often increases the spread of transmittable illnesses.

The informal settlements comprise non-conventional housing built without conforming to lawful building standards. Moser & Satterthwaite (2008) together with Mahanga, (2002) agreed that *“The urban poor build these informal settlements in the urban periphery, close to job opportunities where land is cheap and neglected”*. However, these informal settlements are usually well located

compared to the recently built housing where the urban poor are relocated by the government.

Gotsana (2013) argues that there are millions of families living in informal settlements across South Africa, and some of these informal settlements are built on wetlands. The areas on which these informal settlements are built can affect people's lives negatively. Evens (2007) also added that millions of urban dwellers, who reside in informal settlements, are excluded from services like clean water and proper sanitation. According to Evens (2007), families and individuals are forced to use alternative supplies of water, which are often of poor quality and could be from unreliable sources like nearby rivers and streams due to the absence of adequate sources to provide clean water and adequate sanitation.

Since there is a lack of access to water and proper sanitation in most informal settlements, the means to practice hygienic behaviour are often entirely absent. Access to safe water and proper sanitation is a legal entitlement, which is enshrined in the constitution of the country. The Constitution of the country also states that *"everyone has the right to an environment that is not harmful to their health or wellbeing, to have the environment protected, for the benefit of present and future generations, through reasonable legislative and other measures..."* Linking the housing delivery with the provision of water and sanitation can help to ensure that this right is realized.

According to UNICEF (2007) inadequate access to safe water, electricity and sanitation services is linked with poor hygiene practices. This inadequate access to basic services results in thousands of deaths daily, and also leads to impoverishment and diminished opportunities for millions of individuals. Informal settlement dwellers are more vulnerable to diseases like diarrhoea, cholera, malaria, polio, ring worm and other related diseases due to poor housing and lack of access to water (WHO, 2004).

This study was intended to evaluate the rationale of linking the delivery of housing with the provisions of clean water and proper sanitation. This was achieved by putting emphasis on the fact that the delivery of housing should be accompanied with water and sanitation so that the settlement becomes habitable and hygienic to the beneficiaries. Hence Kennedy Road informal Settlement was used as a case study for this research project.

1.2 Problem Statement

Human settlements play a central role in determining the progress of a country; housing is one of the indicators that show whether a country's population is rich or poor. People living under poor housing conditions are not only a marginalized part of the population they are also deprived of basic services like water and sanitation. The study intends to emphasize the importance of linking delivering housing together with basic services like clean water and proper sanitation. According to Tshikotshi (2010) most cities in developing countries are facing a housing backlog and as a result people are building their own houses informally where there are no services such as electricity, roads, water and sanitation.

The ever growing gap between housing demand and housing supply jointly with colonial and post-colonial apartheid development policies in South Africa has produced an extensive range of settlement types with inequalities in terms of tenure, access to land and housing, and provision of basic services more especially to the poor Tshikotshi (2010). Hence informal settlements have developed on the periphery of cities in South Africa, while these peripheral areas lack basic services like clean water, proper sanitation, roads and electricity. The standard of living in South African cities today is too high and costly. As a result of increases in formal housing costs and unaffordability of formal housing, the growing population, mainly the poor, is forced to live in informal settlements and unhealthy conditions giving rise to poor residential neighbourhoods (Funmilayo, 2014). The urban poor residing in the informal settlements are mostly exposed to

economic shocks as most of them lack access to services such as water and sanitation, safety nets and political representation. Large numbers of people who are staying in the informal settlements are unemployed; therefore they cannot get sufficient sustenance, clean water and other basic services. Their wellbeing and expectations for everyday comforts are regularly compromised when their settlements are located near wellsprings of contamination such as Kennedy Road informal settlement.

Most of the informal settlement dwellers have little ability to provide for themselves. Hence they live in a state of uncertainty, they have no tenure security over the land, and they are often staying in the area illegally. Most people choose to stay in the informal settlements because they are close to job opportunities. The informal settlement inhabitants live under hazardous conditions because of the poor housing together with lack of clean water supply and proper sanitation.

Problems of housing, proper sanitation, drinking water, health care services and chronic morbidity are results of rapidly increasing informal settlements. Out of these mounting issues this paper focuses on the lack of clean water, proper sanitation and their negative impact on the lives of the residents. Jansen og & Schulz (2006) argue that water has become scarce due to population growth, increased urbanization, economic growth and altering climatic patterns. Hence clean water is a limited commodity especially for the urban poor. Partly because of the inequality of water distribution in urban areas there is an imbalance in the distribution of the water. There are those who can afford to have better access to clean water and those who cannot. Jansen og & Schulz (2006) state that water is important for development and poor people usually cannot afford the cost of water. This forces the informal settlement dwellers to pursue other methods to acquire water (Kumar & Harada, 2011). Lacking consistent access to water delivered to them, informal settlements dwellers are left with a range of unreliable and often demeaning alternatives to get hold of water like resorting to polluted water.

Proper sanitation systems are practically non-existent due to the lack of water. According to Tissington (2011) it has been seen over the past years that Reconstruction and Development Programme (RDP) houses have developed to become residential dormitories and as a result the urban poor choose to trade their houses and move back to informal settlements to be closer to work (Tomlinson, 2005).

1.3 Objectives

The study was conducted to accomplish the following objectives:

- 1.3.1** To emphasize the link between access to clean water and proper sanitation and the health of beneficiaries.
- 1.3.2** To examine the risk associated with living without basic services such as clean water and proper sanitation.
- 1.3.3** To do a literature search on the negative impacts on the use of polluted water and diseases associated with this.
- 1.3.4** To unpack social and health related challenges associated with the lack of clean water and proper sanitation.
- 1.3.5** To identify survival strategies that people in the informal settlement use in the absence of clean water and proper sanitation.

1.4 Main Research Question

To what extent is the absence of clean water and proper sanitation negatively impacting the lives of informal settlement dwellers?

1.5 Subsidiary Questions

- 1.5.1** What is the link between access to clean water and proper sanitation and the health of the beneficiaries?
- 1.5.2** What are the risks associated with living without basic services such as clean water and proper sanitation?

- 1.5.3** What are the challenges associated with the absence of water?
- 1.5.4** What are the challenges associated with the absence of sanitation?
- 1.5.5** What are the social and health related challenges associated with the lack of clean water and proper sanitation?
- 1.5.6** What form of water and sanitation assistance do people receive from the eThekweni municipality?
- 1.5.7** What approaches to sanitation are appropriate in informal settlements?
- 1.5.8** What are the survival strategies that people in the informal settlement use in the absence of clean water and proper sanitation?

1.6 Hypotheses

The absence of clean water and proper sanitation can have a negative impact on the lives of the informal settlement residents.

1.7 Definition of key concepts

This study intended to assess the rationale of linking the delivery of housing together with clean water and proper sanitation in low-income settlements. There were a few key concepts, which the author found most relevant to the study: Quality of life in low-income settlements, informal settlements, sustainable human settlements, and water related diseases. The definition of the above mentioned concepts was seen as essential because they form part of the problem statement and hypothesis on which the study was based.

1.7.1 Quality of Life in low income settlements

The term 'Quality of life' is mostly used to evaluate the general welfare of people and societies; however its meaning is multifaceted, very broad and varies with time and a person's beliefs. Funmilayo (2014) stated that quality of life has to do with how people live, feel and understand their daily lives. This includes aspects such as health (on which this paper is focused), education, housing, employment and participation in decisions on matters that affect their lives. Furthermore Funmilayo (2014) also states that the term quality of life has arisen as a perception of living

conditions, health and physical safety, mental and social ability. Nonetheless, definitions of quality of life have been diverse. It has to do with how each one sees himself and the community (Funmilayo, 2014). For the purpose of this study, quality of life refers to the standard of health, comfort, and happiness experienced by people when living in housing of good standard with good water supply and proper sanitation.

Residing in informal settlements poses substantial risks to health, education and well-being. Lack of access to basic services and health facilities is noticeable in these settlements while, in addition, overpopulation in the informal settlement can have a psychological effect on the dwellers, and lack of access to these services can lead to stress, violence and increases problems such as drug abuse and other social ills. Social infrastructures, such as water supply and sanitation are below minimum standards. Water supply, for example, to individual families may be absent, or community standpipes may have been provided, using either the city networks, or a hand pump itself. Informal networks for the supply of water may also be in place. Similar arrangements may be made for electricity and toilet facilities with little dependence on public authorities (UN-HABITAT, 2003).

1.7.2 Informal settlements

UN Habitat Programme (2003) defines Informal settlements as residential areas where illegal housing has been built on land occupied illegally. The UN Habitat (2003) also argues that these settlements are illegal, unplanned and that houses built are not in compliance with contemporary building and planning regulations

There are many definitions for the term 'informal settlements'. Hence the definition of informal settlements is context specific. According to Srinivas (2009) an informal settlement is characterized by overpopulation, deterioration, absence or insufficient basic facilities such as water and sanitation, on which this research focused. Srinivas (2009) also states that these conditions threaten the health and

prosperity of the informal settlement occupants, while creating unpleasant living conditions for the community at large.

Srinivas (2009) states that informal settlements are generally characterized by illegal use of vacant land, illegitimate subdivision or rental of land, unauthorized building of houses, reliance on cheap and locally available scrap building materials, absence of restrictive standards and regulations, reliance on family labour and non-availability of mortgage or any other support finance. Various definitions have been proposed, however that proposed by the UN Habitat Programme is seen to be probably the most commonly applicable.

1.7.3 Sustainable Human Settlement

The generally accepted assumption is that sustainability applies to all aspects of life. However this paper looks at sustainable human settlement which also applies to all aspects of life in the context of settlement. Conversely, the terms sustainability and sustainable human settlement are commonly defined within ecological, social and economic contexts. Sustainability refers to the ability of a process to be continued for an indefinite period without harming or degrading the environment on which it depends. On the other hand sustainable human settlement refers to human settlement development which takes future development into consideration without harming the environment. Sustainability is related to sustainable human settlement because the concept's frequent use in the development context has tended to narrow its common definition. As a result, sustainability is frequently defined as a non-detachable component of sustainable development concept. It can be argued that sustainability requires that the world is seen as a system; a system that connects space and a system that connects time (IISD, 2008). Thinking of the world as a system assists in the understanding of complex and serious global problems as interrelated. The concept of sustainability is used in this research to contextualize service delivery and policy implementation as collective responsibility of all government sectors. The research

argues that the perception of service delivery as a system or machinery is based on principles of sustainability.

1.7.4 Water-related Diseases

There are several water related diseases, which directly and indirectly have negative impacts on the wellbeing of people who lack access to clean water. According to the WHO (2008 “water related diseases are categorized into four categories relating to the path of transmission”. The first category of water related diseases are waterborne diseases, for example typhoid and cholera are diseases that are transmitted through drinking water (WHO, 2008). The interruption of transmission is achieved by proper treatment of drinking water. The informal settlements are directly exposed to these kinds of diseases, because they do not have access to clean water. Water-washed diseases, such as polio are some other type of diseases, to which mostly people from informal settlements are exposed and from which millions all over the world are dying (WHO, 2008).

These are diseases where the prevention of the spread is achieved through proper attention to effective sanitation, washing and personal hygiene. Consistent washing of hands, especially after going to the toilet, is the most effective measure in preventing many infections, as is proper washing and hygiene during food preparation, together with proper sanitation, waste disposal and fly control. Water based diseases are diseases transmitted by contact with water, e.g. recreational swimming. Water vector diseases, such as malaria, are diseases that are transmitted by a vector, such as the mosquito, which needs water or moisture in order to breed. Prevention of transmission is through vector control.

Lack of access to proper sanitation also impacts on the health of informal settlement dwellers. Informal settlement dwellers are exposed to infections such as schistosomiasis and intestinal worm infections, such as ascariasis (roundworm), trichuriasis (whipworm) and hookworm because these infections are

easily spread in areas that do not have access to proper toilets or sanitation facilities. Schistosomiasis spreads when infected individuals urinate or defecate close to a water source, contaminating it with the larvae of the parasite. According to WHO (2004), “Water-related diseases are estimated to claim 3-7 million lives each year. This includes water-borne, water-washed, water contact diseases, as well as water (insect) vector diseases - i.e. those associated with water habitat (e.g. malaria, dengue) and thus with water resources & habitat management”.

1.8 Study Justification

This study endeavored to contribute towards knowledge regarding baseline conditions on the water supply and provision of proper sanitation in South Africa and its analysis may possibly contribute to the understanding of various ongoing changes and trends in the delivery of basic services and the delivery of housing. This study also attempted to contribute towards a better understanding of the housing status quo in developing countries, especially by adding a more social aspect to a volume of research focused on technical and political aspects by exploring the current situation in households and the obstacles that stand in the way of water supply and provision of proper sanitation.

Furthermore, it also advocated for the idea of linking the delivery of housing with the provision of clean water and proper sanitation. Based on the constitutional mandate of the government as stipulated in the Constitution of South Africa in section 27 (1) (b) which states “*everyone has the right to have access to sufficient food and water*”, this study has attempted to provide recommendable solutions to the housing backlog and lack of access to water and sanitation.

1.9 Research Methodology

According to Leedy & Ormrod (2001) research design is the strategy adopted to approach a research problem. Leedy & Ormrod (2001) agree by saying that research design provides the structure and the method to be followed by the

researcher when collecting and analyzing data. The research design is a plan on how information is to be collected for an evaluation that includes identifying the data gathering methods, the instrument which will be used, the manner in which the instruments will be controlled, and how the information will be prepared and analyzed. This study adopted the qualitative research method to collect data. Leedy & Armod (2001) state that qualitative research methods focus on gathering non-numeric information using focus groups, interviews, questionnaires, observation and document analysis. The study used the qualitative method of data collection for the reason that it usually emphasises observations, perceptions and the understanding of the individuals' social life on situations surrounding them (Glatthorn & Joyner, 1998). It makes use of case studies where one investigates events within their context and understanding the differences in these events. A Qualitative approach involves observing, understanding and questioning the meanings and actions adopted by individuals and groups (Creswell, 2007).

1.9.1 Primary sources of data

1.9.1.1 Sampling

According Bless & Higson-Smith (2000) sampling is a technical accounting device to give good reason for the collection of data and to choose in a proper way the restricted set of objects, individuals and events from which the actual information will be drawn. On the other hand Mouton (1996) furthermore refers to sampling as the practice of choosing "phenomena when it is impossible to have knowledge of the whole population of the phenomena. Sampling is correspondingly considered as the process of drawing conclusions about unknown population parameters from the identified sample indicator". Therefore, sampling means taking a certain portion of a population as representative of that particular population.

Strydom & De Vos (1998: 191) state that the use of samples might result in more accurate information than might have been attained if one studied the whole population. The main purpose of sampling is viability and representativeness of

the population targeted. “To ensure that collection activities are undertaken and completed, a sample from the target population is usually determined” Phago (2010). Patton (1990: 169) emphasizes that when a study deals with a large community, sampling should be considered. In this study, respondents will be selected by means of the probability sampling method.

The study adopted both probability sampling and purposive sampling methods in selecting its participants. Probability sampling is a sampling technique where the samples are gathered in a process that gives all the individuals in the population equal chances of being selected. They permit generalization of the population from which they are drawn. There are two types of probability samples: random and stratified (Seaberg 1988). However the researcher only used probability sampling method to select the beneficiaries. Probability sampling was specifically used to select beneficiaries, using random sampling technique to select beneficiaries which were going to answer the questionnaires. Seaberg (1988) asserts that in probability sampling each person in a population has the same known probability of being selected. According to Babbie (2010) random sampling is a type of probability sampling that assigns numbers to units of a population and then a set of random numbers are produced and units with those numbers are selected.

The household surveys were conducted in the selected case study area. This method allowed each household an opportunity to be included in the survey. 5% of households living in Kennedy Road informal Settlement were surveyed. There are 2300 households in Kennedy Road Informal Settlement and 115 households were surveyed in the selected study area. The small sample size was considered as a rational alternative given time and monetary limitations from the researcher’s side.

The purposive sampling was also used in this study. Purposive sampling signifies a group of different non-probability sampling techniques. Purposive sampling was specifically for municipal officials and councillor but was used for the interviews.

Purposive sampling method was used in this research paper to identify experts from eThekweni municipality. The researcher wanted to get information on the provision of water and sanitation from the Department of Water and Sanitation and also get information about housing delivery plans for the urban poor from the Department of Human Settlements. The councillor was also selected using the purposive sampling method. Seaberg (1988) asserts that a purposive sample is one that is subjectively selected by the researcher. Moreover the researcher tries to obtain the sample that seems to be representative of the population. Purposive sampling was seen by the researcher as a very useful technique as it lead to the researcher investigating the samples with the expected desirable attributes (Neuman, 2011). The participants (Municipal officials and councillor) who were selected were chosen in order to answer or to align with the purpose of the study (Creswell, 2007).

1.9.1.2 Interviews

Primary sources of data included residents of Kennedy Road Informal Settlement, Ward Councillor of Kennedy Road Informal Settlement and eThekweni municipality officials. The interview questions were semi-structured to allow for an open conversational discussion on broader housing issues. Most of the interview questions were open-ended because the purpose was to allow free flowing conversation on linking housing delivery and the provision of basic services mainly clean water and proper sanitation matters that could not otherwise have been stimulated through closed questions and structured interviews.

Face-to-face interviews were employed as a strategy to acquire knowledge from respondents. Semi-structured interview questions allowed the participants of the study to speak for themselves rather than providing them (participants) with the researcher's own predetermined questions, which were possibly not going to cover all the required information (Morton & Babbie, 2004). The second method of data collection used was semi-structured interview questions. This "typically refers to a

context in which the interviewer has a series of questions that are in the general form of an interview schedule but is able to vary the sequence of the questions” (Bryman, 2008). This approach gives respondents the freedom to answer questions in any way they choose and the researcher to probe follow up questions in response to significant replies (Bryman, 2008).

1.9.1.3 Questionnaires

A questionnaire is defined as a tool used to ascertain the emotional state, opinions, experiences, insights, or assertiveness of chosen individuals for a research study. As a data collecting instrument, it could be structured or unstructured. Questionnaires were used to collect data from the households. The questionnaires were structured and consisted of closed-ended questions. Most importantly the questionnaires and interview questions were designed to respond to the research question.

1.9.2 Secondary Sources of Data

Secondary sources of data that were used on the subject of sanitation and water included journal articles, government documents, books, newspapers, research reports and the internet. International and local literature on water and sanitation was also used to support the study.

1.10 Data analysis

Data was analysed using thematic analysis. Creswell (1994) argues that thematic analysis focuses on identifiable themes and patterns found in the data collected. It categorized the collected data into themes such as conversation topics, meanings and feelings of participants on the subject matter. Furthermore themes were sourced from the objectives and some questions of the study.

1.11 Limitations of the study

The following are some of the known limitations in this study: Time and budget: The intention of this study was to interview a larger group of respondents rather than a small sample group, but it was not possible due to time, population size and budgetary constraints.

To overcome the limitations of the study, the researcher conducted the study within the available time and budget. The researcher was limited to 5 % of the population size.

1.12 Structure of Dissertation

Chapter one: Introduction and research methodology

This chapter provides an overview of the research problem, research aims and objective. The introduction outlines the background and evolution of the forms of housing mainly used by urban poor. The paper also identifies the main question and sub-questions of the research and provides the hypothesis which the research paper sets out to analyse. This chapter also defines the fundamental concepts, and provides a justification for conducting the research.

Chapter two: Conceptual and Theoretical Framework

This chapter introduces the theoretical and conceptual framework under which housing, water and sanitation provision can be understood and evaluated. It places the study in a theoretical and conceptual environment to allow for critical engagement with the subject using the predefined academic spectrum.

Chapter three: Literature Review

This chapter outlines the literature reviewed. It introduces the international literature as a framework for understanding international trends in delivery of housing and provision of water and sanitation. It then describes various policies and legislations informing the delivery of housing, water and sanitation in South Africa and strategies, plans and programmes used by eThekweni municipality to deliver basic services in informal settlement.

Chapter four: Historical Background of the Case study

This chapter provides a brief background of the case study being researched, and reasons for undertaking research on this particular case study, including location of the case study and the assessment of participation within the study area, the stakeholders involved in the case study and the different approaches specifically implemented in the project.

Chapter five: Research Findings, Data Analysis and Interpretation

This chapter describes the analysis of data followed by a discussion of the research findings. The findings relate to the research questions that guided the study. It presents more specific and in-depth observations of the study area versus the theory provided about the area through secondary data sources. The summary of the results and analysis obtained were gathered from the interviews and questionnaires within the study area during the site visits that were conducted. Despite some limitation with regard to information obtained for this phase of the research reliable, material has been used to support these results.

Chapter six: Summary of findings, Conclusion and Recommendations

This chapter summarizes the findings and outlines the conclusion for the research paper. It concludes the research paper by providing a review of the entire conducted research study and further gives recommendations based on the conducted research findings.

2 Chapter Two: Theoretical Framework

2.1 Introduction

The objective of this chapter is to provide theories on which the study is based. Those theories or approaches are the Basic Human Needs Approach, the Human Rights Based Approach, Threshold Saturation Theory and Integration and Coordination Approach.

2.2 Theoretical Framework

2.2.1 Basic Human Needs Approach

The Basic human needs approach is mainly used as a key method to measure the level of poverty mostly in less developed countries. It endeavors to outline the total resources essential for durable substantial welfare, generally in terms of consumption of goods. According to Jolly (1976) poverty is the projected minimum level of revenue required to secure human needs. Food, water, shelter and clothing are typical examples of human basic needs. However, these basic needs cannot be met without access to water. Access to sanitation, education and health care are also the most crucial human needs which should not be ignored (Jolly, 1976).

Water is an essential component of life for humans, animals and plants. Humans, animals and plants are dependent upon water. People do not need water only to produce food and generate power. People need water as a basic component of human day-to-day living since the human body requires water on a daily basis to carry on functioning.

According Abrams (2001) human species are encircled by the phenomena of contemporary infrastructures and bio-mechanics and until now humans have not grasped the skills, resources and will to provide all members of the population of

the world with something as basic as safe water supply and adequate sanitation. Abrams (2001) further argues that *"Basic human needs go beyond what we need to drink or ingest through our food for daily survival, about 5 litres per person per day. It includes the need for water to maintain a basic standard of personal and domestic hygiene sufficient to maintain health. It is not adequate just to have access to water in adequate quantities"*. According to Abrams (2001) it is essential take water quality into consideration, hence water should be clean so that it will not affect the wellbeing of the consumers, and it needs to be chemical contamination free. Therefore, water, which is mainly collected from unprotected sources of water, does not meet the above-mentioned values and puts the households' lives at risk.

Sanitation and health are directly linked with water; hence water provision should not be alienated from these two inter-related factors. One of the main factors of human sickness is water pollution, which is caused by inadequate sanitation. Abrams (2001) states that this often leads to what is called a cycle of contamination, which results mainly in diarrhoeal diseases. Water pollution continues to be the main factor of sickness and death mostly in the underdeveloped world as a result of lack of adequate water supply.

"Providing for daily water needs is a burden on households with inadequate services in a number of ways, in addition to the direct health threats. Often water has to be carried long distances to the house, which takes time and effort, a burden borne mainly by women and children" (Abrams, 2001). In inner cities and peripheral areas of cities mostly in underdeveloped countries, water is usually accessible from vendors, which is commonly costly compared to water which is provided using formal water services and in most cases water from these is of poor quality.

Inadequate water provision can be regarded as a cause of poverty and has an influence on poverty. According to Abrams (2001) *in most instances those*

deprived of adequate and reasonable water supplies are the underprivileged groups. The negative consequences of poor water supply can be disease together with time used in everyday collecting; often this aggravates the poverty trap". Several countries consider the provision of basic day-to-day water needs as a human basic right. The people of Kennedy Road informal settlement should be assisted by the government in order to meet this human basic need. The researcher believes that if the government can take this approach into consideration when dealing with human basic needs, it can be clearer when addressing social issues such as housing, water and sanitation.

2.2.2 Human Rights Based Approach to Water and Sanitation

"Human Rights Based perspective calls for enhanced consideration to the phase of assessment and analysis providing, among others, full understanding of the legal framework of a state, and the factors that create and perpetuate discrimination and social exclusion and hinder people from realizing their potential. A human rights perspective, hence, aids us to fully understand how laws, social norms and institutional actions positively or negatively affect people" (UNDP, 2000).

The UNDP (2000) also states that "The Human Rights Based Approach moreover brings in legal tools and institutional laws, the judiciary and the rule of law principle as a way to protect and secure freedoms and human development. Human Rights Based Approach is further based on the acknowledgement that real success in tackling poverty and vulnerability requires giving the poor and vulnerable both a stake, a voice and real protection in the communities where they live. This approach is not simply about expanding people's choices but above all about the empowerment of people to decide what this process of expansion should look like".

WaterAid, (2011) on Human Rights Based Approach to Water and Sanitation states that “*values of dignity and equity that underlie all human rights emerge from a variety of sources, including religious and a-religious ideological convictions regarding the essential dignity and justice that every single human being desires for him/herself*”. WaterAid, (2011) further argues that these values of dignity and equity are as a result entrenched in many historic international struggles, mainly the struggles for independence and self-rule.

“International human rights treaties, negotiated by legislative body of governments globally, provide the internationally acknowledged context of human rights, and a regularly acknowledged standard to measure their degree of implementation” (WaterAid, 2011). Furthermore countries across the globe are obliged by these international legal tools they have adopted and ratified to respect, protect and fulfill their commitments to the human rights enshrined in these covenants and conventions (WaterAid, 2011). These three obligations are elucidated more below as they relate to the right to water and sanitation.

2.2.2.1 The obligation to respect the rights of the people

The obligation to respect the rights of people requires countries to refrain from the following: Tissington (2011) argues that “the government should not interfere directly or indirectly with the enjoyment of the rights to water and sanitation”. Secondly government must protect water resources from being polluted. States should also refrain from randomly and illegally disconnecting water and sanitation services. States should also cease to reduce the provision of drinking water to low income communities in order to meet the demand of better-off areas. States must also refrain from destroying water services and infrastructure as a disciplinary measure during an armed conflict; or reducing water resources that indigenous people depend on for drinking (WaterAid, 2011). The States should advocate for equality for all. The gap in basic service provision between low the income group and high income group should be decreased.

2.2.2.2 The obligation to protect the rights of the people

The obligation to protect the rights of the people obliges States to prevent third parties, such as the private sector, from interfering with the rights to water and sanitation. This would mean that governments must agree on some legislation to make sure that private actors such as industries, water providers or individuals obey the human rights' principles interrelated with the rights to water and sanitation. States should, for instance, adopt the necessary policies to make sure that third parties do not unlawfully disconnect water and sanitation services; States should also ensure to that societies are protected against third parties' unsustainable extraction of the water resources they rely upon for drinking (WaterAid, 2011). States should also ensure that children and women are not at risk when they go to collect water or use sanitation facilities outside the home (WaterAid, 2011). Additionally States should also ensure that land tenure regulations and practices do not stop people from accessing safe drinking water; it is government's responsibility that the third parties which are operating water services do not compromise the adequate, equal and reasonable access to safe drinking water (WaterAid 2011). In the case of Kennedy Road and other informal settlements, the State should make sure that companies that provide services to the poor are not privatized in order to prevent price increase of water, which will result to deprivation of those who are not working.

2.2.2.3 The obligation to fulfil the rights of the people

The obligation to fulfil the rights of the people needs States to adopt proper legislation, policies, legal and other measures to fully understand the rights to water and sanitation (WaterAid, 2011). Moreover government must agree to adopt a national policy on water, which gives priority in water management to essential personal and domestic uses. The State should also determine resources which are available to meet these objectives and should specify the best cost-effective method of using these resources, outline the tasks and time frame for executing

the essential measures, and monitor outcomes and results, including making sure of adequate remedies for violations. According to WaterAid (2011) States must ensure the provision of water and sanitation services to disadvantaged and marginalized groups. The States must ensure that water and sanitation services are affordable for all; States should also make sure that people are properly provided with appropriate education about the proper consumption of water and use of sanitation facilities, and most importantly should introduce and encourage approaches to reduce water waste.

2.2.3 Human Rights Based Approach on access to safe water and sanitation services

Access to basic services, predominantly safe water and adequate sanitation, is essential for living, for dignity, empowerment and prosperity. Besides the fact that human beings require water to prevent dehydration, water is also essential to fulfil basic human needs, for example for personal hygiene and for cooking. UNDP (2000) further argues that uncontaminated water together with adequate sanitation are fundamental to fulfil the right to health, and also to fulfil a level of comfort; clean water and sanitation is also fundamental to fulfil the right to adequate housing; it is impossible to achieve the right to education without clean water and proper sanitation. Both clean water and sanitation are essential to fulfil other human rights. Sanitation is also the key to human dignity (UNDP, 2000).

The Constitution of South Africa also speaks on access to basic services. Section 27(1) (b) of the Constitution provides that *“everyone has the right to have access to sufficient food and water”*. Section 24 (a) also states that *“everyone has the right to have access to an environment that is not harmful to their health or well-being. This includes a constant supply of clean, safe drinking water”*. This constitutional obligation is further extended in section 27 (2), according to which *“the state must take reasonable legislative and other measures, within its available resources, to achieve the progressive realization of these rights.”* The right to adequate water is

interconnected with environmental rights and is an assisting right for the enjoyment of other rights such as health, education and safety (SAHRC, 2014).

The right to clean water enables everyone access to adequate, secure, physically reasonable water for home use. The right to water and the right to sanitation go hand in hand. Hence the right to sanitation also enables every individual to facilities that are physically accessible and reasonable, secure, germ-free, culturally and socially acceptable, and which give privacy and ensure dignity of an individual. Mai-Lan Ha (2015) states that “*sanitation in human rights terms is described as a system for the collection, transport, treatment, disposal or reuse of human excreta and associated hygiene*”. Hence it is important to acknowledge the connection between water and sanitation. Right to sanitation cannot be achieved without access to water.

According to WaterAid (2001) “Human rights based approach to water and sanitation endorses involvement and empowerment of the people so that they can have access to decision making regarding their access to basic services such as water and sanitation together with hygiene services”. Human basic right approach also ensures that provision of basic services is primarily based on the values of non-discrimination and everyone has an equal right to basic services. WaterAid (2001) argues that this approach also endorses national and international justiciability of the rights; furthermore it encourages responsibility and transparency and offers mechanisms to gradually realise increasing access to both water and sanitation.

2.2.4 Achievable goals of Human Rights Based Approach

WaterAid (2011) states that there is a lot that can be achieved by using this approach. Firstly accountability can be improved through this approach: as a result the right to basic services confirms that access to minimum essential provisions of clean water and adequate sanitation is a legal right for all. WaterAid (2011) states

that the basic right to water enables individuals to hold the State and other spheres of government responsible for supplying water to account. The acknowledgment of access to clean water and adequate sanitation as a basic human right gives government officials an obligation to ensure that water and sanitation are accessible to all. Societies can use the right to water and sanitation to lobby accountable spheres or levels of government for improvements and also call on these spheres to make sure they fulfil their obligations.

Secondly open participation and full access to relevant information can also be achieved through using this approach: Human rights oblige government officials to give access to information and engage in open consultation and lastly the participation of communities in decision-making (WaterAid 2011). Though community involvement and community empowerment are recognized as best practice in development, integrated planning procedures remain dominant and can disregard the contribution of various users, especially those customarily neglected, such as women or people who are residing in informal settlements. The right to basic services such as water and sanitation can empower and allow societies to shape themselves to solve problems concerning their wellbeing. WaterAid (2011) also argues that people can seek and obtain information, and legitimately take part in decision making or rather influence the outcomes of pertinent decision-making processes.

Thirdly progressive realization of human rights is another achievable goal. According to WaterAid (2011) “*the concept of progressive realization demands that states take deliberate, concrete and targeted steps towards fully realizing rights as expeditiously and effectively as possible and using the maximum available resources*”. This means that States have to create service levels and have to ensure that it prioritizes the achievement of a basic service level for all (WaterAid, 2011). Furthermore the responsibility to focus on the most marginalized and vulnerable groups is important for progressive realization in order to bring progress where it is required. Correspondingly, the value of ‘non-retrogression’ means that

any intentional or unintentional backward steps, like acts that deprive individuals of the rights to water and sanitation at a level they used to enjoy, are generally prohibited (WaterAid, 2011). For example, the cutting of subsidies for water and sanitation, mostly for the marginalized groups.

WaterAid (2011) states that *“the rights to water and sanitation need to be understood for present and for future generations, and facilities and services must be socially, environmentally and economically sustainable”*. Hence enough attention needs to be given on the operation and maintenance of water and sanitation facilities. This is to help to ensure that facilities are sustainable and do not become ineffective. Well maintained facilities cannot breakdown easily. To make sure that communities do not run out of water to drink, clean and wash themselves facilities need to be maintained. WaterAid (2011) argues that prioritization of water for domestic consumption is critical, even during drought and climate change and water scarcity. This approach advocates that water resources such as dams and rivers have to be protected from contamination. States must make sure that they focus on sustainable planning to provide services so that their citizens can enjoy a minimum level of services in future and also when resources are constrained, for instance in the course of financial crisis.

This approach also dwells on priority for people without basic access: the right to water and sanitation demands that governments must prioritize making sure that everyone has access to minimum essential supplies of safe water services and basic sanitation and use available resources accordingly (Anon., 2014). In order to make sure that equality is taken into consideration, States should aim to eliminate the gap between those served and unserved (Anon., 2014). Governments should move away from only spending their water and sanitation funds on improving existing services to middle-class areas, whereas informal settlement dwellers are left with no access to water and sanitation, because that directly violates their international human rights obligations.

Equality and attention to marginalized and vulnerable groups: “International human rights law promotes the equal enjoyment of human basic rights by every individual” (Anon., 2014). Hence every country needs to work in the direction of achieving equality both in housing delivery and provision of water and sanitation service. Discrimination of any form must be prohibited whether it is direct and indirect. It should be noted that to achieve equality in housing delivery and the provision of basic services such as water and sanitation, governments must eliminate existing policies which promote inequalities. Affirmative action needs to be taken to overcome inequalities; this requires laws and policies which look mainly on disadvantaged and marginalized groups, like individuals living in the informal settlements.

2.2.5 Threshold-Saturation Theory

A Threshold-Saturation Theory dwells on the connection of the provision of water and investing in sanitation plus health (Shuval, et al., 1981) and takes into consideration three variables; health status, then sanitation level and lastly socio-economic status, and attempts to encompass, for the first time in one general theoretical framework, numerous conflicting empirical findings (Shuval, et al., 1981). This theory is proposed as a general theory on the relationship between water supply and sanitation investment and health

The importance of clarifying the connection between supply of water to households and sanitation enhancements and nutrition is more than mysterious. Isely, (1983) emphasizes that “The International Drinking Water Supply and Sanitation Decade of the United Nations and the water supply and sanitation plan of the Alma Ata platform on ‘Health for All’ are based on the assumption that investments in water supply and sanitation will improve the health standard of the populations served”. Isely (1983) further states “that detractors from this understanding can point to the insufficiency of confirmation to support the assumption”. The Financiers of water and sanitation programmes, together with policy-makers, request proof of

healthiness and additional benefits as a justification for continued investment. Health benefits are in the middle of the first required benefits.

The relationship between diarrhoeal morbidity together with enhanced provision of clean water and adequate sanitation is to some extent well maintained. “The flaws in many studies... are possibly related to the difficulties referred to earlier of measuring diarrhoeal morbidity in the field and to problems associated with the use of installed facilities” (Curlin et al., 1979). Hughes (1980) and McJunkin (1983) have studied the proof supporting optimistic consequences of improved provision of water on diarrhoeal morbidity. For this reason there is a greater need for government to ensure provision of water and sanitation to its people to eradicate deaths caused by lack of access to basic services mainly clean water and proper sanitation.

2.2.6 Integration and Coordination Approach

According to Smit (1998:77), to enhance people’s lives in a significant manner and enable them to deal with the difficulties of informality, it is important that the informal settlement upgrading strategies be more integrated. Positive integrated approaches to informal settlement upgrading in developing countries would make a huge positive impact of people’s lives (Huchzermeyer & Karam, 2006).

Firstly the concept of integration is often used broadly but in this research paper it will be used specifically as a tool of bringing together different sectors, policies or programmes in informal settlement upgrading and in linking the housing delivery and provision of basic services mainly clean water and proper sanitation. Mabin & Smit (1997), as referred to by Pieterse (2003), define the integration approach as coordination and integration of sectoral investments in cities to ensure that, among other things, economic and spatial planning come together and reinforce social development.

Mabin & Smit (1997) state that the Integration and Coordination Approach is used mainly in the Urban Development Framework of South Africa. They further support the importance of this approach by emphasizing the entrenched legacy of sectoral specialization in the history of urban development policies in South Africa. Additionally Pieterse (2003) saw integration as a multidimensional approach. He provides the four dimensions as predominantly significant to consider in policy formulation and implementation:

- Integration as a policy rationale and outcome: ideal policy outcome of linking economic, political, social and environmental objectives.
- Integration as an institutional rationale: institutional architecture within municipal government and the broader governance system in the city: “successful urban development also requires coordination among the various spheres of government. Initiatives to develop urban management capacity must be supported by provincial and national government, but the management of the urban areas themselves can best be carried out at a local level where decision-makers are in touch with local needs and conditions” Pieterse (2003:124).
- Integration as an object of spatial planning: a space strategy to integrate various spatial forms and socio-economic and environmental characteristics of urban development.
- Integration as the glue for sectoral investment: an attempt to integrate broad sectoral objectives into one investment goal.

These dimensions highlight critical pathways in urban development that necessitate integration. Pieterse (2003) recommends the significance of foregrounding the need to link, coordinate and integrate numerous sectoral policies and investments to advance the development of more equitable and liveable urban settlements. Although Pieterse (2003) does not use the terms ‘integration and coordination’ interchangeably, nevertheless he highlights the linkage between these terms. They are slightly indivisibly linked. Furthermore he argues that it is

difficult to attain integration without appropriate coordination. Pieterse (2003) stresses that *“coordination is amongst the several responsible line functions of importance to ensure integrated and sustainable urban development”*.

Watson (2003) also provides an historical background to the concept of integration. Watson (2003) defines integration as a term primarily adopted by planners internationally to refer to the characteristics of their innovative spatial planning approach. In this case, planners referred to the integration of spatial integration and land uses. Even though there is no precise reference to policy integration, Watson's insights provide a significant step towards understanding integration as a concept. Nevertheless, she later refers to sectoral integration. Watson (2003) asserts that as ‘governance’ around the world has become increasingly complex, increasingly specialized, and increasingly open to conflicting demands, there has been a growing interest in the problem of achieving inter-sectoral integration, particularly within local administration.

2.3 Conclusion

This chapter reviewed the theoretical and conceptual framework. The theoretical framework was aimed at placing the research within the existing framework of existing theories. The theoretical framework was done with a view to frame this research paper within the existing body of knowledge. Theories in this exercise are useful in defining the housing delivery phenomenon.

3 Chapter Three: Legislative Framework and Literature Review

3.1 Legislative and policy framework on water and sanitation

This section deals with the legislative and policy background for basic services namely water and sanitation in the context of South Africa. It takes a closer look on relevant policy initiatives in housing delivery and the provision of clean water and proper sanitation specifically in South Africa. The key objective of the policy framework is to bring about the policy setting under which housing, water and sanitation initiatives are implemented. The central policy principles in housing, water and sanitation will also be covered with a view to understanding contemporary tendencies in the provision of clean water and sanitation. Institutional arrangement under which policy implementation occurs will be outlined.

The section will also discuss what housing policies say about water and sanitation. Those policies are the following: the Housing White paper and Breaking New Ground. For purposes of this study, this paper only starts its argument from 1994 onwards. The purpose is to look at the background to the current policy environment and its delivery stage. This chapter moreover looks at the Constitution of the Republic of South Africa and other water and sanitation policies such as the White Paper on Water Supply and Sanitation Policy (1994); National Sanitation Policy (1996); Water Services Act (1997); Housing Act (1997) together with the Upgrading of Informal Settlements Programme (UISP) and the Emergency Housing Programme (EHP); Municipal Systems Act (2000); White Paper on Basic Household Sanitation (2001); Strategic Framework for Water Services (2003); National Sanitation Strategy (2005); and Free Basic Sanitation (FBSan) Implementation Strategy (SERI, 2011).

3.1.1 Constitutional Obligations

Section 27(1) (b) of the South African Constitution provides that “*everyone has the right to have access to sufficient food and water.*” This constitutional responsibility is extended more in section 27 (2), according to which “the state must take reasonable legislative and other measures, within its available resources, to achieve the progressive realisation of these rights.” The right to adequate water interconnects with environmental rights and is an assisting right for the enjoyment of other rights such as health, education and safety (SAHRC, 2014).

All three government spheres share the constitutional obligation of the provision of water and sanitation. SAHRC (2014) highlights that constitutional responsibility to provide basic services to meet the right to water is a collective duty of national, provincial, and local spheres of government.

National government, through the Department of Water Affairs (DWA) is liable for setting national policy frameworks and standards for the delivery of water services (DWA, 2001). The National Water Act 36 of 1998 (NWA) creates a comprehensive legal framework for the management of water resources in South Africa, which remains the responsibility of national government. The preamble of the NWA acknowledges “the National Government’s overall responsibility for and authority over the nation’s water resources and their use, including the equitable allocation of water for beneficial use, the redistribution of water, and international water matters.” SAHRC (2014) states that all the provincial governments constitutionally mandated to monitor and support local government in the delivery of basic services of water and sanitation.

The constitution of a country is an important basis for all legislation in that country. The Constitution of the Republic of South Africa is therefore the supreme law upon which all South African laws are centered. Lovan et al. (2005) state that in terms of local government affairs, the constitution of the Republic of South Africa further mandates the municipalities “to give priority to the basic needs of the community,

and to promote the social and economic development of the community, and participate in national and provincial development programs” (RSA, 2002). Roles and responsibilities of each sphere of government with regards to the provision of water and sanitation are briefly described below:

3.1.2 Different Levels of Government

The National Sanitation Policy (RSA, 2002) states that provision of sanitation is a collective obligation of all the three spheres of government: namely local government, provincial government and national government.

a) Local Government

DWAF (2005) argues that the role of local government on the provision of sanitation is as follows: firstly it is responsible for providing communal infrastructure. It has to plan and finance all the programmes. However it may receive grants from the national government, but is obliged to operate and maintain sanitation infrastructure and communicate with consumers. It is also responsible for the maintenance of public health, health awareness programmes and most importantly to provide access to health facilities and prevent pollution. In addition it must promote development by assisting community involvement in the provision of basic services. Local government is responsible for provision of technical support for improving on-site systems, assisting in the establishment of local water and sanitation committees, collaboration with others to pool experience and generate consistent approaches, and reporting to provincial government (Sesani , 2005).

Sisk (2001) states that delivery of basic services is the main role of the local government, but mainly those services which need local coordination, networks, and infrastructure. Local government shares its duties with households for achieving better sanitation. Hence, local government needs to provide access to basic services, including sanitation. On the other hand both National and provincial

Governments are constitutionally obligated to assist local government with legislation and other measures.

b) Provincial Government Level Responsibilities

Sesani (2005) and the National Sanitation Policy white paper (1996) highlights that as far as the provision of sanitation is concerned, the provincial government also plays a crucial role. The provincial government is responsible for providing technical support such as capacity building, engineering advice and so forth to local government. Other duties of the provincial government is to distribute housing grants to local government, co-ordinate regional planning and local training capacity, promote the integrated development, inter-departmental co-ordination, allocation of provincial funding, monitor and evaluate progress of sanitation programmes, and also to monitor other related undertakings of local government.

c) National Government Level Responsibilities

The National Sanitation Policy (1996) also states there are duties which the national government should perform in the process of providing sanitation. The national government is responsible to co-ordinate all activities undertaken by both local and provincial government, it also has to initiate policies and strategies to meet the rights of the people as obligated by the Constitution. National government is also responsible to set basic standards and levels of service, changes to the regulatory framework, allocation of national funds (funding criteria), development of a framework for grants, loans and technical assistance, preparation of guidelines, promote and advocate for sanitation improvements by support programmes done by local and provincial governments. Lastly the national government is responsible to monitor and evaluate all activities during the process of sanitation provision.

The Constitution (1996) of South Africa obliges local government to make sure that everyone has equal access to acceptable sanitation services (RSA, 1996). Like all

municipalities, eThekweni Municipality is mandated to provide basic services to all settlements within their area of jurisdiction in accordance with the rights described in the Constitution of South Africa as well as in the various Acts that guide service delivery such as the provision of water and sanitation. After the local government elections in 2000 eThekweni Municipality inherited rural areas, which were largely un-serviced. These rural communities depended largely on traditional unimproved pit latrines. The difficulty with these areas is that they fall outside the bulk service networks such as sewer lines and water mains.

Singapore is a good example of a country which has done well in linking the delivery of housing with the provision of basic services such as clean water and proper sanitation. It set a good example to show that delivery of adequate housing to all is possible. According to Singstat (2014), citizens of Bukit Merah in Singapore had been living under hazardous condition for many years, where a large number of the population did not have access to adequate housing, clean water or proper sanitation. Today in Singapore the majority of Singaporeans live in residential housing which is publicly governed and developed. As at 2013, 81.9% of the resident population lives in such accommodation. (Singstat, 2014). These flats are located in housing estates, which are self-sufficient satellite towns with schools, supermarkets, clinics, hawker centres, and sports and recreational facilities.

In 1965, half of Singapore's population was uneducated; more than 70% of households lived in congested and poor conditions; one third squatted on the city fringes and GDP per capita was 2700 USD. But then again in 2011, according to urbanclique (2015) Singapore was ranked third as the most competitive country in the world. It was also ranked first as the least corrupted country; with GDP per capita of 37000 USD which positioned Singapore in the top ten most wealthy countries and it was perceived as the most competent and upright bureaucracy in South East Asia. Since its independence in 1965, Singapore has contrived to reform its administrative system to be more influenced by a market-oriented management. According to UNDP (2014) the delivery "of mass housing

development, affordable public housing has improved the living circumstances of its citizens. The main vehicle for implementing the public housing policy was the Housing and Development Board (HDB). In 1997, 85% of the population owned or lived in a HDB-developed flat. The Singapore model has been widely hailed as a success and is often studied by other countries, which have yet to solve the housing problems of their urban population” (UNDP, 2014)

In 1947, when the Housing Committee was initiated to fight the housing backlog in Singapore, the housing committee in Singapore released some deplorable outcomes. 72% (680,000) of the people lived in the inner-part of the city. Approximately a third of the people in Singapore were living in very small area which is about 4 square kilometers. UNDP (2014) states that urban shantytowns increased rapidly, increased water related disease, crime and posed fire hazards. In these settlements there was no access to water and proper sanitation. The Singaporean Government linked housing delivery with the provision of basic services, mainly clean water and proper sanitation.

Housing the urban poor in appropriate conditions is a huge challenge in almost all third world countries. UNDP (2014) states “the speed of urbanization, the degree of economic growth, the availability of land for housing, the rise in land prices and inappropriate strategies for urban planning and land appropriation all directly contribute to this problem. Most countries have tried to implement housing programmes in order to house urban poor. Nevertheless, those programmes have usually met with failure or limited success. Efforts to improve their quality of life are also often negated by the rapidly deteriorating housing conditions in the slum and squatter areas”.

This is the common condition in many developing countries. Nonetheless, the Singaporean government has been a distinguished exception to this commonly known rule. According to UNDP (2014) “Singapore has been able to implement city-planning and urban-management policies that actually benefit the poor and its

housing programme has been successful and admired for producing low-cost, affordable housing on a mass scale. Its present-day situation, however, evolved out of the same problems and conditions that still blight other Third World countries today”.

3.1.3 The White Paper on Basic Household Sanitation 2001

There has been a major challenge in providing basic services such as adequate sanitation to every South African. However this challenge is faced by many developing countries. The South African government came up with a White Paper on Basic Household Sanitation which highlighted acts which will address the challenge of providing sanitation to all. The White Paper on Basic Household Sanitation (RSA, 2001:113) outlines that indeed providing sanitation is a huge challenge. As a result millions of South Africans still lack access to proper sanitation and many currently still use the bucket system or pit toilets. “When sanitation systems are inadequate, the impact on the health of the community and on the environment can be extremely serious” (Sesani , 2005). This policy advocates for better sanitation provision for all. It is a perfect tool to aid in the challenge of sanitation provision for the urban poor

3.1.4 The Housing Act (Act 107 of 1997)

The Housing Act firstly outlines that “The Republic of South Africa recognizes that housing, as adequate shelter, fulfils a basic human need” and that basic human need is a fundamental need for all. Hence the South African Government introduced Housing Act 107 of 1997 which is the key housing legislation in the Republic of South Africa. Housing Act 107 of 1997 officially establishes policy principles defined in the White Paper. “A Housing Policy and Strategy for South Africa published in 1994. The Housing Act provides for a sustainable housing development process, setting general principles for housing improvement in all spheres of government” (Tissington, 2011). The Housing Act also outlines the key

duties of all the spheres of government in housing development processes. According to Tissington (2011) the Housing Act “lays the basis for financing national housing programmes. It is relevant to sanitation not only because sanitation is a fundamental part of the right to adequate housing, but also because the government has linked sanitation rollout to its housing delivery programme, through the National Housing Subsidy Scheme (NHSS)”.

According to Tissington (2011) housing development in the Housing Act (Act 107 of 1997) is defined as follows:

“The establishment and maintenance of habitable, stable and sustainable public and private residential environments to ensure viable households and communities in areas allowing convenient access to economic opportunities, and to health, educational and social amenities in which all citizens and permanent residents of the Republic will, on a progressive basis, have access to:

- (a) Permanent residential structures with secure tenure, ensuring internal and external privacy and providing adequate protection against the elements; and*
- (b) Potable water, adequate sanitary facilities and domestic energy supply”*

3.1.5 The Reconstruction and Development Programme (RDP)

According to Tissington (2011) “the Reconstruction and Development Programme is a policy framework document drafted by the African National Congress (ANC) in 1994”. After ANC won its first government election in 1994, it tried to redress the injustices of the past; hence the ANC led government adopted the RDP policy. The primary objective of the RDP was to ensure that all South Africans through government subsidies meet basic needs. The ANC government desired to meet these basic needs in an integrated way as it wanted to combine urban, peri-urban development with rural development. The RDP also explained the importance of access to clean water and adequate sanitation. Hence Tissington

(2011) states “The housing standard in the policy document states that a house must include sanitary facilities, drainage and convenient access to clean water”.

All the acts and policies which have been discussed on this section outline and emphasize the importance of the constitutional responsibilities of the three spheres of government with respect to the delivery of housing and the provision of clean water and proper sanitation. “National government must establish and facilitate a sustainable national housing development process by formulating housing policy” (Tissington, 2011). The policies which the government need to look at at this present moment are policies which aim to improve the linking of the delivery of housing and the provision of basic services namely clean water and proper sanitation. Tissington (2011) further argues “Government must also monitor implementation by promulgating the National Housing Code and establishing and maintaining a national housing data bank and information system”

3.1.6 The “BREAKING NEW GROUND” strategy

The Department Human Settlement, which was previously called Department of Housing, introduced the “Breaking New Ground” (BNG) strategy in 2004. This was intended to guide housing development. The BNG Plan is required “to redirect and enhance existing mechanisms to shift towards more responsive and effective housing delivery” and seeks to “promote the achievement of a non-racial, integrated society through the development of sustainable human settlements and quality housing” (Yuen & Kumssa, 2010).

The BNG plan was initiated to achieve government objectives and those objectives are as follow: the government aimed to accelerate the rate of housing delivery in South Africa and to use housing strategy to alleviate poverty more in low-income areas; the other objective of BNG was to use housing delivery as an employment creation strategy. Hopkins (n.d) argues that the objective of BNG is to “Leverage the growth in the economy; Combat crime, promoting social cohesion and

improving quality of life for the poor; Support the function of the entire single residential property market to reduce duality within the sector by breaking the barriers between the first economy residential property boom and the second economy slump". The BNG plan in support of spatial rearrangement of the South African urban setting also aimed to use housing tool to create sustainable human settlements; "Promoting and facilitating an affordable rental and social housing market; Promoting upgrading of informal settlements; Providing community supporting facilities through housing delivery" (Yuen & Kumssa, 2010).

The BNG policy involves shifts in previous housing policy, and those shifts aimed at putting South Africa confidently in a good way to construct sustainable human settlements for all, because the previous policy merely dwelt on providing houses as it looked at quantity while not taking quality into consideration. Hopkins (n.d) argues that "this result in integrated sustainable development, wealth creation, and poverty eradication, where present and future inhabitants of such settlements live in a safe and secure environment with adequate access to: Economic opportunities". Hopkins (n.d) also alluded to the fact that "BNG planned to have a mix of safe and secure housing and tenure types; reliable basic services; educational, entertainment, cultural, health, welfare and police services". Furthermore the BNG strategy is an answer to informal settlement conditions. As it also speaks on the upgrading of informal settlements the "BNG plan will lead to the stabilization and integration of these areas into the broader urban fabric. It aims to provide housing in healthy and secure living environments, with communities having access to the services and goods produced by society" (Tomlinson, 2005).

3.1.7 The National Sanitation Policy of 1996

According to Tissington (2011) the National Sanitation Policy was adopted by the Department of Water Affairs and Forestry (DWAF) in 1996. This policy recognizes that "sanitation for households mean much more than building toilets. The most important requirement for safe sanitation is of course, getting rid of human excreta, dirty water and household refuse. Also crucial are the way people think and

behave, and whether they have hygienic and healthy habits. Sanitation improvement is a bigger process aimed at the individual, the home and the community” (RSA, 1996:17). The policy aimed at improving the sanitation services for all. The National Sanitation Policy states that if the government could move away from providing inadequate sanitation and only provide flush toilets all the above-mentioned problems can be minimized or solved.

3.1.8 The Water Services Act 108 of 1997

In each and every state there should be an act which will look at assisting the authorities to undertake their duties as water services experts. In South Africa that Act is called Water Services Act. This Act helps the local municipalities to take on their duties and look after the concerns of the beneficiaries. Water Services Act further elucidates the responsibilities of additional water services bodies, particularly the water service providers together with the water boards.

3.1.9 The National Water Act 36 of 1998

The water Services Act works interrelatedly with the National Water Act (Act 36 of 1998). The National Water Act is responsible for legislating water protection processes. Both these Acts work interchangeably with the Municipal Structures Act 33 of 2000: DWA (2015) states that “The municipal Structures Act (Act 33 of 2000) provides for the establishment of municipalities in accordance with the requirements relating to categories and types of municipality and to provide for an appropriate division of functions and powers between categories of municipality”. Local municipality or the District Municipality are obligated by the Municipal Act to be responsible for water services such as ensuring that there is access to water for all.

3.1.10 Local Government: Municipal Systems Act (2000)

The Municipal Systems Act (2000) sets out legislation that enables municipalities to uplift their communities by ensuring access to essential services. The Act defines the legal nature of a municipality as including the community and clarifies the executive and legislative powers of municipalities. It seeks to boost effective local government by establishing a framework for municipal planning, performance management and use of resources. The Act also ensures that municipalities put in place service tariffs and credit control policies that take the needs of the poor into account and it promotes the participation of local communities in local governance.

Municipalities and communities should work together in an attempt to boost economic and social upliftment in their areas, and the Act makes a number of provisions for co-operation between municipalities and communities. It sets out the rights and responsibilities of each party.

3.2. An overview of water, sanitation and health

Water, sanitation and health go hand in hand and are inseparable. In the context of communities that are rooted in poverty understanding the close relationship between the three factors is easier than in the context of better-off communities (Abrams, 2001). The link between water and health cannot be overlooked. Hence there is a close correlation between the two. For instance, waterborne diseases such as diarrhoea, cholera are caused by consumption of contaminated water. Moreover unavailability of water is a contributing factor for faecal-oral diseases. Abrams (2001) defines these diseases as 'water-washed diseases'.

Abrams (2001:) alleges that “there are 'water based diseases' and water-related vector-borne diseases in which the aquatic environment provides an essential habitat for the mosquito vectors and intermediate snail hosts of parasites that cause human diseases (Abrams, 2001). Malaria, schistosomiasis, lymphatic

filariasis, onchocerciasis and Japanese encephalitis are examples of these diseases”

Water contaminated by chemicals also has negative impacts on health. Typical chemically contaminated water diseases contains excessive amount of fluoride. Abrams (2001) states that chemicals can be added during the natural processes and during human activities like mining and industry. According to Abrams (2001) “poor communities, especially in urban fringe areas, are particularly susceptible to dangers from polluted water from a variety of sources due to lack of or poorly enforced regulation of water pollution”.

3.2.1 Impact of poor sanitation on health

South Africa is challenged by several illnesses and most of these illnesses are caused by the poor provision proper sanitation facilities. Inadequate sanitation is directly and indirectly affecting the lives of the poor (Evans, 1994:130). Poor sanitation promotes the spread of health problems. According to Hall (2003) many infections in South Africa are infections caused through lack of access to sanitation. “Viruses, bacteria, protozoa and worms may spread through direct contact, indirectly via carriers and vectors” (Hall, 2003). Deaths caused by cholera in South Africa, mostly in the low income sector, indicate that there is indeed poor access to basic services. According to Hall (2003), “Poor sanitation impacts on the health, quality of life, and development potential of communities”. Tissington (2011) states that “The Water Services Act (RSA, 1997: 13) states that diarrhoea is the leading child-killer disease to South African children. Poor sanitation is a major cause of diarrhoea. The White Paper on Basic Household Sanitation (RSA; 2001: 7) affirms that adequate basic household sanitation facilities can have dramatic health benefits to communities”.

Eade & Williams (1995, 688) underline that sanitation is essential in primary health care. Eade & Williams (1995) further articulate that more than 25 million individuals

all around the world die consistently from sicknesses caused by lack of access to proper sanitation. Lacking sanitation has been recognized as the fundamental driver of human disease. The most widely recognized sicknesses connected with poor sanitation are: looseness of the bowels and diarrhoea, typhoid, bilharzia, jungle fever, cholera, worms, eye contamination and skin infections. Contaminated water and poor cleanliness are the significant reason for these diseases, the most widely recognized group of transmittable diseases, profoundly prevalent among poor individuals living in congested conditions with poor facilities (Blackett, 2001: 29).

Most faecal-oral diseases are transmitted by hands and amid food preparation, as opposed to through drinking polluted water directly. There are causes of infection transmission, which can incorporate the following: Transmission by means of fingers and hands, sullied by dung through unwashed hands.

The second transmission is faecal defiled food, which has been contaminated by unwashed hands or developed in polluted soil. The third transmission is through flies (Evans, 1994:130).

The fourth transmission mode is through liquids. This is fundamentally water pathogenically polluted at source or amid gathering, transportation or stockpiling. The fifth transmission is through fields, individuals working in fields, or youngsters playing where pathogens are available.

In both urban and rural settings of underdeveloped nations, a huge number of the most helpless individuals need access to enhanced water and sanitation services (Nkongo & Chonya, 2009). These incorporate more than 500 million handicapped individuals, a developing number of fragile elderly individuals, and different gatherings of individuals with special needs, incorporating those living with HIV and AIDS (Nkongo & Chonya, 2009) Information on access to water and sanitation services shrouds the individual exertion that powerless groups need to make in getting to those facilities every day. Unavailability of water and sanitation facilities

excludes huge numbers of these powerless groups from getting services they must have each day (Shah, 2011).

Nkongo & Chonya (2009) state that individuals living with HIV ought to have full access to water and legitimate sanitation. Some of the ways in which people living with HIV (PLHIV) are influenced by the quality, amount and accessibility of water, sanitation and cleanliness are clarified below:

The fundamental goal of the water supply is to enhance individuals' wellbeing by giving access to safe water and (ecological) sanitation. With HIV/AIDS, this turns out to be much more earnest in light of the fact that water and sanitation related illnesses, for example the different sorts of skin illnesses, are among the most widely recognized contaminations. For this reason, sufficient water supply and sanitation are absolutely critical for HIV infected individuals to stay healthy as far as possible and for individuals with AIDS to lessen their presentation of such diseases (Nkongo & Chonya, 2009). Potable water and proper sanitation are crucial to guaranteeing fitness and good health. Perilous water is neither good for cooking nor drinking because of the danger of being contaminated. Contaminations like looseness of the bowels are additionally brought about by absence of clean water and appropriate sanitation. Making sure that individuals living with HIV and AIDS have access to clean water and proper sanitation decreases the danger of their developing looseness of the bowels and cholera.

3.2.2 Household Economy and Productivity of PLHIV

Improved access to sustainable water sources close to households lessens the time and exertion spent searching for water by families dealing with PLHIV. The time spent can be gainfully used by these families for different undertakings and ventures that rely upon a satisfactory water supply. Inaccessibility to safe water may prompt the purchase of safe water, bringing about the burden of excessive costs. Nkongo & Chonya (2009) state that the absence of water may prompt a disturbance in those profitable activities that depend on accessibility of water, such

as cultivating crops. Efficiency of affected individuals goes down because of sickness while profitability of other relatives may go down because of the extra weight of having to consider and back up ill individuals, again prompting diminished salary levels.

Despite the fact that HIV/AIDS is not a water-related infection, the issues are narrowly related. A number of the severe infections that kill individuals living with HIV/AIDS are transmitted through polluted water and unsanitary living conditions. Nkongo & Chonya, (2009) states that “when people are sick, they normally suffer from diarrhoea” therefore access to safe and adequate sanitation is essential as well as enormous amounts of water for keeping themselves and their environment clean. Enhanced water supply and sanitation can lessen the recurrence of diarrhoea. Nkongo & Chonya (2009) further allege that “the incidence of malaria can also be reduced when mosquito-breeding areas caused by insufficient drainage are eliminated”.

According to Nkongo & Chonya (2009) “a reliable supply of water, including for small-scale production and sanitary latrines, allows those infected by HIV/AIDS to continue productive activities and reduces the workload for caregivers”. Lack of access to sufficient water has a negative effect on HIV infection; mothers who are HIV positive breastfeed their babies because they have no access to water to prepare infant formula, although that can expose babies to HIV. “If a reliable source of safe water and infant formula can be provided until the baby starts to eat solid foods at six months of age, the generational spread of the virus can be reduced” Nkongo & Chonya (2009)

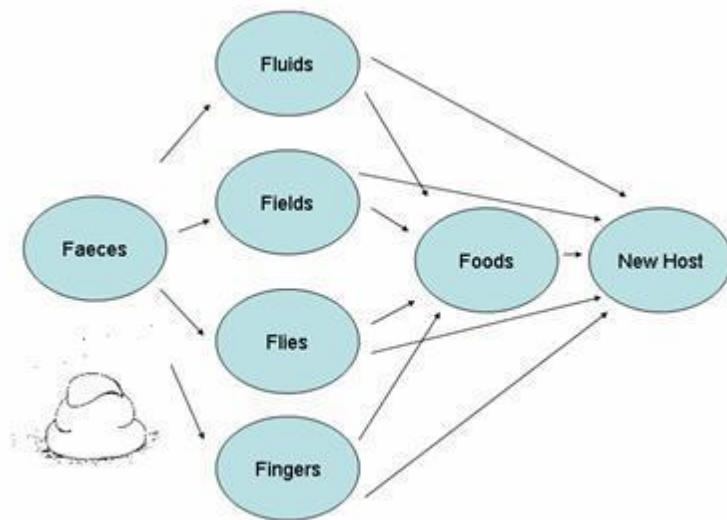


Figure 1: F-diagram

Sanitation is a critical part of breaking the faecal-oral transmission route for many diarrhoeal and other illnesses. The absence of basic sanitation at the end of the day pollutes water, food or hands and transmits enteric pathogens. According to Lanois (1958) "Figure 1 is known as the F-diagram and depicts possible transmission routes of faecal contamination pathways (Lanois, 1958). This shows that faecal contamination of fingers, food, and water can cause risk of illness even when a population has a reliable, safe water supply".

Hygienic clean drinking water, and legitimate hand washing and hygiene are all approaches to reduce diarrhoeal illnesses and also counteract faecal-oral transmission. Numerous projects look to enhance sanitation, water supplies, and hygienic conduct in a joined effort, regularly called "WASH" programming (water, sanitation and hygiene). In spite of the fact that these mediations do not as a matter of course should be finished in the meantime, they are frequently addressed together in light of the fact that they all add to reduce diarrhoeal sicknesses.

3.3 The Millennium Development Goals (MDGs) on Water and Sanitation.

According to the World Health Organization (2012) in 2012 roughly 2.5 billion individuals overall needed access to enhanced sanitation, and around 780 million individuals needed access to enhanced water supplies. There has been a critical focus from non-governmental organizations (NGOs) and governments to create more access to safe drinking water, yet significantly less broad thought is given to adequate sanitation. One step forward was the consideration to the scope of sanitation in the Millennium Development Goals.

Goal 7C of the MDGs states that, between the years of 1990 and 2015, the rate of individuals internationally who still need access to enhanced sanitation and enhanced drinking water sources will be reduced to half (UN, 2011). There is dispute as to what is characterized as "improved sanitation" and also how to measure access to sanitation and reach those who do not have access to sanitation. The world met the MDG for water toward the end of 2011; however it is projected the world will miss the sanitation goal by more than a billion individuals (WHO, 2012).

The United Nations (UN) set eight MDGs for development. According to the MDGs, Goal 7 of the MDGs "addresses environmental sustainability, with a target (Target 10) to halve, by 2015, the proportion of people without sustainable access to safe drinking water and basic sanitation. The attainment of Target 10 also contributes to the reduction of child mortality (Target 5); a decrease in the incidence of major infectious diseases (Target 8); improvement of maternal health (Target 6); and improvement of the quality of life of slum populations". (Fonseca & Cardone, 2004)

Enhanced water and sanitation contributes to gender equality and access to these basic services is also seen a factor of women empowerment (Goal 3), being allied to school enrolment and school attendance, particularly of girls. Meeting the target would convey further development advantages and also contribute to decreasing

poverty level (Target 1) and starvation decrease (Target 2) through utilization of water supply for industry and horticulture, sparing beneficial time in getting to closer water sources and sanitation facilities, and contribute to workforce wellbeing. Essentially, enhanced water supply and sanitation represent increased financial value to those more vulnerable individuals from society.

The new sanitation target joined the existing MDGs of reducing the proportion of people without access to services such as safe water by 2015. Together, they provide an international commitment for an integrated approach to sanitation, water supply and hygiene promotion.

The issues of water supply, sanitation and environmental protection are major complications threatening developing countries (Okonkwo, 2010). The degree of the problem increases as the populations of these countries increase. Consequently, outbreaks of water-borne diseases are bound to occur very frequently. For countries that had a high proportion of people without access in the baseline year 1990, the task was much greater than for countries that already had high coverage levels.

Okonkwo (2010) states that some progress has been made to improve water supply and sanitation in most developing countries. Nonetheless, there is still more that needs to be done if the MDGs are to be accomplished. According to Okonkwo (2010) in order to help to achieve this goal, a collection of mechanisms have been put in place to share the experience of successful programmes in developing countries. Some of the mechanisms are highlighted below:

3.3.1 WaterAid/the World Bank:

Organizations like WaterAid or the World Bank, which are playing a major role in supplying water and sanitation in many developing countries around the globe, are

currently playing a most important role in sponsoring the spread of technological, institutional and financial inventions.

The United Nations also plays a crucial role in assisting in the improvement of the delivery of water and sanitation. International organizations such as United Nations Children's Fund, the World Health Organisation, United Nations Development Programme, the United Nations Environment Programme, UN-HABITAT and United Nations Education, Scientific and Cultural Organisation work to advance the sharing of knowledge on water and sanitation among countries in the South, supplemented by UNDP's Special Unit for South Cooperation (Okonkwo, 2010).

3.3.2 Water and Sanitation Programme:

Okonkwo (2010) describes "the Water and Sanitation Programme (WSP) as an international partnership of the world's leading development agencies concerned with improving sector policies, practices and capacities, and alleviating poverty by helping the poor to have access to adequate water and sanitation services". WSP is managed by the World Bank, and previously it has supported countless improvements made in the sector. WSP enthusiastically upholds administrative ideologies approved at transnational seminars and translated into improved policies and programmes. It further offers encouragement to national governments, local governments and to other organizations concerned with improving provision of water and sanitation (Okonkwo, 2010).

3.3.3 Water Supply and Sanitation Collaborative Council (WSSCC):

Okonkwo (2010) further describes the WSSCC. He states that this council hastens the accomplishment of sustainable water supply, sanitation and waste management services to all individuals (primarily the poor people) by improving joint efforts among underdeveloped countries and several external agencies which provide support to these countries through coordinated programmes. Okonkwo (2010) argues that "the Council's secretariat in Geneva acts as the organisational and knowledge hub for Council activities, while national and regional co-

coordinators serve as a bridge between the Council and its members in a particular region and/or country, and as a means for extending the Council's contacts with people"

3.3.4 Global Water Partnership (GWP):

The GWP is an international multi-investor body which supports underdeveloped countries in enhancing sustainable developmental growth and managing their water resources; Rana & Kelly (2004) state that GWP pays exceptional attention to the Integrated Water Resources Management. GWP is a World Bank initiative. It was established in 1996, under the UNDP together with Swedish International Development Agency and is now financed by a scope of global development support organizations and a range of international development assistance agencies. It is operated as a web of international, country-level corporations maintained by a Secretariat established in Stockholm and guided by a Technical Committee (Rana & Kelly, 2004)

3.3.5 World Water Council (WWC):

The WWC is one of the international bodies which mainly focuses on promoting attentiveness, constructs political obligation and also activates action on serious water concerns. This council further holds World Water Forums as stages where water community stakeholders together with policymakers from several countries explore resolutions that can undertake water security. These and other components will go far towards securing the collaboration expected to take care of the demand for help to accomplish the MDGs on water and sanitation (Okonkwo, 2010).

All the above mentioned organisations work together to achieve the MDGs. They are all the role players in the delivery of basic services to the poor. They play a major role in creating sustainable human settlements for the poor globally. They are behind policy making decisions and they further influence policy formation.

3.4 Case Study: South Africa

Providing urban poor with proper housing has been a challenge all around the world. Hence there are millions of people across the world who still live under hazardous conditions. The eThekweni municipality came with a good development project which would cater for the urban poor. The researcher looked at two case studies to explain and highlight the importance of linking housing delivery and the provision of clean water and sanitation. The case studies which are described in this paper show the success in linking housing delivery and basic services mainly water and sanitation.

The three spheres of government in South Africa, the National Department of Human Settlements (DHS), the KwaZulu-Natal Department of Human Settlements (KZNDHS), eThekweni Metropolitan Municipality together with Tongaat Hullet Development combined to achieve a joint venture to deliver adequate housing for the poor. The Cornubia Housing Project was a joint venture between the public sector and private sector. When completed, the establishment will boast 28 000 mixed income housing units, light industrial factories, retail parks, schools, various businesses and open parks (DHS 2014).

The eThekweni's first Cabinet Lekgolta priority project was seen by the researcher as a good example to address the housing backlog in South Africa. A multi-billion rand development, the Cornubia housing project is a mixed use also mixed income project. According to DHS (2014) Cornubia development "will change the skyline of eThekweni in the future". He further states that "Cornubia was aimed to be the home of the next major industrial area in the north, with approximately 80ha coming on to the market in 2012. This will be a key industrial development with linkages to the new international airport".

The development of Cornubia was centered upon the main beliefs of sustainable development with greater densities, a wide range and integration of income levels, creation of employment opportunities and economic prospects, considerable

delivery of clinics, schools and additional social amenities, based on feasible non-motorized and public transportation and wide-ranging open spaces.

A project such as Cornubia could help with provision of services, mainly water and sanitation, and addressing housing delivery issues in the country, however the government should invest more on such development projects to benefit the previously disadvantaged group. This kind of development is similar to that of the Singaporean government (DHS 2014). The government together with the private sector could successfully deliver housing.

The second local case study which the researcher looked at was Cato Manor. Cato Manor was previously dominated by an informal settlement. A large number of households in Cato Manor lacked access to services such as clean water and adequate sanitation. However, there is now a huge improvement in the area and most people today are properly housed with a large number of households having access to proper sanitation and clean drinking water.

Cato Manor is located seven kilometers from the centre of Durban. It is characterized by an array of housing settings which range from formal housing, including RDP houses, to informal settlements to Tin houses (transit camps, provided by the government). Mostly Africans are situated within the area but a few Indians are present as they have opened shops that locals can purchase from daily. Cato Manor is separated into three sections which are Umkhumbane, Cato crest and Wiggins (Sutherland & Lewis, 2012)

According to a study conducted in Cato Manor it was shown that there is accessibility to drinking water, the majority of the people who stay there (64.2%) are satisfied with the quality of water and access to drinking water. A larger portion of the population, which is 42%, has private access to water for domestic use; however 27.5% use communal taps and 29.7% purchase water from water vendors. There seems to be a fair share in the ways that people within the

settlement receive water as most have their own taps or buy water from vendors and even use the communal tap (Sutherland & Lewis, 2012)

At the time of the study, water consumption in Cato Manor was as follows: 32.6% of the population paid between 0-R5 per month. Only 2.2% received free water (Sutherland & Lewis, 2012). Different costs were charged for domestic use based on the type of water connection they had and also the amount of water they used in a 30 day period. Households with a full pressure water connection paid a fixed charge (based on the size of the water meters) if monthly consumption was greater than 6kl. Each unit was allocated 9kl of free basic water for a 30 day period. 2.9% households had access to clean toilets, while only 0.7% paid to use the sanitation infrastructure. According to the study that was conducted by Madonsela & Binedell (2013) the community of Cato Manor indicated that they preferred flush toilets. Residents of Cato Manor believed that government should assist in providing proper sanitation services.

3.5 Overview of low-income settlements

3.5.1 The state of Informal settlements in South Africa

Informal settlements remain blemishes over significant urban communities in South Africa. They comprise non-traditional housing constructed without agreeing to lawful building measures.

Moser & Satterthwaite (2008) state that “these settlements are usually built at the edge of cities where land is cheap and neglected. However, these informal settlements are often better located than the housing developments to which the government seeks to relocate them”. People who reside in these settlements generally build their houses using unsafe building materials. Mahanga (2002) added to this by saying that “wood, tin, corrugated iron and others are used to build these settlements”. Mostly, these crude houses generally lack appropriate infrastructures, such as clean water supply, any form of sanitation, drainage, waste disposal and access roads. “The urban poor households regularly live in these awful conditions, which increase the spread of contagious diseases” (Cairncross et al., 1990)

The failure of government to deal with rapid urban increase of urban population is indicated by massive growth of informal settlements. It could be argued that the South African government has failed to provide proper housing to its people and also failed to ensure that there is access to basic services for all. According to Cairncross et al. (1990) “The result of this failure is indicated by an increase in the number of households living in informal settlements without suitable infrastructures. Despite these constraints, the urban poor prefer to live in poorly serviced areas so that they have access to economic opportunities for survival.”

Poverty for low income households is considerably more than absence of income or unemployment. It constitutes failing wellbeing and nutrition, congested housing, school dropout levels and anxiety on physical and social situations. It is in this

setting that a particular macroeconomic model of poverty is insufficient while there is a need to consider social security nets associated with the necessities for the urban poor (Baumann et al., 2004).

The unpleasant conditions in low income settlements in South Africa are frequently amplified by restrictions to land close to job opportunities. There is no properly allocated land to house the South African urban poor and low-income groups (Khan, 2003). Undeniably, the absence of land for government to deliver adequate housing for the poor is the main cause of the growing number of informal settlements. These settlements are mostly built on unsuitable land and the health of the residents is in danger in most cases (Yuen, 2007). “Eradication of informal settlements through relocation poses challenges of site improvement charges and bureaucratic breakdown, while political corruption may keep people from getting adequate housing” (Aldrich & Sandhu, 1995).

Schlyter (1995) alleges that “Informal settlements are described as illegal and spontaneous shantytowns lacking decent services and infrastructure”. Godehart & Vaughan (2008) further argue that “illegality and informality, environmental hazards, poverty and vulnerability, social stress and others characterize informal settlements”. This study uses informal settlements as it spotlights on unlawful settlements deprived of sufficient structures and services.

An informal settlement is the only form of accommodation for the urban poor in South African urban cities. The existing housing that is delivered by the South African government through different channels, for the most part by once-off capital subsidies, is considered to be basically unreasonably expensive for the urban poor (UNCHS, 1999).

3.5.1.1 Disadvantages of lack of access to water on Health

Sanitation is viewed as the upkeep of clean conditions. In this manner, essential sanitation implies the provision of adequate hygienic, risk free toilets, the successful evacuation and transfer of family unit waste, and compelling emanating disposal. According to Pietersen (1997:14) “Good sanitation is important for a number of reasons, not least of all human dignity”. Inadequate sanitation has a negative impact on several parts of social development. These negative impacts are discussed below.

Sanitation is considered as the preservation of sanitary conditions. Accordingly, basic sanitation implies the provision of adequate hygienic, risk free toilets, and the viable evacuation and disposal of domestic waste (Pietersen, 1997:14).

According to Pietersen (1997) “Sanitation systems involve the disposal and treatment of waste.” A lack of an adequate sanitation system contributes a range of pollution risks to the environment, especially the contamination of surface and ground water resources. This, in turn, increases the cost of downstream water treatment as well as the risk of disease for people who use untreated water. According to The White Paper on Basic Household Sanitation (RSA, 2001:8) the effects of pollution include: waterborne diseases, blue baby syndrome in bottle-fed infants, excessive growth of aquatic plants which are toxic and depletion of oxygen in the water.

Lack of access to proper sanitation and lack of disposal of waste practices result in loss of security and dignity, exposure and increased dangers to individual wellbeing (RSA, 2001:9). Individuals are compelled to utilize poor facilities, while some even use bushes in the absence of proper sanitation facilities. As a result they are exposed to risky circumstances where they can be ambushed or assaulted by wild creatures. Those using poor or inadequate sanitation are exposed to health risks.

3.5.1.2 Social disadvantages of no access to water

Lack of access to water is a social problem. There is a solid link between the quality of social infrastructure in communities and the wellbeing of residents (Tarrass & Benjelloun, 2012). It is essential for occupants to have local social networks and shared community experiences to be able to build a sense of belonging and identity. Shared communities such as schools play a predominantly significant role in inspiring the kind of informal social contact, which is required in communities. However if there is a no access or lack of access to water and sanitation, schools and other facilities such as clinics have to be closed, and that will have negative social impact on a community.

Inadequate social infrastructure is not just an inconvenience for occupants but also has substantial long-term consequences, and associated costs. A spiral of decline in society will occur when there are weak social networks in the community, and when there are issues with the quality of the physical environment and poor local services

There are social disadvantages of lack of water on education. The lack of water has a vast impact on education. However, for some people it may be hard to see how absence of water and education is interrelated. For some individuals in different parts of the world, mostly in developing countries, children must be up at sunrise to gather water from streams and other unprotected water sources. They walk kilometers to get water. The teenagers, in most instances young girls, get drained. As a result some miss school because they are tired, yet others do go to school but their concentration level is so poor that they end up failing. Doing this for a long time takes away school time and the cycle proceeds (Tarrass & Benjelloun, 2012). In some communities young ladies are not permitted to go to school as it is considered that they can serve the family by getting water and dealing with other family needs.

There are also social disadvantages of lack of water on poverty. Access to quality water is vital to economic success and better expectations for everyday comforts. Companies and schools flourish when individuals arrive on time and do not need to spend time in the morning collecting water. Restaurants, food courts and shops need to be clean at all times in order to pull in customers. Manufacturing exercises, commercial plantations, together with mining activities all need a great deal of water to flourish (Blignaut et al., 2009). Absence of water has a greater impact of the economy. Due to the absence of water economic activities will not be able to take place and people will be unemployed and that will lead to constant poverty.

There are many related social problems, which are associated with communities that lack good social infrastructure that might be caused by lack of water. These social problems include isolation, fear of crime, issues with community cohesion and mental health problems.

It is a disturbing statistic that approximately one billion people in the world lack access to clean and healthy drinking water. Residents in developed countries can just turn on a tap and access safe drinking water at any time they like, but the situation is very different for the people in parts of Africa more especially for people residing in informal settlements (Blignaut et al., 2009).

In Africa each and every day millions of people, in most cases women and girls, walk kilometers to have access to any water at all. The time it takes to collect the water takes too much of their time. As a result they do not have time to do other things during the day. Large numbers of children in these areas do not even get a chance to have an education because most of the time they are collecting water. To make things worse, often the only water they have access to is from streams, standpipes or ablution facilities. That water is usually contaminated and full of diseases and as a result people die every day, and millions of the urban poor become sick (Blignaut et al., 2009).

3.5.1.3 Environmental Disadvantage of no access to water and sanitation

Environmental effects of inadequate access to clean water and proper sanitation leads to dispersed pollution of water sources. The results of this would increase the cost of downstream water treatment, as well as the risk of disease. In considering environmental issues caused by the lack of access to clean water, it is important to note that most human activity changes the environment. Adequate sanitation is an important way to minimize the negative impact of human settlement on the environment (Tarrass & Benjelloun, 2012). Lack of adequate sanitation and inadequately maintained systems constitute pollution risks to the environment, mainly to surface and ground water resources, which in turn pose a threat to health. The environment should be addressed in a holistic manner, and water is most important in the South African context. Although water systems are able to tolerate a certain degree of pollution there is a limit to the amount that can be handled without causing the water quality to deteriorate to such an extent that the water cannot be used.

Environmental impact: All sanitation systems should be designed to reduce the environmental impact of unmanaged human waste disposal. Nevertheless, most systems will cause some degree of environmental impact, particularly if they are not managed as well as the designer intended. The general risk of environmental problems and the specific risks resulting from system failure must be considered at the time of technology selection.

3.5.1.4 The impact of rapid urbanization on growth of informal settlements and access to water and sanitation

Rapid urbanization is a critical challenge for municipalities, which are tasked with service provision to urban centres in South Africa. As a result they are unable to keep up with the rapid pace of population growth, and several urban centres are suffering an extensive increase in the number of people living below the poverty

line in informal settlements. Many of which are illegal like Kennedy Road. Most informal settlements lack access to adequate and affordable basic services such as water supply and sanitation, mainly because these areas are not planned and people just invaded the vacant spaces.

Half of the population in the world today resides in urban areas and, in two decades, approximately 60% of the population in the world will be urban residents. In developing countries the urban population continues to grow at a very fast rate. According to Graham (2010) both in Africa and Asia, the number of people who reside in urban areas is expected to double between the year 2000 and year 2030. “Natural increase in urban population (50%), the process of reclassification of rural areas as urban areas (25%) and rural-to-urban migration are the main causes of the growth of cities” (Graham, 2010:45). The burgeoning urban populace development makes phenomenal difficulties, among which provision of water and sanitation have been the most agonizingly felt while lacking. An absence of safe drinking water and sanitation results in faecal-oral ailments, for example, diarrhoea and episodes of jungle fever and cholera.

According to Graham (2010), 141 million urban residents globally in year 2010 lacked access to clean water. Graham (2010) also states that “one out of four city residents lives without access to approved sanitation facilities”. The urban inhabitants who suffer most, are the urban poor because as a result of rapid urban growth a large number of the urban poor live in the informal settlements, lacking basic services such as water, adequate sanitation and sustainable housing. Ironically, the urban poor frequently pay far more for a litre of water than their richer neighbours, since they often lack access to the water supply system and rely on water provision from private vendors.

Graham, 2010 highlighted that “62% of the sub-Saharan Africa urban population and 43% of the urban population of South-Central Asia lives in slums. In Accra,

Ghana, the urban poor pay up to 12 times more for a litre of water than their richer neighbours, since they often rely on private vendors”.

3.5.2 Effects of Poor housing on inhabitants

O’Neil (2000) states that the “range of health problems which can be attributed to poor housing conditions is large, from psychological and physiological effects to specific diseases varying in the degree of associated morbidity”.

There is a huge and substantial body of scientific writing that exhibits convincingly that there are immediate causal connections between distinctive parts of poor housing and specific health conditions (Smith, 1990). There is an expansive and noteworthy group of exploratory writing that exhibits convincingly that there are immediate causal connections between distinctive parts of poor lodging and specific wellbeing conditions (Smith, 1990).

The literature has distinguished two essential segments of poor housing that are specifically connected to poor health outcomes; those segments are basic housing quality, together with overcrowding, and sanitation (O’Neil, 2000). Each of these segments will be reviewed in terms of the health consequences for communities, with a particular focus on situations that directly and indirectly affect informal settlement occupants.

In the international literature a few studies address the harm of poor sanitation or dilapidated housing because these problems generally do not occur outside of third world situations or urban slums (O’Neil, 2000). In these conditions, the focus is less on specific housing conditions and health and is more on broader structural issues such as urban renewal or social inequality.

3.5.3 State of housing in South Africa

Housing is the central foundation on which all other infrastructures such as roads, water and sanitation depend. The boom of public protests by societies in response to the slow delivery of housing and insignificant quality of housing developments

in 2006 shows that housing is a very complex concern which moreover inevitably involves politics (Baloyi, 2007). Underprivileged groups in South Africa lack the most basic services such as water and sanitation. For a number of these societies to operate appropriately and be well off, fundamental services must be in place. The essential infrastructure that is mostly needed in these communities consists of housing, roads and storm-water, water and sanitation and other supporting infrastructure like social services, while safety and security is also vital in a community. The South African government is confronting delivery on promises from election campaigns and the mandate of society (Baloyi, 2007). The South African government had set its national goals on the delivery of services by concentrating on water and sanitation. Housing delivery and the provision of water and sanitation in South Africa was preferred as a focus for this study.

3.5.4 The need for quality water supply and sanitation

Investing in water and sanitation is a key element in enhancing urban living conditions, impelling rural development and lessening future expenses linked with contamination, poor water quality and waste services management. The United Nations Children Fund (UNICEF) and World Health Organisation (WHO) show the advantage of investing in sanitation as: lessened sickness and death and improved lifespan of the people, investment funds in human services expenses, diminished time minding and wiped out leave (back to work), higher labourer profitability, better learning ability with children at school, upsurge school attendance particularly by young ladies, reinforced tourism and national pride, direct economic significance of high water, such as, irrigating system for watering crops, and decreased water treatment costs.

There is a greater need for quality water and sanitation hence this need is extensively recognized as an indispensable component of social and economic development. According to Warner & Green (2005:90) “provision of water and sanitation services addresses some of the supreme life-threatening needs of human beings. Safe water and proper sanitation are crucial to the protection of

public health by limiting the transmission of transmittable diseases and by assisting in the maintenance of a sanitary home environment”. All together, they contribute significantly to the improvement of dignity for all and it further contributes significantly to economic opportunities by liberating individuals, mostly females and children, from the drudgery of water conveyance and giving more opportunity to them to participate in different activities such as going to school and playing other roles in the community (Graham, 2010).

This predominantly happens in developing countries where the level of access to water and water related facilities is reportedly very low. Salaam-Blyther (2012) states that “more than 1.2 billion of the world population lacks access to clean water and 2.6 billion of the world’s population lacks access to basic sanitation”. Salaam-Blyther (2012) further notes that over the next 30 years virtually all of the world’s population growth is expected to be concentrated in urban areas in developing countries. This means that developing countries are facing great challenges in meeting community water supply needs and improving access to basic sanitation. This is evident among poor and marginalized populations living in peri-urban informal settlements. The urban informal settlements have earnest and prompt requirements for safe drinking water, decent sanitation and excreta disposal and access to water for horticultural and other household purposes. The common factor in these needs is wellbeing and the environment, their maintainability, insurance and change.

3.5.5 The Supply of Clean water

Enhancing access to water supply and sanitation services (WSS) has been an issue in the development plan throughout recent decades and still these services fail to be available to any great extent for the world's populace. Yearly, this becomes more of a challenge due to elements such as geopolitical changes, rapid population growth and cumulative urbanization (UN, 2003).

Looking at international statistics it becomes self-evident, that a great number of people without access to clean water and appropriate sanitation live in developing countries and the weight falls particularly on low-income earning families. Notwithstanding, UN-Habitat (n.d.) contends that considerably more individuals in developing countries need access to WSS than those in developed countries. Therefore the governments in developing countries should make sure that the surveys are conducted more often to ascertain the exact number of people lacking access to water and sanitation services.

3.6 Conclusion

This chapter reviewed international literature on housing, water and sanitation. The review helped to establish a framework for understanding global trends on housing delivery. It also looked at how these trends influence the South African housing, water and sanitation legislative framework and South African policies. The South African literature was reviewed with the aim of understanding the environment under which housing delivery and the provision of clean water and sanitation take place. The framework of the informal settlement was selected because it presents the most challenging housing environment with interesting water and sanitation disputes.

Housing, water and sanitation are intertwined and are inextricably linked. At a macro level, MDGs are a cornerstone of development and they are the point of departure for sustainable delivery of basic services to poor people globally. This is one of the reasons why this literature review section gives a detailed discussion of MDGs. In order for the world to meet MDG targets in housing, water and sanitation, there has to be commitment from all stakeholders. The prominent lessons were that housing, water and sanitation require global attention and national priority. There is a need for increased strategic investment into housing, water and sanitation. It is the responsibility of national governments to adopt and localize

global initiatives into effective delivery instruments; a trend that is evident in the respective policies.

More broadly, international policies, particularly UN policies, influence and inform positive policy shifts in the South African context, which are unlikely to have occurred under a normal government and local authority environment.

4 Chapter Four: Historical Background of the Case Study.

4.1 Introduction

The purpose of this chapter is to introduce the case study area within its broader spatial location in Kennedy Road informal settlement in the eThekweni Municipality. This chapter presents an overview of historical background of the study context, which is Kennedy Road. It also unpacks the characteristics of the area, by considering the geographical location, the historical background of the study, plus the socio-economic status including valuable resources, employment level and the well-being of the occupants. It also looks at the things that make the case study area habitable, such as amenities found in and around the case study area.

4.2. Case Study

4.2.1 EThekweni Municipality

EThekweni Municipality is situated in the province of KwaZulu-Natal. It is regarded as a Category A municipality in South Africa due to the following components:

“(a) A conurbation featuring: areas of high population density; an intense movement of people, goods, and services; extensive development; and multiple business districts and industrial areas;

(b) A centre of economic activity with a complex and diverse economy;

(c) A single area for which integrated development planning is desirable; and

(d) Having strong interdependent social and economic linkages between its constituent units” (<http://www.justice.gov.za>).

EThekweni is topographically bumpy, with many valleys and gorges, and almost no true coastal plain (Durban, 2014). It has an average of 1.08% annual population growth rates (2011 census) and is a metropolitan municipality established in year 2000. EThekweni Municipality incorporates the city of Durban, and encompassing towns and is one of the 11 districts of KwaZulu-Natal. The largest part of its population which is 3,442,361 individuals speaks isiZulu (2011 census).

Durban is the largest city in KwaZulu-Natal and the third biggest city South Africa. It is a modern cosmopolitan city of more than 3,442,398 inhabitants (according to 2011 Census). It is known as the home of Africa's well-managed, busiest port and it is likewise a noteworthy centre of tourism as a result of the city's warm subtropical weather and broad shorelines (Durban, 2014).

4.2.1.1 Water and Sanitation in eThekweni Municipality

Housing delivery together with the provision of water and sanitation are most critical basic services for human life. Housing delivery in eThekweni Municipality is seen as a major problem because provision of clean water and adequate sanitation to the urban poor is seen as a major challenge as it is in most South Africa cities. The challenges of housing delivery and the provision of clean water and proper sanitation were largely caused by inequalities and red tape in what was formerly known as Durban Metro. In this process a large segment of the eThekweni Municipality population was left out from access to housing, water and sanitation. (Durban, 2014)

In year 2000 after the local government elections, the surroundings of the eThekweni Municipality were extended to take in a large number of rural areas that were previously under traditional leadership. “The eThekweni Municipality Area consists of 2297km², of which 36% is rural and a further 29% is peri-urban. The municipal area stretches from uMkomaas in the south, including some tribal area in uMbumbulu, to Tongaat in the north, moving inland to Ndwedwe, and ends at Cato Ridge in the west” (Durban, 2014). The Municipality borderline then covered some of the rural communities which have been mentioned above, which were formerly outside the service delivery network. Through the demarcation process, eThekweni Municipality inherited these rural areas, which were without housing, water and sanitation. There was also a substantial lack of bulk infrastructure in the rural areas mentioned above. This was an added challenge to the existing backlog in housing, water and sanitation in the eThekweni Municipality (Durban, 2014).

4.2.2 Kennedy Road informal settlement

The section below introduces the case study area within its immediate location of eThekweni Municipality. It also discusses important features of its surroundings. It discusses constraints and opportunities provided in this area.



Source (Google maps) Map 1: Kennedy Road Informal Settlements Locality map

4.2.2.1 Geographical location of the Case Study

The Kennedy Road Informal Settlement is one of the several informal settlements in Durban. It is home to about 10,000 people and 2300 households (Vartak, 2009). Kennedy Road informal settlement is located in Clare Estate, under Ward 25, in eThekweni Municipality, Durban in KwaZulu-Natal, South Africa. Kennedy Road Informal Settlement is made up of two areas. The first area was improved by the previous City of Durban through the Urban Foundation, and the second area,

which contains a mounting number of informal houses, has never been transferred to the beneficiaries. It is well located because it is close to an industrial area, a landfill and a middle-income neighborhood, all of which provide income and livelihoods to many of the approximately 10000 residents (Vartak, 2009). Mr. Mzobe founded Kennedy Road informal settlement in the late 1970s. The area on which the settlement was established is steep and runs down between the Municipal Dump and the 6 path uMgeni Road. During the occupation, the suburb of Clare Estate was kept, under politically-sanctioned racial segregation enactment, for the selective utilization of individuals of the Indian group.

4.2.2.2 Historical background of Kennedy Road

The original occupation was mysterious with informal settlements covered up in the bush and occupants being watchful not to be seen entering or leaving the area. However, in the mid-1980s, the territory had accumulated a number of occupants and thereafter the occupation turned out to be open (Vartak, 2009). Some action to compel individuals out of the area that they occupied unlawfully was opposed by the inhabitants and in the late 1980s the City acknowledged the permanency of the settlement (Maharaj, 2002).

A developmental non-governmental organization (NGO) connected to the Urban Foundation, then started upgrading the settlement and further provided electricity and toilets, and during the upgrading the community hall was built. Even so, early in 1995, a second year into Democracy, the resolution that was taken late 1980s to allow the settlement to be permanent was then changed. Since then, there has been continuous pressure for occupants to accept moving to the peripheral areas of the city. Thus far, this pressure has been resisted by the occupants.

4.2.2.3 What Makes this Informal Settlement Popular?

Durban is one of the largest cities in southern Africa, also the largest city in KwaZulu-Natal and has attracted transient workers from other parts of southern Africa. Due to lack of sufficient housing delivery methods, by the 1980s Durban and the region around the city were home to several informal settlements (Maharaj, 2002). These settlements mirrored other facilities for some men and women from other parts of the country, a large number of whom had moved from the Eastern Cape, rural areas of KwaZulu-Natal, and the KwaZulu-Natal Midlands. While some were escaping racial viciousness others were attracted to this settlement by the guarantee of access to opportunities for enhancing their living conditions.

4.2.2.4 Living Conditions in Kennedy Road informal Settlement.

Kennedy Road informal settlement provides shelter for people generally from rural areas that came to the city for job opportunities and it is a strategy to generate some income. Densities within the Kennedy Road informal settlement are very high, approximately 2300 households and the case study is located on a steep hillside. Kennedy Road informal settlement and other informal settlements are prone to emergencies and disasters such as floods, fires and storm surges which negatively impact on people living in these vulnerable areas. The vast majority of units, irrespective of tenure, within the settlement are constructed from temporary materials. In this area there are also backyard renters who are usually the newcomers to the settlement and thus according to the community cannot be upgraded in situ but will need to be relocated. The normal expense of leasing a room is between R150-R200 every month depending upon what services the room has. Informal settlement dwellers in Kennedy road have access to very similar services as the main/primary residential unit i.e. generally illegal connections to water, electricity, etc (Durban, 2014)

Living conditions in Kennedy Road settlement, similar to those in a few other informal settlements around Durban are poor. Basic services such as water and

sanitation together with electricity are observed to be extremely lacking in the settlement putting the wellbeing and lives of inhabitants in genuine danger (Vartak, 2009).

4.2.2.5 Socio-Economic Conditions in Kennedy Road

The greater percentage of Kennedy Road's inhabitants is involved in the informal economy and work in shops, markets, and others also work in construction and some work as domestic workers in the nearby suburbs. Many of the residents of the Kennedy Road Informal Settlement, for example, benefit from low-paid domestic work and gardening “piece jobs” in the suburb of Clare Estate, Durban. Others run shebeens (alcohol) or spaza shops (small shops) in the settlement. Kennedy Road settlement is situated inside Clare Estate, a dominantly Indian middle class zone with malls and well-built buildings (Durban 2014).

➤ Demographic information on Kennedy Road

Along with the high natural growth rate of the urban population, the urbanization process has led to the rapid growth in large South African cities. Urbanization is one of the root causes for the spread of informal settlements in Kennedy Road. Land administration and development strategies, which have frequently been seen as inflexible and failing to take care of constantly increasing demand for housing by the poor population, have additionally been associated with the rapidly increasing number of the informal settlements.

Alongside the high characteristic development rate of the urban populace, the urbanization process has prompted the fast of the informal settlements in large South African cities. Urbanization is one of the main drivers for the spread of informal settlements in Kennedy Road.

➤ **Major effects of the informal settlements**

The growing number of the informal settlements has brought about numerous, and complex economic and environmental outcomes. These comprise contamination, deforestation, flooding, misuse of agrarian grounds and so forth. The sprawling of ineffectively controlled settlement developments has brought about numerous ecological and wellbeing related issues. Uncontrolled informal settlement growth is resulting in physical issues, uneconomical space usage, and extreme infringement of settlements into great farming areas, ecological debasement and contamination threats (COLE 1995).

4.2.2.6 Integration and sustainability in the Kennedy Road

Kennedy Road informal Settlement is a well-located area as it is close to business areas, which makes the place more popular, and attracts more people. The area is next to the big economic centre, which is Springfield business centre.

The settlement has undergone some upgrading, and the Urban Foundation provided a layout plan and a general plan, and provided 106 resident households with a designated plot and a shared pit latrine in the mid-1980s. The original plans included large-scale relocation of most residents, and ended in significant protests and unrest due to the lack of participation and engagement. However, over the intervening 20-30 years the area has grown significantly and much of the settlement is now informal, with residents having a range of tenure options including informal ownership, informal rental and looking after friends/residents places. Backyard rental has increased, especially over recent years.

More recent attempts at addressing informality in the settlement have resulted in the residents and municipality co-constructing a register of entitlement to future housing. Rubin (2008) states that “Senior Citizens, who are original dwellers or have been in residence since at least 1987, residents who are on the 2001/2002

registration list, newcomers who have arrived post 2001/2002, and people who have RDP houses elsewhere but who have returned to the informal settlement”.

There was a settlement plan for this area, which was scheduled on the City’s 2012/2013 informal settlement and human settlement plan and to date some relocation and de-densification has taken place. There have been allegations of intimidation and violence around the relocation process that is currently the subject of a court case. There is a powerful social movement located in the Kennedy Road, Abahlali Basemjondolo, which originates in the Kennedy Road Development Committee and has promoted public protest to demand better interim services and permanent housing (Durban, 2014).

This case study indicates the difficulties facing backyard renters within an informal settlement. While rentals are low, access to services and backyarders’ position in the developmental hierarchy are tenuous. Current living conditions in the settlement are very poor and due to the high densities and lack of services, fire and communicable disease are constant risks. The settlement is very dense and located on a steep hillside, which makes in situ upgrading difficult and means that not all residents will be able to remain on the site if and when the settlement is upgraded. This has implications for backyard occupants who are generally more recent settlers and thus will have a higher likelihood of being relocated once the development plans are fully implemented.

The Kennedy Road Informal Settlement is made up of two areas. The first area was improved by the previous City of Durban through the Urban Foundation, and the second area, which contains a mounting number of informal settlers. The second area has no waterborne sanitation (still use the VIP toilet) and the location has never been reassigned to the recipients.

The eThekweni Housing Unit has met in few meetings with the applicable internal divisions in eThekweni municipality, for example, Health, Disaster Management,

Solid Waste, Planning, Environmental, Fire, Materials Testing (Geotech) to investigate either redesigning the settlement in situ or considering encompassing an area for relocation (Durban, 2014)

There were blended responses from the divisions over the suitability of the present area being developed because of opportunities found in the nearby areas. However the DWAF opposed any development that could be carried out in the area due to the fact that there is a landfill site next to the area. On any occasion those assembled at a conference were for an autonomous expert study to decide the suitability of the area and the empty area encompassing the landfill site.

4.3 Conclusion

The chapter discussed significant challenges facing the eThekweni Municipality in housing, water and sanitation delivery, particularly in the informal settlements. The case study represents typical but dynamic housing, water and sanitation challenges of informal settlements in South Africa. Context analysis was important in the understanding of the overall picture of what is happening within the housing, water and sanitation sector in eThekweni Municipality.

The chapter introduced the study area within its broader spatial location. Figures, maps and pictures were used in this section to show the spatial location of the case study. It described at various defining elements and characteristics of the case study. Furthermore it introduced the case study area within its immediate surroundings. Conversely this was an essential exercise in establishing the level of access to service and infrastructure networks in the case study. Significant, but by no means surprising, were the high unemployment percentages and poor access to basic services and social amenities in the area. The chapter discussed significant challenges facing eThekweni Municipality in housing, water and sanitation delivery, particularly in informal settlements. The service delivery challenges facing the case study area are partly influenced by what is happening

in its immediate surroundings. The general observation is that the case study presents a perfect scenario to analyze disparities in housing, water and sanitation provision initiatives. It identifies typical housing, water and sanitation challenges of informal settlements in South Africa. The study represents its unique context and character. Context analysis was important in the understanding of the overall picture of what is happening within the housing, water and sanitation sector in eThekweni Municipality.

5 Chapter Five: Research Findings, Data Analysis and Interpretation

5.2 Introduction

This chapter deals with the conducted research findings of the study based on the delivery of housing and the provision of clean water and proper sanitation. The objective of this chapter is to present and analyse data collected from Kennedy Road informal Settlement. Research objectives are used as themes to allow for thematic analysis. Several sets of data will be presented and analyzed within each relevant theme with the purpose of answering the research questions outlined in Chapter one. Each theme represents a particular disparity or aspect of the housing, water and sanitation challenge. The objective of examining household information will be to uncover how the hypothesized difference in housing delivery, water and sanitation provision and lack of integration and coordination, manifest themselves in de facto circumstances. Information from municipality officials and the ward councillor will also be analysed under appropriate themes with the purpose of understanding the official perspective on the process of housing delivery, water and sanitation provision.

Based on the conducted research findings this chapter will describe the current housing delivery, water supply and sanitation situation in the case study and various methods to improve the delivery of housing together with water supply and sanitation that are presented in the referenced literature. Lastly the results of the questionnaires are presented and compared to water supply and sanitation coverage data provided by WHO/UNICEF (2000). Based on findings of the survey, methods to improve water supply and sanitation coverage are proposed, as well as the obstacles to their improvement.

5.3 Section A: Findings and characteristics of respondents

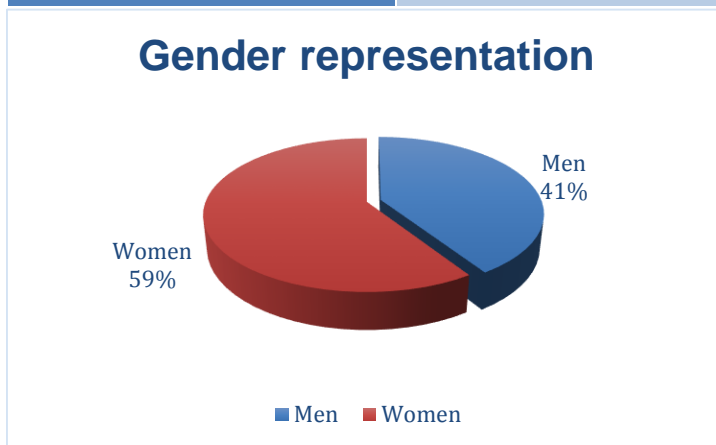
Respondents were asked a series of questions in terms of their demographic and socio-economic characteristics. This profile was important as it enabled the Researcher to gain insight into the demographic and socio-economic characteristics of the households.

4.2.1. Gender Representation of the informants in the case study

Respondents were asked to indicate their gender. The findings are shown in Table 1 and graph 1 below.

Table 1. Gender Representation

Gender	Intervals	Percentage
Men	47	41%
Women	68	59%
Total	115	100%



Graph 1

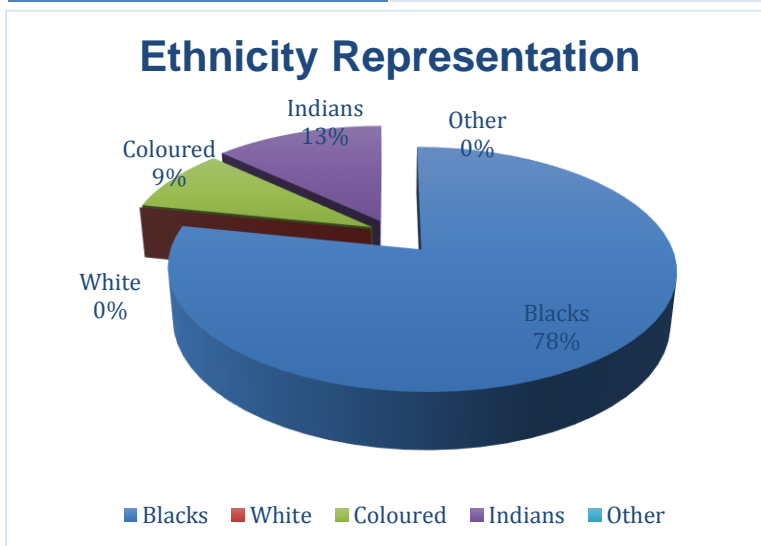
Both the table and the graph above show that 41% of the respondents were males and 59% were females. The distribution of respondents by gender is noteworthy, as traditionally it is believed that within the household, females have a better understanding of water and sanitation issues than males and are therefore more likely to provide greater insights into the said issues than men. While this is only a perception, it is nonetheless noteworthy.

4.2.2. Ethnicity representation of the informants in the case study

Respondents were asked to indicate the ethnic groups to which they belonged. The findings are shown in Table 2 and graph 2

Table 2. Ethnicity representation

Ethnicity	Intervals	Percentage
Blacks	90	78%
White	0	0%
Coloured	10	9%
Indians	15	13%
Other	0	0%
Total	115	100%



Graph 2

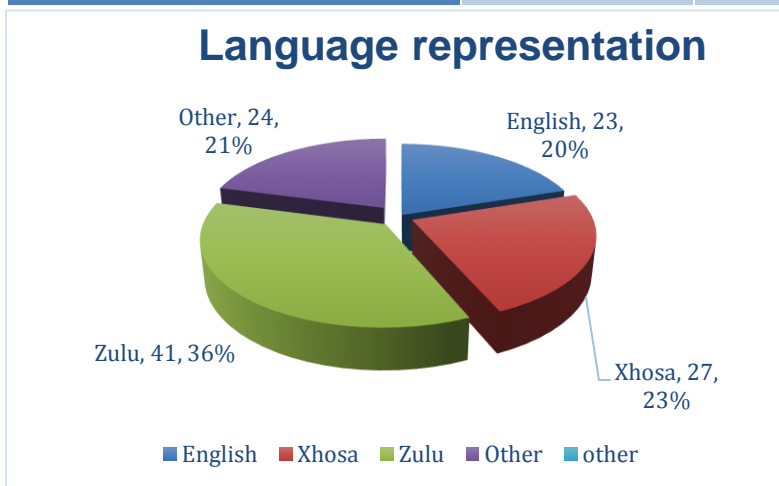
Both the table and the pie graph above show that out of 115 respondents, the ethnic group which was most common in the case study was blacks 78% (90), followed by Indians 13%(15), and the remaining 9% (10) indicated that they were coloured.

4.1.1 Language representation of the informants in the case study

Respondents were asked to indicate their home language which they used as a medium of communication in their households. The findings are shown in Table 3 and graph 3.

Table 3. Language Representation

Language	Intervals	Percentage
English	23	20%
Xhosa	27	23%
Zulu	41	36%
Other	24	21%
Total	115	100%



Graph 3

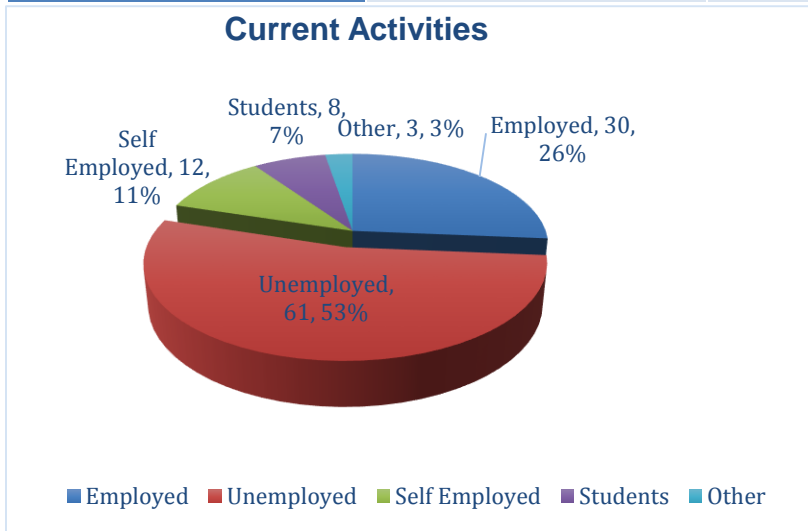
Both Table 3 and graph 3 above show that out of 115 respondents, the most common language spoken at home is Zulu 36% (41), followed by Xhosa 23%(27), and other languages 21%(24). The remaining 20% (23) indicated that they speak mostly English at home

4.1.2 Current activity of the informants in the case study

Both Table 4 and graph 4 show the occupational status of the respondents.

Table 4. Current activities

Activity	Interval	Percentage
Employed	30	26.09%
Unemployed	61	53.04%
Self Employed	12	10.43%
Students	8	6.96 %
Other	3	2.61%
Total	115	100%



Graph 4

Both the table and pie graph above show that most 53,04% (61) of the respondents were unemployed, followed by 26.09% (30) who were employed. The proportion of respondents who were studying was 6.96% (8) and 10.43% (12) indicated that they owned businesses. The lowest percentage 2.61% (3) of respondents fell under other activities such as retired. Provision of water and sanitation and the type of facility is mostly determined by the affordability and ability of the households to pay for such services. Households may want water and proper sanitation

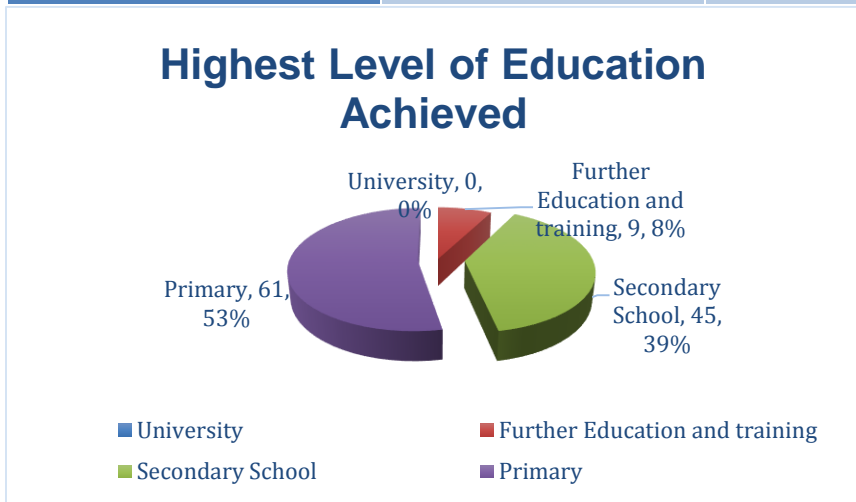
facilities badly, however they may be powerless to express that wish in financial terms (UNICEF, 2000: 17). They might need excreta management facilities, but not at the prevailing price. It is evident from the findings that only 26.09% (30) of the sampled respondents were employed. In terms of the occupation status, the above results show that most respondents who participated in the case study were unemployed. There was a high rate of unemployment in the case study which was making it more difficult for the people to be able to leave to move to better planned areas. Based on the above mentioned research findings it was evident that the community was poor, and could not afford to build their own houses with clean water and proper sanitation. In such cases the households qualified for the free basic services programme initiated by the Department of Water Affairs and Forestry (RSA, 2003: 12).

4.1.3 The Highest level of education achieved

Table 5 and graph 5 show the levels of education attained by the respondents,

Table 5. Level of education achieved

Level of Education achieved	Interval	Percentage
University	0	0%
Further Education and training	9	8%
Secondary School	45	39%
Primary	61	53%
Total	115	100%



Graph 5

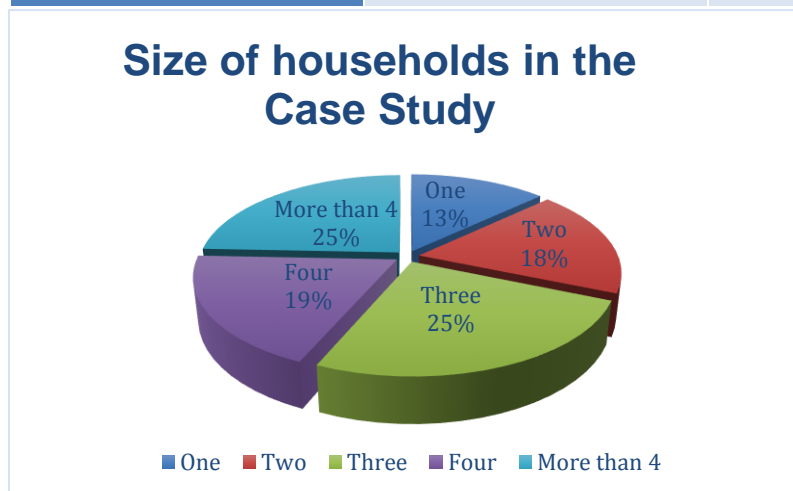
Both the table and pie graph above show that most respondents 53.04% (61) indicated that they had completed only primary school, followed by 39.13% (45) who indicated that they had attained secondary school qualifications such as certificates, followed by 8% (9) who had completed some form of further education and training qualification. None of respondents indicated that they had attained a university degree. The level of education in the area was shown to be very low. Most of the household heads were not employable due to a lack of education. The level of education that an individual has, determines the level of understanding of developmental matters, particularly housing delivery and provision of water and sanitation in the household or the community.

4.1.4 Size of households of the informants

Respondents were asked to indicate the number of people living in the household. The findings are shown in Table 6 and graph 6.

Table 6. Size of Household

Household Size	Interval	Percentage
One	15	13%
Two	21	18%
Three	29	25%
Four	22	19%
More than 4	28	25%
Total	115	100%



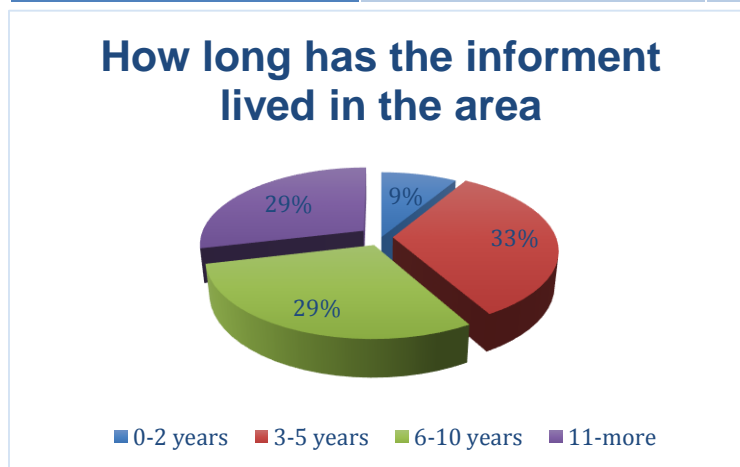
Graph 6

Both the table and the pie graph above show 25% (29) of the respondents indicated that there were 3 people living in the household, another 25% (28) of the respondents indicated there were more than 4 people living in the household. 19% (22) of the respondents indicated that there were 4 people, some 18% (21) of respondents indicated that there were two people and the remaining 13% (15) of respondents indicated that there was only one person. One of the basic demographic characteristics of a household is the number of individuals who are part of the household. Kimenyi and Mbaku (1995) further argue that “a point of concern insofar as the literature maintains that households with more members are more likely to be faced with poverty than households with fewer members”

4.1.5 How long has the informant been living in the area?

Table 7. Number of years lived in the area

Duration (years)	Interval	Percentage
0-2 years	10	8.7%
3-5 years	38	33.04%
6-10 years	34	29.57%
11-more	33	28.7%
Total	115	100%



Graph7

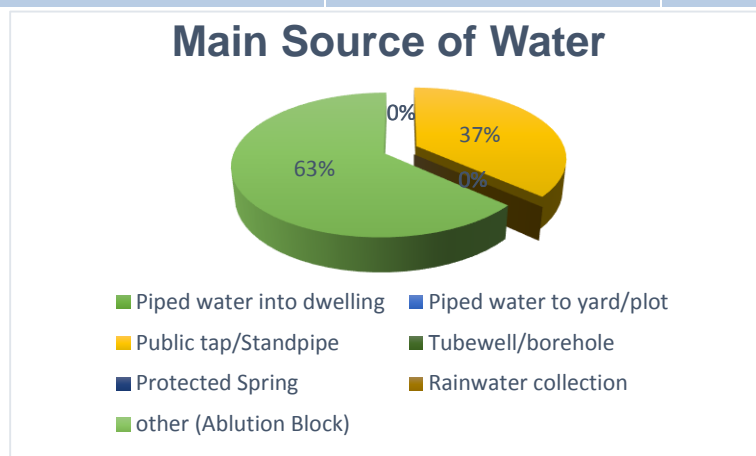
Both the table and the pie graph above show that more than half of the respondents indicated that they had been living in the area for more than 6 years. Most

respondents 33% (38) indicated that they had been living in the area for 3-5 years. Followed by 29.57% (34) who indicated that they had been living in the area for 6-10 years, 28.7% (33) indicated that they had been living in the area for 11 years or more, but only 8.7% (10) respondents indicated that they had only lived in the area for 0-2 years . This indicated that most of the people in the area had been staying there for a long time and it also indicated that the urban migration was still taking place in the area.

4.1.6 Main source of drinking water for informants' households

Table 8. Source of drinking water

Response	Interval	Percentage
Piped water into dwelling	0	0%
Piped water to yard/plot	0	0%
Public tap/Standpipe	42	37%
Tubewell/borehole	0	0%
Protected Spring	0	0%
Rainwater collection	0	0%
other (Ablution Block)	73	63%
Total	115	100%



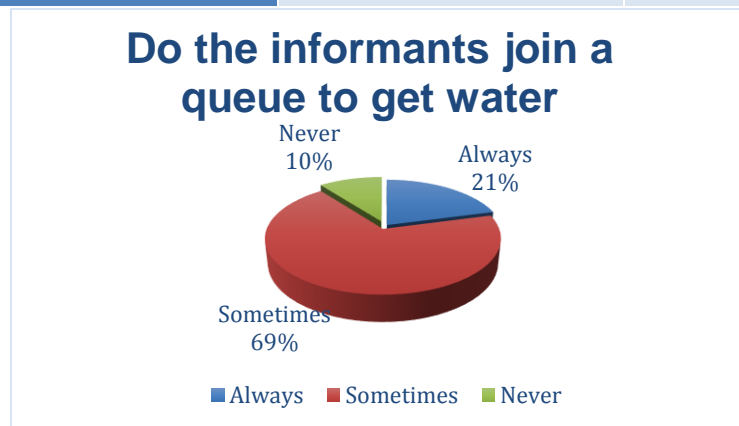
Graph 8

Both the table and the pie graph above show that out of 115 households sampled in the survey 63% (73) of the respondents indicated that their main source of water was the other (Ablution block) and the remaining 37% (42) of the respondents indicated that their main source of water was Public taps/standpipes. Based on the above statistics the ablution facilities were used by most people in Kennedy Road and it could be argued that these facilities brought change to the area and they were trusted by most people in Kennedy Road.

4.1.7 Do you usually have to join a queue to get water?

Table 9. Do you join a queue to get water?

Response	Interval	Percentage
Always	24	21%
Sometimes	79	69%
Never	12	10%
Total	115	100%



Graph 9

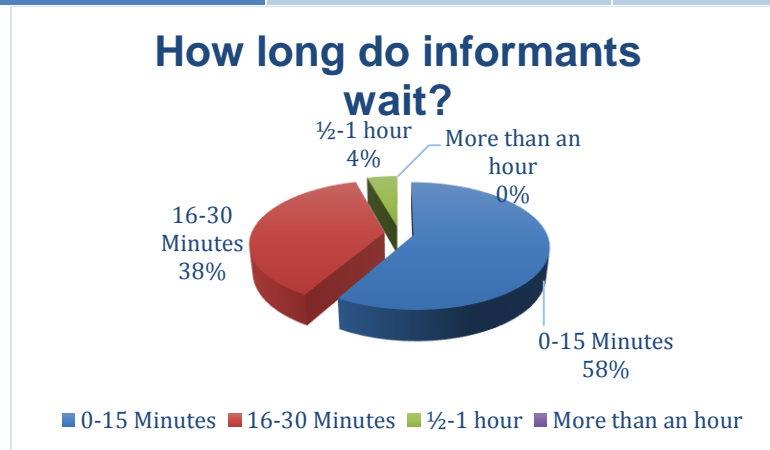
Both the table and the pie graph above show that more than two-thirds of the respondents indicated that they joined queues when collecting water. Most respondents 69% (79) indicated that sometimes they had to queue to get water, followed by 21% (24) of the respondents who indicated that they always joined a queue to get water. Only 10% (12) of the respondents indicated that they had never joined a queue when getting water from the

main source of water in the area. This shows that there is still a lot to be done by the municipality to provide more main sources of water in the area because the majority of respondents indicated that they spend time when collecting water.

4.1.8 How long do informants wait?

Table 10. Waiting duration to get water

Duration	Interval	Percentage
0-15 Minutes	67	58%
16-30 Minutes	43	38%
½-1 hour	5	4%
More than an hour	0	0%
Total	115	100%



Graph 10

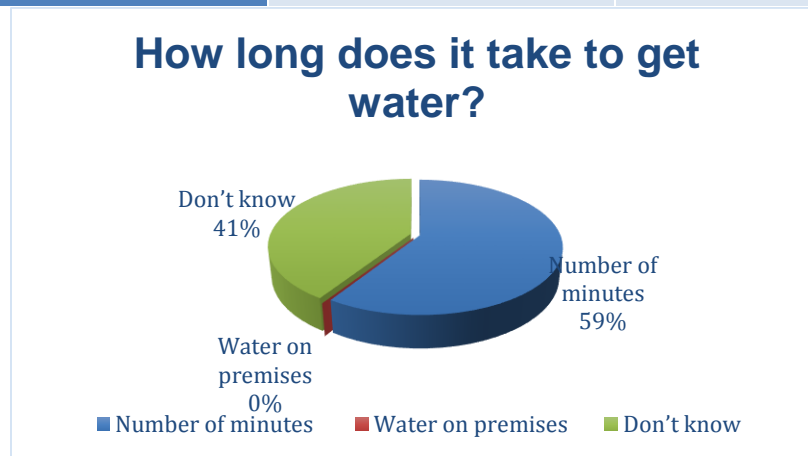
Both the table and the pie graph above show that more than half of the respondents 58% (67) waited in queues when collecting water for 0-15 Minutes. Followed by 38% (43) of respondents who indicated that their waiting duration when collecting water was 16-30 minutes and only 4% (5) of respondents indicated that they waited for 30-60 minutes when queueing for water from the water source. Based on the conducted research survey findings it can be concluded that people had to wait when collecting water

and that meant the water facilities were insufficient for the population in Kennedy Road.

4.1.9 How long does it take to get there, get water and come back?

Table 11. How long does it take to get water?

Response	Interval	Percentage
Number of minutes	68	59%
Water on premises	0	0
Don't know	47	41%
Total	115	100%



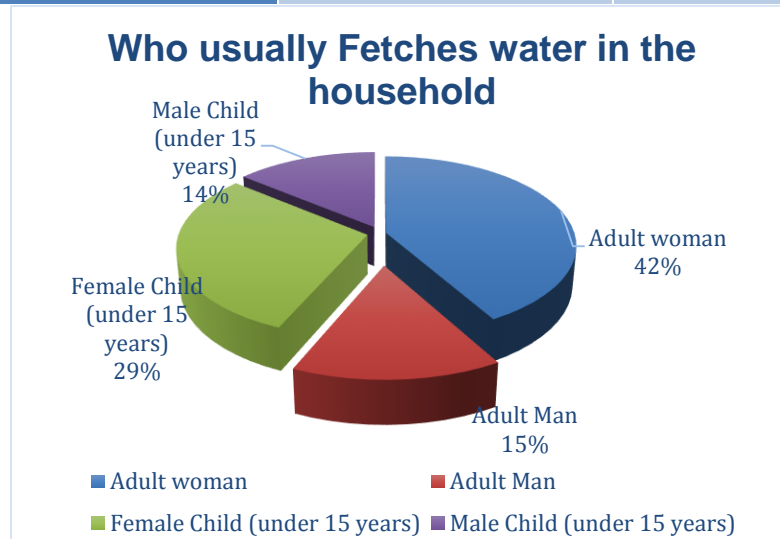
Graph 11

Both the table and the pie graph above show that more than half of the respondents 59% (68) indicated it took them sometime to get water and go back to their houses and the remaining 41% (47) of respondents indicated that they did not know the duration they took to go to the main water source and get back to their homes. Based on these finding it is clear that the main water sources in the area are some distance from most of the households in Kennedy Road.

4.1.10 Who usually fetches water for your household?

Table 12. Who usually fetches water?

Response	Interval	Percentage
Adult woman	48	42%
Adult Man	17	15%
Female Child (under 15 years)	34	29%
Male Child (under 15 years)	16	14%
Total	115	100%



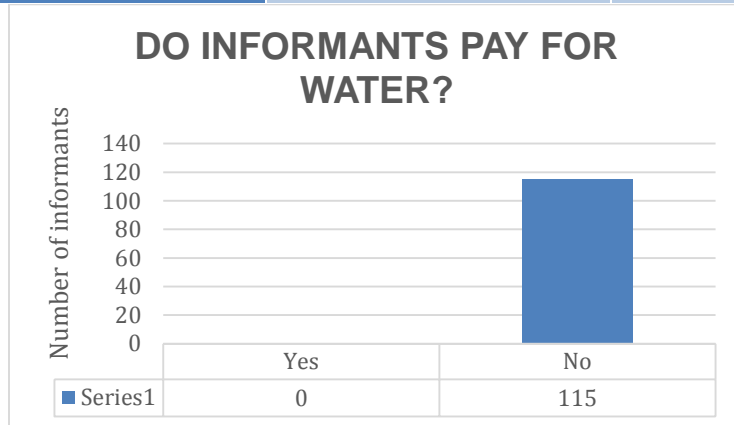
Graph 12

Both the table and the pie graph above show that in almost half of the households adult women are the ones who were collecting water 42% (48) followed by 29% (34) female child (under 15 years) then followed by 15% (17) of Adult Man, then lastly 14% (16) male children under the age of 15. In total only 28.7% households reported that water collection was a male responsibility, on the other hand 71.3% (67) of the household respondents indicated that women were the ones collecting water. Given the current poor access to private taps and the unreliability and low frequency of water supply of the tap water and public standpipe water, women were the ones who bore the burden of collecting water. Improvement of water services in the informal settlements would be likely to benefit women because they would have more time for other activities as well as performing their social roles of looking after the family and allowing females to have access to education.

4.1.11 Do informants pay for water?

Table 13

Response	Interval	Percentage
Yes	0	0%
No	115	100%
Total	115	100%



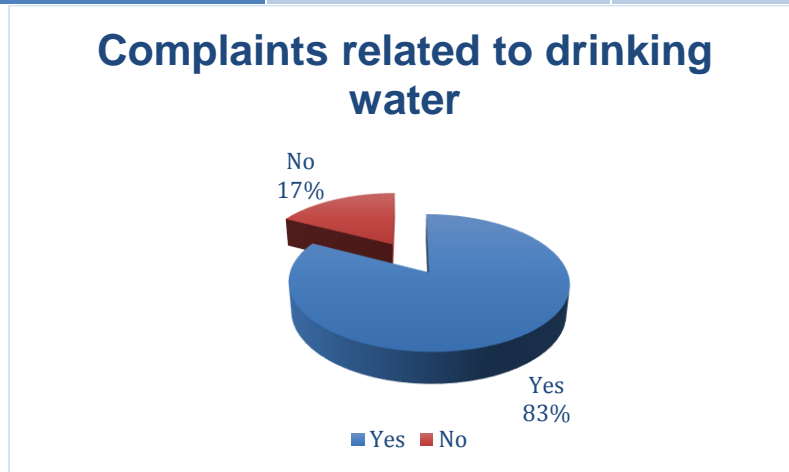
Graph 13

Both the table and the pie graph above show that 100% (115) of the respondents indicated that they were not paying for water. The local government was providing water free of charge for the households as mandated by the Free Basic Water Policy that was officially announced in 2001. The households in Kennedy Road qualify for free basic water because of their socio-economic status. This policy is based on the standards and principles of the National Water Act and the Constitution of the Republic of South Africa. As stated above, many households are living below the poverty line and they cannot afford to pay their water bills. The Free Basic Water (FBW) policy grants each household 6000 litres per month free of charge.

4.1.12 Have you made a complaint related to drinking water service in the past year?

Table 14. Complaints related to drinking water

Response	Interval	Percentage
Yes	95	83%
No	20	17%
Total	115	100%



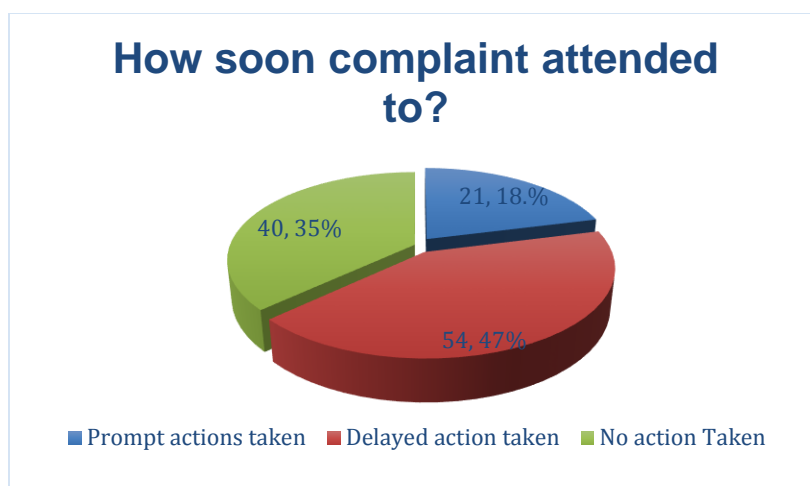
Graph 14

Both the table and the pie graph above show that there had been many complaints related to drinking water services in the past year. 83% (95) of household respondents indicated they had complaints that they had reported to the municipality and 17% (20) had no complaints related to drinking water services.

4.1.13 If yes, how soon was the complaint attended to?

Table 15. How soon complaint attended to?

Response	Interval	Percentage
Prompt actions taken	21	18.26%
Delayed action taken	54	46.97%
No action Taken	40	34.78
Total	115	100%



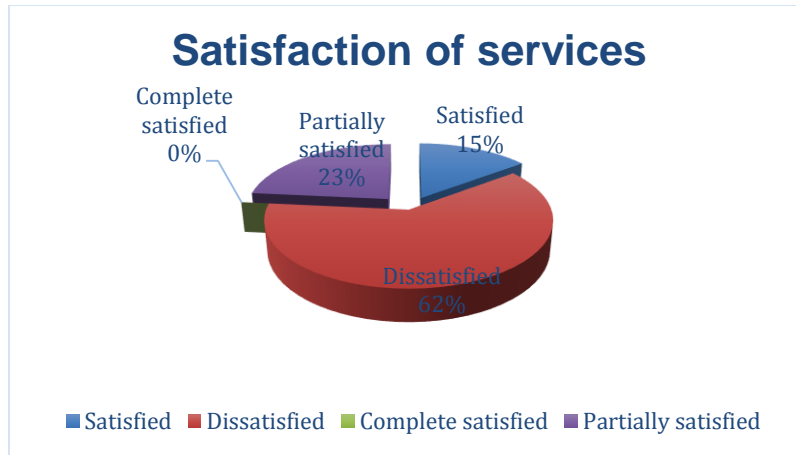
Graph 15

A greater percentage of respondents 47% (54) showed that they were not happy with the municipality response to their complaint showing that the municipality delayed to take action after they reported their complaints. Respondents rated the municipality's response to reported water-related complaints as slow. The general impression was that the municipality did not respond as soon as households would have liked it to. It should be pointed out that these responses were based on respondents' experience. However, the deduction from these responses was that on average the municipality was slow in responding to reported complaints.

4.1.14 Overall, are the informants satisfied with drinking water services?

Table 16. Satisfaction of services

Response	Interval	Percentage
Satisfied	17	15%
Dissatisfied	71	62%
Completely satisfied	0	0%
Partially satisfied	27	23%
Total	115	100%



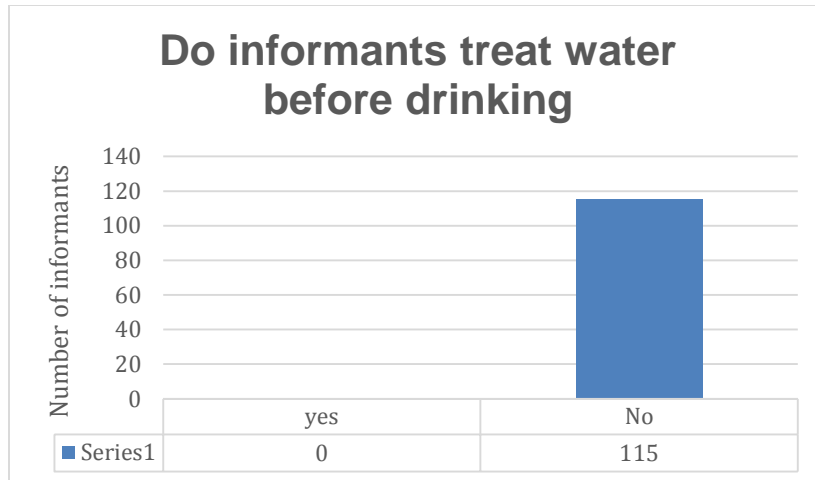
Graph 16

Both the table and the pie graph above show only 15% (17) of the respondents maintained that overall they were satisfied by municipality's water service provision. On the other hand a large percentage of the respondents which was 62% (71) indicated that they were dissatisfied by the municipality's water services. Lastly the remaining 23% (27) of the respondents were partially satisfied with the municipality's water services. On average this indicated that about 80% of the respondents were more or less satisfied with the municipality's provision of water service. However that was a sign that the eThekweni municipality was trying its best to provide water regardless of the fact that there were lots of challenges.

4.1.15 Do you treat your water in any way to make it safe to drink?

Table 17

Response	Yes	No
Interval	0	115
Percentage	0%	100%
Total	115	100%



Graph 17

Both the table and the bar graph above show that 100% (115) respondents indicated that they did not treat water before drinking. This is an indication that they were happy with the quality of water provided by the municipality despite their complaints with the water service provided by the municipality. Complaints could be based on the quantity of the sources and the distance of the main water sources from the households.

4.1.16 What do the informants do to make the water safe?

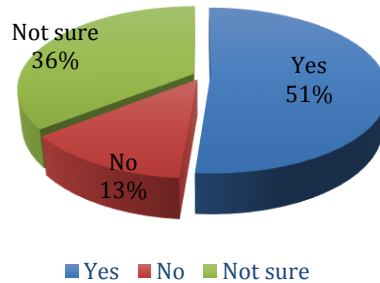
100% percent of the informants indicated that they did not treat their water before drinking.

4.1.17 Is the water supply infrastructure operated and maintained by the community?

Table 18. Is the water supply infrastructure maintained by the community?

Response	Interval	Percentage
Yes	59	51%
No	15	13%
Not sure	41	36%
Total	115	100%

Is the water supply infrastructure maintained by the community?



Graph 18

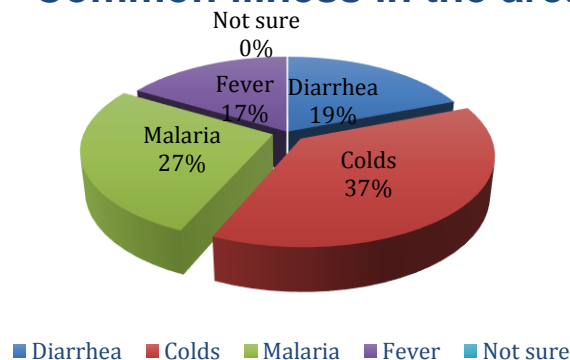
Both the table and the pie graph above show that out of 115 respondents, 51% (59) agreed that the water supply was indeed operated and maintained by the community, 36% (41) were not sure, and only 13% (15) of the respondents indicated that the water supply was not operated and maintained by the community.

4.1.18 Common illness in the area

Table 19: Common illness in the cast study

Response	Interval	Percentage
Diarrhoea	22	19%
Colds	43	37%
Malaria	31	27%
Fever	19	17%
Not sure	0	0%
Total	115	100%

Common illness in the area



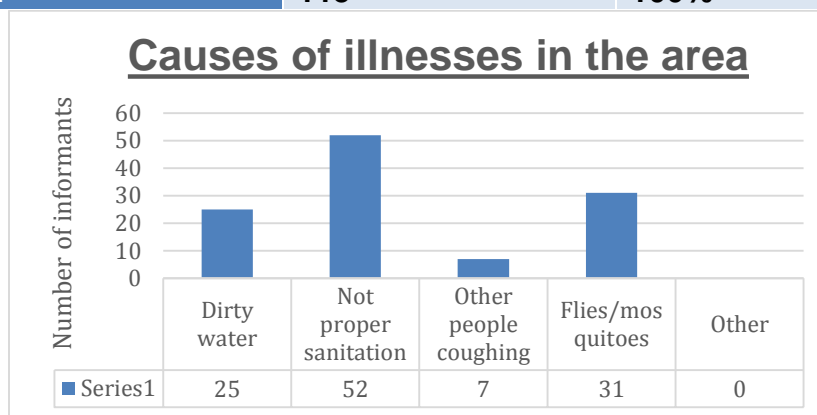
Graph 19

When the respondents were asked about common illness in the area, both the table and the graph above show that 37% (43) indicated that the common illness was cold followed by 27% (31) Malaria which might be caused by the mosquitos which are found in the area due to water leaks. 19% (22) of respondents indicated that diarrhoea was also one of the common illnesses found in the area and the remaining 17% (19) of the respondents indicated that fever was also common in the area.

4.1.19 Causes of the illnesses in the case study

Table 20: Causes of illnesses

Responses	Interval	Percentages
Dirty water	25	21.74%
No proper sanitation	52	45.22
Other people coughing	7	6.09
Flies/mosquitoes	31	26.96%
Other	0	0
Total	115	100%



Graph 20

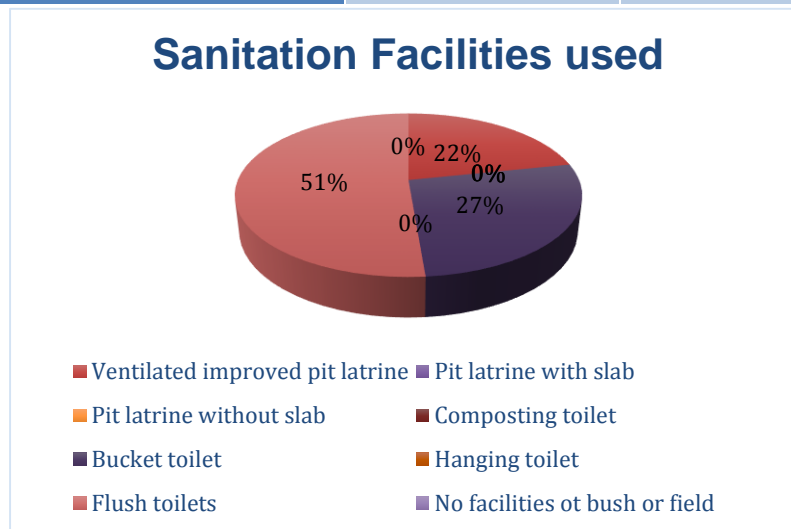
Both the table and the bar graph above show that the majority of 45.22% (52) respondents believed that lack of proper sanitation was the main cause of the illnesses mentioned above, followed by 26.96% (31) of respondents who indicated that flies/mosquitoes were also causes of illnesses in the area. 21.74% (25) of the

respondents indicated that dirty/polluted water caused illnesses in the area and the remaining 6.09% (7) of respondent households indicated that other people coughing were the causes of the illnesses in Kennedy Road.

4.1.20 Kind of sanitation facilities the informants use

Table 21: Sanitation facilities

Response	Interval	Percentage
Ventilated improved pit latrine	25	21,74%
Pit latrine with slab	0	0
Pit latrine without slab	0	0
Composting toilet	0	0
Bucket toilet	31	26,97
Hanging toilet	0	0
Flush toilets	59	51,30%
No facilities or bush or field	0	0
Total	115	100%



Graph 21

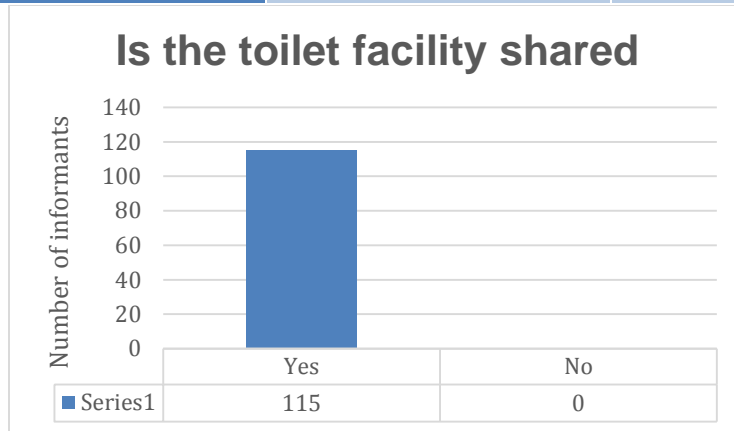
According to Hosegood, et al. (2003: 4) “household sanitation facility is an important aspect of household health status”. The research findings indicated that the majority of the households used flush toilets. Out of 115 household respondents 51.30% (59) used flush toilets. Most striking is that 26.96% (31) of the

sampled respondents used bucket toilets and the remaining 21.74% (25) of respondents use UD latrines. One of the reasons why 48,70% (56) still did not use the flush toilet might be the distance they had to walk to the newly installed sanitation facilities.

4.1.21 Do informants share this facility with other households

Table 22. Is the toilet facility shared?

Response	Interval	Percentage
Yes	115	100%
No	0	0
Total	115	100%



Graph 22

Both the table and the bar graph above show that 100% (115) of the sampled respondents indicated that all members of the community shared the sanitation facilities.

5.4 Section B: Post 1994 housing situation in South Africa.

Based on the research finding the beginning of democracy in South Africa in 1994 has generated a fresh perspective in which access to basic services such as housing, water and sanitation was acknowledged as an important human right for all the South Africans.

The high level of poverty in South Africa was inherited due to the injustices during the apartheid era; however it remains to be challenged with uneven and frequently inadequate access to resources, infrastructure and social services between the

poor South Africans and the rich South Africans. A large number of the people who reside in the low-income settlements are the most deprived ones, as result they get poor access to clean water and proper sanitation. “The South African Bill of Rights enshrined the right to basic services and ordered that the government needs to take equitable measures to attain the progressive realization of these rights” (Statssa, 2014).

Based on the conducted research findings the eThekweni Municipality has also been readdressing the injustice of the past. However, to some extent the municipality has stated that it has been able to achieve its goal of providing basic services to the people. As a result there are several projects which are underway to provide proper housing for the previously disadvantaged. Due to the level of service delivery the municipal official also stated that the eThekweni Municipality had won several awards as one of the best municipalities in service delivery. The municipal official agreed that there were challenges in eradication of the informal settlements in eThekweni, because of the rapid urbanization which is hard to control.

5.4.1 Provision of water and sanitation in Kennedy Road.

The researcher targeted the municipal officials who were responsible for the water and sanitation projects in the eThekweni Municipality. The researcher also targeted the ward councillor. The researcher wanted to get information on the future plans, where the municipality had to assure that every citizen, have enough access to both water and sanitation. The Researcher also wanted to find out about the current system, which was used to provide water in the informal settlement namely in Kennedy Road within the parameters of the eThekweni Municipality.

The Municipal Official from the Department of Water and Sanitation stated that the municipality had put the Kennedy Road informal settlement on their priority list to provide the area with clean water and proper sanitation. As a result the municipality had installed ablution facilities in the area to ensure that the households had access to clean water and proper sanitation even though there were still few of

these facilities in the area. The Department of Water and Sanitation Municipal official also stated that the department dealt with sites which were put forward to them by the Department of Human Settlements. The water and sanitation unit only provided water when requested by the Department of Human Settlements. The Department of Water and Sanitation inspected the area before to see where they would be able to install the bulk infrastructure.

The municipal official also stated that there was no access to clean water and proper sanitation facilities in Kennedy Road because the area was unplanned and people had invaded the area. As a result previously the households in Kennedy Road had used System as a main sanitary system. The municipal official from Department of Water and Sanitation also stated there had been cases of children drowning in the VIP toilets.

The eThekweni Municipality installed ablution facilities in the area as a solution to these challenges and also to promote hygiene in the area. These ablution facilities were installed in the area to help the households to have access to clean water and proper sanitation. The municipal official stated that these ablution facilities were the solution to most challenges faced by the households in the area, more especially the lack of access to water and sanitation. The municipal official further stated that the community was happy with these ablution facilities, because community member benefited from the project as the municipality employed community members to install and to maintain the ablution facilities.

Photo 1: Ablution facilities



Source: Author (2015)

Photo 2: Stand Pipes



Source: Author (2015)

These ablution facilities were planned to cater for every household. One of the challenges faced by the municipality in installing these ablution facilities was the availability of space to install them; hence these ablution facilities are too far from some households because of the congestion in the area. On the other hand a high percentage of the respondents, which was 62% (71) of 100% (115), indicated that they were dissatisfied with the municipality's water services, many were unhappy due to the fact that these ablution facilities were far from their households and they were inaccessible at night because they were locked at 18H00 and they did not have electricity. As a result the residents made illegal connections.

Municipal official from eThekweni Water and Sanitation unit further stated that the municipality was doing all it could to make sure that every citizen got access to clean water and adequate sanitation. The municipal official agreed that these facilities were far from some households, because of the congestion at the informal settlement in Kennedy road. Water and Sanitation Unit firstly provided stand pipes then later on the municipality provided ablution facilities in the area. The second

municipal official also highlighted that the municipality was facing challenges in providing water in Kennedy Road. One of the many challenges faced by the Water and Sanitation Unit was that the area was not properly planned hence it was difficult for the Unit to put standpipes in the centre of the settlement or closer to every household. The municipality was unable to install taps in each household because the informal settlement is unplanned and as a result there was no space to install bulk infrastructure.

The Municipal official from eThekweni Water and Sanitation Unit also stated that the residents of Kennedy Road previously depended on standpipes as a main water source. Then the municipality added another main source of water which was the ablution facilities. Water supply systems in the area included standpipes and community ablution blocks. Community ablution blocks served as multipurpose service stations. They include water taps, toilets and shower areas. Ablution blocks were part of the eThekweni Municipality projects that were being rolled out in various informal settlements. Kennedy Road informal Settlement is poorly serviced in terms of access to water and sanitation as well as other basic services.

The Municipal official B also added that water supply was one of the most important functions of his office. It was a constitutional responsibility of his department to ensure water supply to the people of eThekweni. The municipal official stated that eThekweni Municipality had performed relatively well in terms of ensuring adequate water supply to its population as it had received local and international awards for providing services to the people.

5.4.2 Conditions of water supply and sanitation supply

Almost all the people in Kennedy Road informal settlements relied on the municipal water supply system. Water is one of the most important natural resources because access to safe water is vital for survival. However, despite significant investments in the water sector, the outlook on access to safe water remains in

crisis globally (World Bank, 2001). Lack of access to clean water and proper sanitation is a major cause of diarrhoeal diseases, which in turn account for a large proportion of childhood morbidity and mortality (Janvier et al., 2002). Onesmo & Holmes (2006) highlighted that at the world summit in 2005 it was pointed out that the lack of clean water and adequate sanitation and hygiene awareness was still one of the urgent health concerns world-wide. Lack of these services contributes to health issues.

5.4.2.1 Water supply in Kennedy Road informal settlement

The municipal officials stated that uMngeni Water is the bulk potable water supplier for eThekweni Municipality. The municipality then pipes the water to its communities. The water is supplied through full pressure, semi-pressure roof tanks, standpipes and ground tanks. The more affluent segment of the community has a financial ability to access the full pressure system. The lower income bracket is afforded access to a semi-pressure system. Nevertheless, the semi-pressure system has an upgradability element in it. Low-income communities are not expected to use the semi-pressure system perpetually but are given an option to upgrade as their socio-economic fortunes change.

Dickens & Rawhani (2004) state that eThekweni is the first municipality to offer free basic water to its residents. The free basic water programme was intended at ensuring access to a free basic volume of 200 litres of water per person per day. Since then the free basic water programme has been put into the water supply policy of South Africa. The eThekweni Water and Sanitation (EWS) has been pre-emptive and pioneering in terms of water supply approaches to communities. The predominantly essential interventions in the informal settlements are through standpipes, ground tanks, ablution blocks and roof tanks. Similar to any programme, these interventions face serious challenges, the biggest of which are acceptability, by-passing, abuse and illegal connections as observed in the case study areas.

For approximately 10,000 residents at Kennedy Road, the research findings revealed that there were only five water standpipes and five ablution facilities providing potable water leading to long queues and many hours spent in collecting water. As the responsibility for ensuring the adequate availability of water for the family often rests with women, the lack of adequate sources of potable water is a huge burden on the women of the settlement. Sanitation is also severely lacking. Initially there were only six toilets for the entire settlement and it was only after Abahlali activists petitioned and fought for better services that more toilets were installed and the settlement now has 112 toilets. However, the toilets remain insufficient.

5.4.2.2 State of sanitation facilities in Kennedy road informal settlement

Sanitation refers to the delivery of services for the safe disposal of human waste. Sanitation is important in any kind of settlement. Lack of sanitation is the major problem in most informal settlements in South Africa like Kennedy Road informal settlements. For sanitation residents depended on few VIP latrines and a very limited number of chemical toilets for sanitation before the municipality provided ablution facilities with flush toilets. Sanitation plays a vital role not only in the delivery of health services but also in the health of communities in general. Many diseases are linked to a lack of sanitation. According to the national sanitation policy the aims of sanitation to communities are to protect the environment, to integrate the development of a community in the provision of sanitation, to place the responsibility for household sanitation provision with the family or household, to improve the health and quality of life of the whole population (Stephenson 2005).

Other forms of sanitation systems in the Kennedy Road include: ventilated pit latrines, ablution blocks and shared communal toilets. Based on the conducted research it can be concluded that the level of sanitation service in Kennedy Road informal settlement is poor but better than before the installation of ablution facilities.

Based on the conducted research study the ward councillor of ward 25 (Kennedy Road Informal Settlements) is a male. The highest level of education achieved by the councillor is tertiary education and before he was elected as a councillor he was employed and working for a trade union called National Security and Unqualified Workers' Union. The councillor had a heart to work with people and in the best interests of people more especially the previously disadvantaged. Based on these findings the researcher would argue that the councillor has a basic understanding of challenges which are facing low-income groups and as he had worked with people for several years he can be seen as fit for the job. To add to that, the Councillor has lived in the area for more than 10 years and it can be noted that he knows the challenges facing the people in Kennedy Road informal settlements.

The Councillor agreed that the municipality had the capacity to deliver basic services to the urban poor. He further highlighted that there were several challenges which made the municipality appear incapable, such as rapid urbanization and relocation as some of the people refused to relocate to other housing developments. Some argued that there were no job opportunities in those new communities and they would have to travel long distances to work. The councillor stated that there were RDPs in his ward. The councillor stated he was happy with the Integrated Development plan of the eThekweni Municipality because it strove to help the urban poor and catered for every citizen. The councillor stated that there was a housing project coming soon to the area. The ward councillor went further to accentuate that:

“The people in Kennedy Road are happy with the newly installed ablution facilities by the government because they didn’t have access to such services which are in good standard. The councilor added that the introduction of these ablution facilities opened job opportunities for the local people said the Ward councilor “

This demonstrates that the installation of these ablution facilities created a good relationship between the residents and the municipality. There were service delivery protests in the area but since the installation of these ablution facilities

there have been few protest in the area. However, that does not mean the people are completely satisfied because the people still need houses to be developed in the area.

5.4.2.3 Slums Clearance Project in eThekwini Municipality

The Department of Human Settlement at eThekwini Municipality has proactively developed an Informal Settlement Programme to inform its overall Housing Plan (Durban 2015). The municipal official from the Department of Human Settlements highlighted that the eThekwini Municipality had pursued the policy of bridging finance development to make sure that there was rapid delivery of housing and provision of services thereby minimizing the growth of informal settlements.

The project manager from the Department of Human Settlements had stated that suitable unoccupied land was in the process of being acquired for the future greenfield housing projects to provide more houses for households from Kennedy Road informal settlements which still required relocation. The project manager further stated that the Council was aware of the crises of the poor and urgent interventions were being put in place in order to improve the lives of the people of Kennedy Road.

The Department of Human Settlements had already convened quite a few meetings with the related internal departments such as Health, Materials Testing (Geotech), Solid Waste, Environmental, Planning, Fire, and Disaster Management to investigate whether to upgrade the Kennedy Road informal settlement or consider the surrounding land for relocation. However, there were mixed reactions from the some of the departments over the suitability of the current land being developed or the opportunities offered in the vicinity

The project manager stated that even though the settlement was still on the Slums Clearance Project for short-term intervention, due to the high demand of housing there were no readily available sites in any greenfield projects to accommodate such a high number of households. Given the scarcity of suitable land close to the

city, the only other alternative was to explore what opportunities were available in the surrounding area.

The Department of Human Settlements had included Kennedy Road informal settlement as part of the next phase of the Slums Clearance Project. The Department of Human Settlements also numbered the settlement for more effective planning, budgeting and control. The Department Human Settlements had appointed specialist consultants to investigate the suitability of the area for housing development. This investigation was expected to start in 2005 but other challenges prevented this investigation taking place.

According to the municipal official from the Department of Human Settlements about 47 VIP toilets had been urgently cleared in the settlement as part of the upgrading. The ablution facilities were installed in the area to improve the basic services in the area. The remaining VIP toilets will also be removed. The contract will employ the local people.

The municipal official stated that there was a huge challenge of getting suitable land for housing development around the Central Business District (CBD) close to job opportunities. However, the municipality identified land on the eastern side of Phoenix close to job opportunities for housing development; this land was identified to accommodate households which could be accommodated in and around wards 23 and 25. The council together with the informal inhabitants had entered into a partnership to ensure that all households in ward 25 had access to housing opportunities.

The municipal official from the Department of Human Settlements stated that the main aim of his department was to offer an effective and well-organized administration to aid delivery of housing and the construction of sustainable human settlements with a view to ensuring that all citizens of eThekweni Municipality had access to housing opportunities. The municipal official stated that there were housing programmes taking place in the eThekweni Municipality and he highlighted that these housing projects were there to address the housing backlog and to

implement the equity plan. The programme involved the control of an increasing number of the informal settlements through constructive community engagement and through rapid housing delivery for households living in unhygienic and life threatening environments.

These housing programmes ensured the construction of a holistic living environment through integration of different housing typologies and the provision of basic services such as water and sanitation and other communal facilities. The municipal official also stated that these programmes sought to improve the quality of life of the urban poor in the new housing developments.

5.4.3 Role of the Government in provision of water and sanitation

There have been obstacles in delivering clean water and proper sanitation. There have been a number of obstacles for the government to effectively deliver acceptable sanitation. One of these obstacles has been the lack of clarity on the roles and tasks of different departments responsible for the delivery of these services. However, the White Paper on Basic Households Sanitation have subsequently clarified duties and obligations of all three spheres of government. Nevertheless it has been clear that there was a misunderstanding of these responsibilities. If all three spheres of government could work together these duties could be done easily. The connection of all spheres of government need to be strengthened to meet the constitutional obligation of ensuring that there is access to basic services for all. The inter-sectoral approach should be at the heart of all housing delivery projects. Lack of connection between the three spheres of government can have a negative impact on basic services. Local government should develop a clear Integrated Development Plan which is in line with the National Development plan. This would help to clearly outline all challenges which the local government comes across.

It should be clearly understood that the local government has to take full responsibility for driving the delivery of basic services as clearly mandated by the

White Paper on basic sanitation. Local government further has a responsibility to promote health and hygiene awareness campaigns and also to monitor the well-being of its people. The main role of the local government is accountability for the provision of basic services. However the local government should not work in isolation.

To add, the provincial government needs to take responsibility to support the local government to ensure that it performs its responsibilities effectively and help the local government to achieve its primary objective. Provincial government should give technical, financial support and provide human resources as a form of support to the local government. Based on the conducted research the researcher would recommend that the provincial government should oversee all delivery processes, both delivery of housing and the provision of water and sanitation. National government departments should also work together with local and provincial government to ensure that the constitutional mandate is obeyed. All national departments responsible for housing delivery and provision of basic services should support the processes.

South Africa has made major improvements in housing delivery policies and in policies guiding service provision since 1994 and that should not be overlooked. However, the country still has a lot to do to overcome the housing backlog and basic services backlog. Developing policies which are more people centered is one of the tasks the government still has to take into consideration. Policies also need to take into consideration the state of the global economy status quo. Based on the conducted research study it has been identified that there is a lack of linking between government departments responsible for housing delivery. Hence it will be difficult to achieve sustainable human settlement for all.

There was a consensus amongst the municipal officials and the councillor that the provision of water and sanitation has improved. They agreed that there was an improvement in policies dealing with the provision of water and sanitation as well.

Previously people in informal settlements used VIP toilets and mobile toilets but now they have access to running water. The municipality has installed ablution facilities. They also argued that the improvement is due to policy shifts. The municipal officials argue that the policies changed from none to very basic and eventually to an advanced policy, so as to provide services to the previously disadvantaged. They considered water and sanitation policy as progressive since 1994. The new policy can be seen as pro-poor orientated and is very pioneering in developing innovative approaches compared to the previous policies. Municipal officials indicated that previous water and sanitation policies took a more market driven delivery approach and poor people in urban areas had no access to adequate water supply and basic sanitation, because the policy favoured the privileged and urban poor were excluded.

Gaps in water and sanitation policy were perceived as attributable to the lack of attention which was given to the provision of water and sanitation problems in general by the Constitution of the Republic of South Africa. After water and sanitation were endorsed as basic human rights in the Constitution of Republic of South Africa there was solid development of policies. As a result the policies started to accommodate the urban poor. The Free Basic Water programme is one of the positive changes which were brought with the evolution of policy. The policy started to cover a broader scope of a society that had previously been ignored. The introduction of basic sanitation levels for low-income communities was another innovative evolution of policy.

The evolution of policy gave birth to one of the positive changes which was the free basic water programme. The water and sanitation policy then began to cover even the poor who were previously ignored. Another innovative change to provision of water and sanitation was the introduction of basic sanitation levels for low-income communities. The positive changes in provision of water and sanitation were mostly informed by the trends in international water and sanitation environment. The influence mostly originates from the approaches which were

developed by United Nations and United Nations policy documents explained in the second chapter of this research paper.

The municipal official from eThekweni Water and Sanitation Unit saw the free basic water policy as part of the most important paradigm shift which was going on in the water supply sector. The informants further mentioned several inventive sanitation interventions that represent the on-going shifts to a more sustainable manner. For instance, the initiative of introducing dry toilets is seen as a valued impact to water saving and also sustainability of sanitation provision for the urban poor (see Figure 1 below).

Photo 3: VIP toilets 1



Source: Author (2015)

Photo Figure 4: VIP toilets 2



Source: Author (2015)

Provision of VIP toilets in informal settlements like Kennedy Road is not appropriate due to the lack of space, amongst other reasons. VIP toilets were an intervention to the lack of access in sanitation for the urban poor by eThekweni Municipality in the informal settlement previously. The system was then improved by the eThekweni Municipality.

Due to the significant growth of the population in Kennedy Road the municipality also provided mobile toilets in the area. All these facilities are far from many residences due to the lack of space in the inner part of the settlement to locate the mobile toilets, space to build VIP toilets and install the ablution facilities. eThekweni Water and Sanitation Unit stated that it was difficult and almost impossible for them to install ablution facilities in the inner part of the settlement due to the congestion. They had to lay water pipes throughout the settlement. The municipality used the existing water and sewer connections close to the area to get water access for the ablution facilities.

Photo 5: Ablution blocks



Source: Author (2015)

Photo 6: Outside sinks on facilities



Source: Author (2015)

In the case of eThekweni Municipality these are innovative changes in water and sanitation policies which can be noticed when looking into water and sanitation provision. One should ask oneself whether these innovations are transferable into effective service delivery. Responses from households surveyed in the case study indicate otherwise. There are several ways to measure the effectiveness of service delivery. Beneficiaries' satisfaction to access to basic services would be one of the ways to measure effectiveness of service delivery. Based on the conducted research findings it has been shown that beneficiaries were not entirely satisfied (see table 16 & graph 16), 67% of the respondents were not satisfied with water and sanitation services.

Respondents measured their satisfaction and dissatisfaction with water based on internal connections and distance from the standpipes and the ablution facilities. There was no integration in the level of standard and service to be delivered. As deliberated earlier, dissatisfaction with the delivery of housing and the provision water and sanitation can be used as an indicator of of a gap in policy implementation. There are various elements that can influence satisfaction and dissatisfaction with the above services which may not necessarily be indicative of policy differences in implementation.

It may be the case that beneficiaries who were satisfied with their water and sanitation services were either located nearer to the standpipe and/or ablution facility and/or had an illegal water connection. Illegal connection is when the people connect illegally into a water main without the permission of the authority in charge. Photos 7 and 8 below show examples of illegal water connections. Illegal water connection is one of the reasons for water loss.

Photo 7: illegal water connection



Source: Author (2015)

Photo 8: Water leak



Source: Author (2015)

The illegal connection contributes in water loss. Based on the research findings it is clearly shown that when households complained to the municipality with regards to water services 46.97% (54) of the respondents indicated that the municipality delays in taking action to remedy the complaints. On the other side 34.78% (40) of the respondents indicated that when they sent in their complaints the municipality did not take any action. It can then be concluded based on the conducted research findings that the maintenance system of services in Kennedy Road is poor. Due to this poor action to fix or repair water services a lot of water is lost due to water leaks (see photos 7 and 8) above. The municipality is also not taking any action to eliminate illegal water connections in the informal settlement. Based on the research finding the sanitation facilities in Kennedy Road were not sufficient. Even the few the households that had access, found they were of poor quality (see Photos 9, 10 & 11). The waste was not collected by the municipality which also contributed to health risks in the community.

The households in Kennedy Road informal settlements were living under hazardous conditions. The level of satisfaction of the households is hindered by several factors, one of them being the poor housing quality and the poor access to services such as water and sanitation. Sanitation facilities in the area were not of good standard. Even the newly installed ablution blocks were not properly maintained, VIP toilet facilities were not accessible due to the lack of waste management. Other community households were forced to use these VIP toilets under these conditions. One of the reasons people used these facilities was because the ablution facilities were not accessible after 18H00, because they were closed. (see Photos 9, 10 and 11 below)

Photo 9: Ablution broken toilet door



Source: Author (2015)

Photo 10: Ablution black broken
Urinal



Source: Author (2015)

Photo 11: Inaccessible VIP toilet



Source: Author (2015)

There are several gaps in water and sanitation provision policies together with housing delivery policies. These disparities, manifested during the implementation phase, namely lack of satisfaction, duplication of services, duplication of subsidies, use of conflicting technologies, and lack of informal settlement makeover into sustainable human settlements. Public dissatisfaction with services is used by the researcher as an indicator of gaps in policy implementation. The housing satisfaction was seen through the accessibility to basic services such as access to both clean water and adequate sanitation. The use of housing satisfaction as an indicator of manifestation of a gap is informed by the role played by Department of Human settlements in enabling access to other basic services such as water and sanitation.

Households should base their satisfaction on the accessibility of basic services in the household. Based on that the researcher argues housing must not be deliberated as an independent entity it should be an element which enables access to basic services namely water and sanitation.

Observation from the field survey suggests that the physical quality of housing was not used as a basis to measure housing satisfaction; satisfaction was based on provision of water and sanitation. Rather a household's ability to facilitate access to water and sanitation was used as the basis for measuring satisfaction. There are other means of assessing how gaps in policy manifest themselves in implementation; however, service satisfaction was used to assess the gap in these policies. To meet the objectives of this research paper, service satisfaction was used as the main indicator of the manifestation of these gaps.

6 Chapter six: Summary of Findings, Recommendations and Conclusions

6.1 Introduction

The main purpose of this section is to give the summary of findings, conclusions and recommendations. The section finishes the paper by going back to the research questions and sub-questions and then evaluating whether the research was able to answer these questions.

6.2 Summary of the findings

On the aspect of age, gender, ethnicity and language the study found that Kennedy Road informal settlement was mostly occupied and dominated by youth, the study also found that most of the people who stayed in Kennedy Road were females, furthermore most people in the study were black Africans and spoke isiZulu; this was because 51% of the respondents who participated in the study were below 35 years of age and 59% were females. Furthermore, the majority of residents were blacks at 78% as compared to 13% Indians and as well as Coloureds who were the lowest race group represented at 9% and there were no white respondents among the respondents who participated in the study. The language most spoken in Kennedy Road was isiZulu at 36%; this could be due to the fact that the study was in KwaZulu-Natal province, which is a Zulu dominated province. It can, therefore, be argued that most of the people who suffered most from the lack of access to basic services are black Africans and mostly youth.

With regards with current activities, the study found that most of the people in Kennedy Road informal Settlement were unemployed. The unemployment rate constituted about 53.04% compared to 26% of people who were employed. Regarding the issue of level of education achieved, the study found that most of the people who lived in Kennedy Road had primary school level of education because that constituted about 53.04%. It can be argued that the level of education

achieved was a contributing factor to the high unemployment rate, because people in the case study were not well skilled due to the low level of education.

With regards to the size of the households, the study found that most households in the study had three people living in the same house, because 25% of the households in the study had a household size of 3 people followed by 25% of households with 4 people compared to 18% of households with 2 people and 13% with one person. The study also found that most people had been staying in the area for more than 3-5 years because people who had been living in the area constituted 33.04% followed by 29.54% of people who had been living in Kennedy Road for more than 6-10, then 28.7% who had been living in the area for more than 11 years. It can be argued that the vast majority of the people in the study had been suffering from the lack of access to basic services for more than 3 years.

As far as the water provision is concerned, the study found that most of the households in Kennedy Road used the ablution facilities as a main source of water. 63% of the population used the ablution block as their main source of water, the remaining 37% (42) mostly used public taps/standpipes as their main source of water. The study found that most people in Kennedy Road joined queues and had to wait when collecting water from the above mentioned water sources. More two-thirds of the people joined queues when collecting water, 69% of the people indicated that they sometimes joined queues, 21% of the people always joined queues when collecting water and only 10% never joined queues. The study found that 58% of the people in the study waited for 0-15 minutes when collecting water, on the other hand 38% of the people waited for 16-30 minutes. The study also found that 59% of the inhabitants stated that it took them sometime to get water and come back to their houses. It can be argued that water facilities were not sufficient to cater for all the dwellers in Kennedy Road and these water sources were far from most of the households.

With regards to who was mostly responsible to collect water in the households in Kennedy Road, the study found that women were responsible collecting water; 71.3% of people who collected water in Kennedy Road were women compared to 28.7% of men who collected water. It can be argued that there is gender inequality when it comes to the responsibility of water collection. The study found that people in Kennedy Road do not pay for water. The local government was providing water free of charge for household as mandated by the Free Basic Water Policy that was officially announced in 2001.

In connection to complaints made in the area regarding drinking water services, the study found that there had been many complaints related to drinking water services by people in the past year. According to the research findings, 83% of household had complaints they had reported to the municipality compared to 17% of households who had no complaints related to drinking water services. Based on the findings, 47% of people in the study were not happy with the municipality response to their complaints because the municipality delayed to take action after they reported their complaints. On the other hand 34.78% were also unhappy because there was no action taken by the municipality regarding their reported complaints. Overall the people of Kennedy Road were not happy with the drinking water services and as a result 62% of the people in the study were dissatisfied by the municipality's water services compared to 23% of households who were partially satisfied with the municipality's water services and 15% were satisfied with water services. Based on the findings households in Kennedy Road stated that they did not need to clean water before drinking.

In connection to illnesses in the study the research found that there were common illnesses in the study. The study found that households were mostly affected by colds as 37% indicated that the common illness was cold followed by 27% Malaria which might be caused by the mosquitos which were found in the case study area due to water leaks. 19% of the respondents indicated that diarrhea was also one of the common illnesses found in the area and the remaining 17% of the

respondents indicated that fever was also common in the area. The study found that lack of access to proper sanitation was the main cause of the illnesses found in Kennedy Road. 45.22% of participating households indicated that lack of access to sanitation was the main cause of common illnesses, followed by 26.96% who felt illnesses caused by mosquitos and flies then 25% that illnesses were caused by dirty water.

As far as the provision of sanitation is concern households in Kennedy Road used ablution facilities as their main source of water and the study found that the vast majority of households in Kennedy Road used flush toilets, 51.30% of the households used flush toilets followed by 21.74% who used VIP toilets and 26.97 used the bucket system. The study found that the community shared these facilities.

Based on the conducted research findings the eThekwini Municipality had also been readdressing the injustice of the past. The municipality stated that to some extent it had been able to achieve its goal of providing basic services to the people. The Municipal Official from the Department of Water and Sanitation stated that the municipality had put the Kennedy Road informal settlement on their priority list to provide the area with clean water and proper sanitation. As a result the municipality had installed ablution facilities in the area to ensure that the households had access to clean water and proper sanitation even though there were still few of these facilities in the area.

The municipal official also stated that there was no access to clean water and proper sanitation facilities in Kennedy Road because the area was unplanned. People had invaded the area and as a result the households in Kennedy Road had previously used the VIP System as a main sanitary system. The Municipal official from eThekwini Water and Sanitation also added that water supply was one of the most important functions of his office. It was a constitutional responsibility of his department to ensure water supply to the people of eThekwini.

As far as the ward councillor is concerned, the findings show that the councillor agreed that the municipality had the capacity to deliver basic services to the urban poor. He further highlighted that there were several challenges which made the municipality appear incapable, such as rapid urbanization and relocation as some of the people refused to relocate to other housing development.

The project manager from the Department of Human Settlements had stated that suitable unoccupied land was in the process of being acquired for future greenfield housing projects to provide more houses for households from Kennedy Road informal settlements which still required relocation.

6.3 Recommendations

A research attempted to assess the rationale of linking the delivery of housing with the provision of clean water and proper sanitation in low-income settlements. A level of absence of coordination and integration was found. Taking a step back and looking at the literature review, discussions, observations and findings, the researcher makes the following recommendations. The following recommendations signify an innovative direction that the execution of housing delivery policies together with water and sanitation policies can take in a coordinated, integrative and holistic manner. The following recommendations are based on the research findings.

Jones et al. (2014) further argue that:

“Policy makers, practitioners and researchers need to identify, understand and address the pressing challenges associated with the delivery of services in urban areas in the developing world.

Specific attention should be paid to urban services that are most important for broader development goals and those that present unique challenges in urban

environments, including solid waste management, water and sanitation and transport services.

Governance and political economy factors are important in determining the effective delivery of public services, including in urban areas. However while the literature is more fully developed with respect to some services than others, the body of knowledge is not strong on the key governance challenges specific to urban areas, or how these challenges can be overcome”.

6.3.1 Recommendations on Policy

There is a huge gap between water and sanitation and housing delivery policies. Differences in housing, water and sanitation policy initiatives are multifaceted and are found at several stages of policy life-cycle. Despite the fact that policy changes happened at different time intervals for each of the policies this does not necessarily form an element of disparity. However, it does have an impact on the level of advancement for each of the policies.

Based on the conducted research findings the core disparity that was found by the researcher was lack of integration and coordination at the policy making level. Housing, water and sanitation policies are a constitutional responsibility of two different departments, Department of Human Settlements and DWS respectively.

The procedure of policy development hence takes place within these silos. Department of Human Settlements bases its guiding principle on its targets, needs and objectives and the same applies to the Department of Water and Sanitation. There is no forum for negotiated policies which will facilitate a cross-sectoral policy development process. Consequently, housing, water and sanitation policies are not congruent with one another.

On the one hand, legislative framework is rigid and sector specific. Norms and standards introduced by legislative frameworks of housing, water and sanitation are not receptive to technological innovations. For example, the norms and

standards stipulated in the Housing Act of 1997, outlining the acceptable level of an 'RDP' house, do not support the technological choices introduced by the Water Services Act of 1997. One significant

- Policy making practices should occur within a cross-sectoral environment.
- It is of importance that housing, water and sanitation policy strategies to be integrated and coordinated into one holistic strategic plan. Meaning that housing sector plans together with water development plans and sanitation strategies have to be interrelated together at a local municipality level.
- Housing backlogs together with water and sanitation backlogs must be merged cross-sectorally.
- Constant consultation with the people about housing development projects: time lines and order of these projects should be made clear to the community members.
- Based on the conducted research findings there is a greater need that the project packaging and implementation should be coordinated and be integrated.

6.3.2 Recommendations on Municipalities

There is a greater need for the government to carry on transforming the human settlements using Breaking New Grounds policy as a foundation of transformation (DHS, 2015). Department of Human Settlements and Department of Water and Sanitation both at local government and national government level can only achieve the goal of providing sustainable human settlement through achieving the following:

- (a) Should make sure that people live in adequate housing with access to basic services such as water and sanitation.
- (b) Building human settlements that are economically, socially, spatially and integrated. If all housing projects can meet the above mentioned components sustainable human settlement can be achieved.

- (c) Allowing the growth of a functionally and reasonable residential property market.
- (d) According to DHS (2015), improving institutional capability and coordination for the spatial targeting of collective investments to contribute to healthy residential property development at the same time as offering wider remuneration to all who participate in its investment

In addition, there is a greater need for both DHS and DWS to share common goals to enable them to deliver services more efficiently to the people. Housing delivery projects should be a collective responsibility of both the DHS together with DWS and lastly their goals should be aligned and that would make service delivery more efficient. Moreover, it will be of importance to design housing development programmes as a nonstop process rather than a once-off project because of the continuing population growth in the urban areas. Aside from adopting integration and coordination principles informal settlement upgrading programmes should be a multi-sectoral continuum.

Avoid relocations and maintain current settlement densities. In order to minimize relocation the researcher would recommend that the municipality consider upgrading informal settlements or start new housing development projects closer to the CBD where there are job opportunities. The researcher would also recommend that municipalities should consider the principle of reducing the relocation of the urban poor to places where there are no job opportunities. The municipality should also consider relocating the urban poor to better located settlements with water and sanitation. The principle of relocating should, however, be used as a last resort when the land is not developable. All the departments which are responsible in creating sustainable human settlements should work together, policies should also be in line with one another.

Given the fact that there is insufficient land for housing development projects to accommodate the urban poor, municipalities should maximize densities when

delivering housing by building high rise flats such as double story four row housing instead of single freestanding houses. In most cases people choose to continue living in their current area as long as it is close to opportunities, some people settle well in higher density areas as long they have access to basic services and live close to areas of employment opportunities.

The Municipality together with the Department of Education should introduce Adult Basic Education and Training in areas like Kennedy Road as this programme will help to enhance the education level of the inhabitants. This will further allow the people to participate in decision making. If the people are more educated they will be more skilled and they will be employable and the rate of unemployment will decrease and people will be able to afford to build their own houses.

6.4 Conclusion

The research findings have revealed that lack of access to adequate housing, clean water and proper sanitation has a negative effect on health and the well-being of the urban poor. It further showed that lack of access to water contributes to health, environmental and socio-economic problems. The summary of the results and analysis obtained were gathered from the interviews and questionnaires in the study area, during the site visits that were conducted. The summary of findings determined the degree to which the research paper has successfully answered the research question, sub-questions and objectives.

References

- Abrams, L. (2001). *Water for basic needs*. World Health Organization. <http://www.africanwater.org> [accessed: 20 June 2014]
- African National Congress. (1994). *The Reconstruction and Development Programme: A policy Framework*. Johannesburg: Umanyano Publishers.
- Aldrich, B.C., and Sandhu, R.S., (1995). *The Global Context of Housing Poverty*. In Idrich, B.C., and R.S., Sandhu (eds) *Housing the Urban Poor: Policy and Practice in Developing Countries*: London, Zed Books.
- Anon., (2014). waterAid. [Online] Available at: www.righttowater.com [Accessed 11 March 2015].
- Aydemir, S. (1999). *Kentsel Alanların Planlanması ve Tasarımı*, KTU Yayını, Trabzon.
- Babbie, E. (2010). *The practice of social research*. Belmont, CA: Cengage Learning.
- Bakker, K. and Krooy, M. (2007). *Governance Failure: Rethinking the Institutional Dimensions of Urban Water Supply to Poor Households*. World Development, Vol 36, No. 10.
- Baloyi V.B (2007). *Housing delivery in South Africa-A project management case study*. University of Johannesburg. South Africa
- Baumann, T., Huchzermeyer, M., Rolnick, J., Roux, T. and Wimpey, R. (2004) *Background Paper 1: Conceptual implications of emerging policy shifts*. Prepared for the Department of Housing, Pretoria.
- Blacket, I. (2001). *Water Matters Why Sanitation Need a much Higher Priority*. Harambee, pp.1 – 7 <http://www.tear.org> [Accessed: 25 August 2014]

- Bless, C. & Higson-Smith, G.H. (2000). *Fundamentals of research methods: An African perspective*. 3rd Edition. Landsdowner: Juta.
- Blignaut J.N., Marais C. & Turpie J. (2007). *Determining a charge for the clearing of invasive alien plant species to augment water supply in South Africa*. Water SA 33 (1) 27-34
- Bryman, A. (2008) "Of methods and methodology", *Qualitative Research in Organizations and Management: An International Journal*, Vol. 3 pp.159– 16
- Cairncross, S., Hardoy, J.E., and Satterthwaite, D. (1990). *The Urban Context*. In Cairncross, S., Hardoy, J.E., and Satterthwaite, D., (eds). *The Poor Die Young: Housing and Health in Third World Cities*. Earthscan Publications Limited, London.
- Chepsiror E, (2013). *The challenges of housing development for the low income population in kenya; a case of eldoret town*, University of Nairobi
- Creswell, J.W. (2007). *Qualitative inquiry and research design: Choosing among five approaches* (3rd ed). Thousand Oakes, CA: Sage.
- Curlin G.T, Aziz K. M. A., and. Khan M. D (1979), "*The Influence of Drinking Tubewell Water on Diarrhoea Rates in Matlab Thana*," Research Working Paper no. 1 (International Centre for Diarrhoeal Disease Research-Bangladesh, Dhaka, Bangladesh, 1979).
- Dale, P., and McLaughlin, J., (1999). *Land Administration*, pp. 26-35, Oxford University Press.
- Denzin, N.K. (1970). *The Research Act in Sociology*. Chicago: Aldine.
- Department of Statistic Singapore (2014). *Households and Housing*. <http://www.singstat.gov.sg/> [accessed: 20 August 2014]
- Department of Human settlement (2014) Cornubia: *Celebrating 20 years of building dreams* [Accessed: 20 June 2015] <http://www.dhs.gov.za>

- Devers, K.J., Frankel, R. (2000). *Study design in Qualitative Research-2: Sampling and Data Collection Strategies*. In: Education for Health, 13, 2, 263-271: <http://educationforhealth.net> [accessed: 21 April 2014]
- Durand-Lasserve, A. (2006). *Informal Settlements and the Millennium Development Goals: Global Policy Debates on Property Owners and Security of Tenure*. Global Urban Development Magazine, 2(1), 1-15
- Durban. 2014. Information on eThekweni municipality. [Accessed: 25 June 2014] <http://www.durban.gov.za>
- DWA, (2001). *White paper on basic household sanitation*. Pretoria: s.n.
- Eade, D & Williams, S. (1995). *The Oxfam Handbook of Development and Relief*. Oxfam Publishers.
- Evans, A. (1994). *Status of non- urban Sanitation in South Africa: Public Health Aspects, Present position and needs*. Health Technology Research Group. Medical Research Group.
- Evans, B (2007). *Understanding the Urban Poor's Vulnerabilities in Sanitation and Water Supply*. Financing Shelter, Water and Sanitation. Center for sustainable urban development. <http://csud.ei.columbia.edu> [accessed: 25 September 2014]
- Fonseca C, Cardone R. (2004) *Analysis of cost estimates and funding available for achieving the Millennium Development Goal targets for water and sanitation* WELL Briefing Note: WELL Resource Centre for Water, Sanitation and Environmental Health, Loughborough University.
- Funmilayo, L. A, (2014). Journal of Emerging Trends in Economics and Management Sciences. *Effect of urban informal settlements and outdoor advertisement on the quality of built environment and urban upgrading in Nigeria*, Vol 6, 332-339

- Galloway, A. (1997). In *A Workbook of Sampling*. Editor. Kate Galloway. <http://www.tardis.ed.ac.uk/~kate/qmcweb/scont.htm> . [Accessed:25 April 2015]
- Glatthorn, A.A & Joyner, R.L., (1998). *Writing a winning Thesis or Dissertation*. London: Sage Publications Ltd.
- Godehart, S., and Vaughan, A., (2008). *Research Reviewing the BNG in Relation to Upgrading Informal Settlements*. Research Paper for Theme 1: Conceptual Framework. For the National Department of Housing.
- Gontsana, M.A. (2013). *Cape Town's Informal Settlements Keep Growing*. Groundup, from <http://www.groundup.org.za> [accessed 21 April 2014]
- Hardoy, A., Hardoy, J., Pandiella, G., and Urquiza, G. (2005) '*Governance for Water and Sanitation services in low-income settlements: experiences with partnership-based management in Moreno*'. Buenos Aires' Environment and Urbanisation, Vol. 17, no. 1 pp. 183-200.
- Hall, C. (2003). *Coping with hygiene in South Africa, a water scarce country*. International Journal of Environmental Health Research, 43(117): 17-28.
- Hornby, A.S. (2005) *Oxford Advanced Learner's Dictionary of Current English*, 7th Edition. Oxford University Press, Cape Town.
- Hatchard, J., Ndulo, M., Slinn, P., (2004) *Comparative constitutionalism and good governance in the Commonwealth: an Eastern and Southern African perspective*, p. 73f, Cambridge University Press.
- Hopkins, J., (n.d). *Social Housing in South Africa: Review of South Africa's Housing Policy*, s.l.: Southern African Housing Foundation.
- Huchzermeyer, M. & Karam, A., (2006). *Informal Settlements perpetual Challenge*. Cape Town: UCT Press.

- Hughes, J. M. (1980). *Potential impacts of improved water supply and excreta disposal on diarrhoeal disease morbidity: an assessment based on a review of published studies*, (draft document) Geneva, WHO.
- International Institute for Sustainable Development, 2008: Sustainable Development Concept: <http://www.iisd.org/sd> [Accessed : 25 November 2014]
- IRC International Water and Sanitation Centre. 2008. *Kenya-Kibera Slum Upgrading Project*. www.irc.nl [Accessed 06-June 2014]
- Isely, R. B., (1983). *Relating improvements in water supply and sanitation to nutritional status: The issue of using anthropometry as an evaluation measure*. Food and Nutrition Bulletin, Volume 5
- Jansen og, A. &Schulz, C.K (2006). *Water demand and the urban poor: A study of the factors influencing water Consumption among households in Cape Town*. South Africa. University of Tromsø Norway.
- Jolly, R. (1976). "The World Employment Conference: *The Enthronement of Basic Needs*", Development Policy Review, Vol. A9, No. 2, 32-44, October
- Jones . H, Clench. B. and Harris, D. (2014). *The governance of urban service delivery in developing countries*. s.n
- Khan, F. (2003). Supporting People's Housing Initiatives. In Khan, F., and Thring, P., (eds). *Housing Policy and Practice in Post-Apartheid South Africa*: Heinemann Publishers, Sandown
- Kumar, R. (1999). *Research Methodology: a step-by-step for Beginners*. Sage Publications, London. Pp 149-166
- Kumar K. S. and Harada H. (2011). "*Field survey on water supply, sanitation and associated health impacts in urban poor communities- a case from Mumbai City, India*," Department of Environmental Systems Engineering, Nagaoka University of Technology 46, no. 11

- Kramer, M., (2006) *Dispossessed: Life in Our World's Urban Slums*. Orbis Books: New York.
- Lanois, Wagner and. (1958). F-Diagram
- Leedy, P. & Ormrod, J. (2001). *Practical research: Planning and design (7th ed.)*. Upper Saddle River, NJ: Merrill Prentice Hall. Thousand Oaks: SAGE Publications
- Lovan, W. R, Murray, M. & Shaffer, R. (2005). *Participatory Governance: Planning, Conflict Mediation and Public Decision- Making in Civil Society*. Ashgate Publishing UK.
- Mabin, A and Smit, D (1997) '*Reconstructing South Africa's cities? The making of urban planning 1900-2000*', *Planning Perspectives*, 12: 2, 193 — 223
- Mahanga, M.M. (2002). *Urban Housing and Poverty Alleviation in Tanzania*. Dar Es Salaam University Press Limited: Uvumbuzi Road
- Mai-Lan, H. (2015). *Knowing and Showing that Companies are Respecting the Human Rights to Water and Sanitation*. Pacific Institute. <http://pacinst.org> [accessed: 16 August 2015]
- Marx, C., (2003) *Supporting Informal Settlements*. In Khan, F., and Thring, P., (eds). *Housing Policy and Practice in Post-Apartheid South Africa*: Heinemann Publishers, Sandown.
- McJunkin, F. E. (1983) *Water and Human Health*, Washington, DC National Demonstration Project for Rural Water Supply.
- Meera Bapat and Indu Agarwal (2003), "*Our Needs, Our Priorities; Women and Men from the Slums in Mumbai and Pune Talk About Their Needs for Water and Sanitation*," *Environment and Urbanization* 71, no. 15
- Moser, C., and Satterthwaite, D., (2008) *Towards Pro-poor Adaptation to Climate Change in the Urban Centres of Low-and Middle-income Countries*. Human Settlements Discussion Paper Series Climate Change and

Cities 3: Global Urban Research Centre, International Institute for Environment and Development.

Mosha, A.C., (1995). *The Global Context of Housing Poverty*. In Aldrich, B.C., and R.S., Sandhu (eds) *Housing the Urban Poor: Policy and Practice in Developing Countries*. London, Zed Books.

Morton, J and Babbie, E. (2004). *The Practice of Social Research*. Oxford University Press southern Africa. Chapter 10- Qualitative studies

Mouton, J. (1996). *Understanding social research*. Pretoria. Pretoria: Van Schaik.

Mukonoweshuro, T.F. (2014). *Barriers to the provision of basic sanitation in two selected informal settlements in Harare, Zimbabwe*. University of the Witwatersrand: Johannesburg. South Africa

Neuman, W. L. (2011). *Social research methods: Qualitative and quantitative approaches* (7thed.). Boston: Allyn & Bacon.

Nkongo, D. and Chonya, C. (2009). *Access to Water and Sanitation for People Living with HIV and AIDS: An Exploratory Study*. WaterAid Tanzania

Okonkwo, J.O. (2010). *Sanitation, Potable Water Supply and Environmental Protection. Benefits, Progress and Issues for Sustainability in Developing Countries Policy Brief*. Tshwane University of Technology.

Owuor, S. and Foeken, D. (2006). *Surviving in the neighbourhoods of Nakuru, Kenya*. In P. Konings & D. Foeken, eds, *Crisis and creativity: Exploring the wealth of the African neighbourhood*, pp. 22-45. Leiden: Brill

Patton, M.O. (1990). *Qualitative evaluation and research Methods*. (2nd ed) Newburt Park, CA: sage.

Phago K.G (2010). *Effects of the development and implementation of the national public housing policy in South Africa with specific reference to the Gauteng province*. Pretoria, University of South Africa.

- Pieterse, E; (2003): *Unravelling the different meanings of integration: in Confronting Fragmentation: Housing and Urban Development in a Democratizing Society*. Harrison, P , Huchzermeyer, M. Mayekiso, M. page 124
- Pietersen, A. (1997). *Water and Sanitation: Towards a Healthy Family*. Department of Health. Pretoria
- Rana S & Kelly L., (2004). *Addressing Challenges of Globalization: An Independent Evaluation of the World Bank's Approach to Global Programs Case Study*. World Bank. Washington, D.C
www.worldbank.org [accessed: 26 July 2015]
- Rondinelli, D. (1990) '*Housing the urban Poor in Developing Countries: The Magnitude of Housing Deficiencies and the Failure of conventional Strategies Are World-Wide Problems*', The American Journal of Economics and Sociology, vol. 49, iss. 2
- RSA. Department of Water Affairs and Forestry (2002): *Sanitation for a Healthy Nation: Sanitation Technology options*. Pretoria: Government Printers.
- RSA. National Sanitation Policy (1996): National Sanitation Task Team. Pretoria: Government Printers.
- RSA. The White Paper on Basic Household Sanitation. (2001) *Sustainable development of water resources, water supply and Environmental sanitation*. Pretoria: Government Printers
- Salaam-Blyther, T. (2012). *Global access to clean drinking water and sanitation: U.S. and international Programs*. New York: Congressional Research Service.
- Schlyter, A., (1995) *The Global Context of Housing Poverty*. In Aldrich, B.C., and R.S., Sandhu (eds) *Housing the Urban Poor: Policy and Practice in Developing Countries*: London, Zed Books.

- Seaberg, J.R. (1988). *Utilizing sampling procedures*. In Grinnell, RM. (Ed) Social work research and evaluation. 3rd ed. Itasca, IL: Peacock.
- Sesani, T. F., (2005). *An Investigation of the level of sanitation in the Bushbuckridge Local Municipality*, Polokwana: University of Limpopo.
- Shuval, H. I., Tilden, R. L., Perry, B. H. & Grosse, R. N., (1981). *Effect of investments in water supply and sanitation on health status: a threshold-saturation theory*. pp. 243-248.
- Sisk, T.D. (2001). *Democracy at the Local level: The International IDEA Handbook on Participation, Representation, Conflict Management and Governance*. Halmstad: Bull Tryckeri.
- Smit, W. (1998). 'The rural linkages of urban households in Durban, South Africa'. *Environment and Urbanization*: Vol.10, No. 1, April 1998: <http://eau.sagepub.com/cgi/reprint/10/1/77.pdf> : Accessed 20 August 2014
- Smith, S.J. (1990). *Health Status and the Housing System*. Social Science and Medicine, 31, 753-762.
- South African Human Rights Commission (2014) *Report on the Right to Access Sufficient Water and Decent Sanitation in South Africa*. <http://www.sahrc.org.za> [Accessed: 15 October 2014]
- Srinivas, H., (2009). *Urban Squatters and Slums: Sites and Services*. <http://www.gdrc.org/uem/squatters/s-and-s.html>. [Accessed on April 2014].
- Strydom, H. & De Vos, A.S. (1998). *Sampling and sampling methods. Research at grassroots. A prime for the caring professions*. Pretoria. Van Schaik Publishers.
- Sutherland, C. & Lewis, B. (2012). *Water and Sanitation Service Delivery in eThekweni: a Spatially Differentiated Model*. Seventh Framework Programme. Durban

- Tarrass, F. & Benjelloun, M (2012). *The Effects of Water Shortages on Health and Human Development. Perspectives in Public Health*. Vol. 132, No. 5
- The National Department of Housing (2004). *'The Breaking New Ground: A Comprehensive Plan for Housing Delivery'*. www.housing.gov.za: Accessed 03 June 2014
- Tissington, K., (2011). *Basic Sanitation in South Africa. A Guide to Legislation, Policy and Practice*, Pretoria: Socio-Economic Right Institute of South Africa.
- Tomlinson, R. (2005) HIV/AIDS and Urban Poverty. *Consultant's Report to the South African Cities Network*
- Tshikotshi, V. (2010). *The Challenges of Eradicating Informal Settlements in South Africa*. Johannesburg.
- UN-HABITAT, (2003). *The Challenge of Slums - Global Report on Human Settlements 2003*
- UN-HABITAT, (2007). *Enhancing Urban Safety and Security addresses three major threats to the safety and security of cities: crime and violence; insecurity of tenure and forced evictions; 2007*
- United Nations Centre for Human Settlements (UNCHS) (1999): *Informal Settlement Upgrading: The Demand for Capacity Building in Six Pilot Cities* (Amman, Ankara, Caracas, Concepción, Ibadan and Nkayi), Nairobi, Kenya.
- United Nations Children's Fund (2014). *Water, Sanitation and Hygiene Annual Report 2013*. <http://www.unicef.org/wash> [accessed: 20 June 2014]
- United Nation Development Programme (2000) *Administrator's Note on Implementing UNDP Policy on Human Rights in the New Millennium*;
- United Nations Development Programme (2014). *Provision of public housing in Singapore*. <http://tcdc2.undp.org> [Accessed:20 August 2014]

- United Nations Human Settlements Programme (UN-HABITAT). (2003): *The challenge of slums: global report on human settlements*. UN-HABITAT, New York, New York, USA.
- Urban Clinique (2015) Singapore: *Where slum area is now just a past*. <https://urbanclinique.wordpress.com> [accessed: 25 June 2015]
- Warner, D.B and Green Abate, C. (2005). *Guidelines for the development of small-scale rural water supply and sanitation projects in East Africa: a policy and planning framework for activities funded by USAID under the Title II (Food for Peace) Program and by other donors*. [Accessed: 26 June 2015]
- WaterAid (2011). *Rights-based approaches to increasing access to water and sanitation*. WaterAid Discussion paper.
- Watson, V (2003): *Planning for integration: The case of metropolitan Cape Town: in Confronting Fragmentation: Housing and Urban Development in a Democratizing Society*: Harrison, P, Huchzermeyer, M. Mayekiso, M. Page 140- 145
- World Bank (1976), "*Measurement of the Health Benefits of Investments in Water Supply*," Public Utilities Report no. PUN 20. Washington, D.C., 1 976.
- World Health Organization. (1996). *Fact sheet, child hood diseases in Africa, diarrhoeal disease*, No. 109, March, pp 1
- World Health Organization. (2004). *Waterborne diseases in the informal settlement* [online] Available: www.who.int accessed 20 April 2014
- World Health Organization. (2008). *Safer Water, Better Health: Costs, benefits, and sustainability of interventions to protect and promote health*; Updated Table 1: WSH deaths by region, 2004.

World Health organization (2009). *Number of outbreaks of waterborne diseases attributable to drinking-water and bathing water each year*. Outbreaks of waterborne diseases

Yuen, B., (2007) *Squatters No More: Singapore Social Housing*. Global Urban Development, 3, 1.

Yuen B. & Kumssa A. (2010). *Climate Change and Sustainable Urban Development in Africa and Asia*. Springer Science & Business Media

Appendix A: Questionnaires for Beneficiaries

Questionnaires for Beneficiaries 2015

A. Demographical information of the informants

1. Your gender?

Female		Male	
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2. Age (in complete years)

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3. Ethnicity

Black		White		Coloured		Indian		Other (Specify)	
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4. What is your first language?

English		Xhosa		Zulu		Other (Specify)	
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5. Which of the following categories best describe your current activity?

Employed		Unemployed		Self-employed		Student		Other (Specify)	
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6. What is the highest level of education you have achieved?

University or college or equivalent	
Further Education and Training.	
Secondary school	
Primary school only (or less)	

7. Size of your household?

One		Two		Three		Four		More than 4	
-----	--	-----	--	-------	--	------	--	-------------------	--

8. How long have you been living in this area?

Less than a year		3-5 years		6-10 years		11 years or more	
------------------	--	-----------	--	------------	--	------------------	--

B. Use and collection of household water

9. What is the main source of drinking-water for members of your household?

- A. Piped water into dwelling
- B. Piped water to yard/plot
- C. Public tap/standpipe
- D. Tubewell/borehole
- E. Protected spring
- F. Unprotected spring Rainwater collection
- G. Cart with small tank/drum Tanker-truck
- H. Other (specify)

10. Do you usually have to join a queue to get water?

- A. Always
- B. Sometimes
- C. Never

11. If “A” or “B”, (b) how long do you usually wait? (read possible answers and indicate one)

- A. Less than 15 minutes
- B. 15 minutes to ½ hour
- C. ½ to 1 hour
- D. More than an hour

12. How long does it take to go there, get water, and come back?

- A. Less than 15 minutes
- B. 15 minutes to ½ hour
- C. ½ to 1 hour
- D. More than an hour

13. Who usually fetch the water for your household?

- A. Adult woman
- B. Adult man
- C. Female child (under 15 years)
- D. Male child (under 15 years)
- E. Anyone in the household

14. Do you pay for water?

- A. Yes
- B. No

15. Have you made a complaint related to your drinking water service in the past year?

- A. Yes
- B. No

16. If yes, how soon was the complaint attended?

- A. Prompt action taken
- B. Delayed action taken
- C. No action taken

17. Overall, are you satisfied with your drinking water service?

- A. Satisfied
- B. Dissatisfied
- C. Complete
- D. Partial

18. Do you treat your water in any way to make it safe to drink?

- A. Yes
- B. No

19. What do you usually do to make water safe to drink?

- A. Boil
- B. Add bleach/chlorine
- C. Use a water filter (ceramic, sand, composite, etc.)
- D. Solar disinfection
- E. Other (specify)

20. Is your water supply operated and maintained by the community?

- A. Yes
- B. No
- C. Not sure

21. What illnesses are common in your household or Area?

- A. Diarrhea
- B. Colds
- C. Malaria

- D. Fever
- E. Not sure

22. How do you/they get these diseases?

- A. Dirty water
- B. Not proper Sanitary facilities
- C. Other people coughing
- D. Flies/mosquitoes
- E. Other (specify)

D. Sanitary facilities

23. What kind of toilet facility do members of your household usually use?

- A. Ventilated improved pit latrine (VIP)
- B. Pit latrine with slab
- C. Pit latrine without slab/open pit
- D. Composting toilet
- E. Bucket
- F. Hanging toilet/hanging latrine
- G. Flush/pour
- H. No facilities or bush or field

24. Do you share this facility with other households?

- A. Yes
- B. No

25. How many households use this toilet facility?

- A. Anyone
- B. 10 households
- C. 50 households
- D. 100 households

Appendix B: Ward Councillor' interview questions

Interview schedule for the Ward Councillor.

A. BIOGRAPHICAL PROFILE.

1. AGE

- A. Less than > 20
- B. 20 – 30
- C. 31 – 40
- D. 41 – 50
- E. 51 – more than

2. GENDER:

- A. Female
- B. Male

3. EDUCATION: NO

- A. Primary
- B. Secondary
- C. Tertiary

- 4. Were you employed before becoming a councillor? _____
- 5. If yes, what was your job?
- 6. Which office in the Municipal ward do you represent? _____
- 7. How long have resided in your local municipality? _____
- 8. What motivated you to run for local government elections? _____

B. UNDERSTANDING OF SERVICE DELIVERY

1. What is the function of an IDP? _____
2. What is a quality service delivery? _____
3. In your opinion, what are the major problems hampering quality service delivery in your local municipality? _____
4. Do you think your local municipality has capacity in terms of service delivery? A. Yes, B. No. _____
5. If no, what do you think can be done to build capacity of your municipality? _____

C. ACCESS TO HOUSING AND SANITATION

1. Are there any RDP houses erected in your ward?
2. Are you aware of the housing standards contained in the Housing Act?
3. If yes, can you state the housing standards?
4. What source of water supply does the households in your area use?
5. What type of toilets are used by the residents in your ward?
6. Can the type of toilets used in your ward be regarded as adequate sanitation?
7. If no, why do you think they are not adequate sanitation?
8. Could you please explain your understanding of the importance of sanitation?

D. SANITATION PROVISION BY THE MUNICIPALITY

1. Does the IDP of your local municipality cater for the provision of sanitation facilities? _____
2. Do you think your local municipality has the capacity to address sanitation backlog? _____
3. How is your local municipality prepared to address the sanitation backlog?

Appendix C: Key Informants' interview questions

Key Informants' interview questions

Name of interviewer:

Date:

Department, Name, Position:

Introduction: I am here to review the water and sanitation project implemented in Kennedy Road informal Settlement. I want to use the information to write my masters research project your comments and opinions are very important to me. Please feel free to talk freely. Your comments will be recorded, but I will not quote you in the report. We will share a summary of my final Dissertation with you later.

1. General information

1.1. What are the most common health problems in the area?

1.2. Are there any sanitary problems?

2. General information

2.1. Please tell us about the project interventions. What was your role?

2.2. Have any other interventions concerning sanitation, drinking water been implemented in the area/municipality?

2.3. What results do you think the project intervention has brought to the area?

2.4. What was the impact on disease transmission? (FOR HEALTH GET STATISTICS)

2.5. Do you have any recommendations to improve this package?

3.

3.1 In your opinion, what are the major problems hampering quality service delivery in your local municipality more especially housing, water and sanitation.

3.2 Do you think your local municipality has capacity in terms of service delivery?

A. Yes, B. No. _____

3.3 If no, what do you think can be done to build capacity of your municipality?

3.4 Are you aware of the housing standards contained in the Housing Act?

3.5 If yes, can you state the housing standards? _____

3.6 Does the IDP of your local municipality cater for the provision of sanitation facilities and what is its approach to address the issues in Kennedy Road Informal Settlement?

3.7 How is your local municipality prepared to address the housing backlog?

4. Support from Project Implementation Unit

4.1. How often do you have contact with the Project Implementation Unit? When was their last visit?

5. Recommendations

5.1. What other recommendations do you have for improving the water and sanitation in your area/municipality?

5.2. How could you get people interested in improving their sanitation?

Appendix D: Informed Consent Form

Information Sheet and Consent to Participate in Research

Date:

My name is Abongile Mpofu (student number 207527509). I am doing research on a project entitled: Assessing the rational of linking the delivery of housing with the provision of clean water and proper sanitation in low-income settlement. Case study of Kennedy Road informal settlements in eThekweni Municipality. This project is supervised by Mr Vincent Myeni at the School of Built Environment and Development Studies, University of KwaZulu-Natal. I am managing the project and should you have any questions my contact details are:

School of Built Environment and Development Studies,
University of KwaZulu-Natal
Durban 4001
Tel: 031 260 2923
Cell: 078 382 9554
Email: mpofua1@gmail.com

You are being invited to consider participating in a study that involves research housing delivery and the provision of water and sanitation. The aim and purpose of this research is to examine the rational of linking the provision of clean water and sanitation with the delivery of housing in low-income settlement.

The study is expected to enroll (119 participants, 115 beneficiaries, 2 Municipal officials from the department of human settlement, 2 municipal officials from Department of water and sanitation, and one community leader/ Ward Councillor of Kennedy Road informal settlement.

This study has been ethically reviewed and approved by the UKZN Humanities and Social Sciences Research Ethics Committee

In the event of any problems or concerns/questions about my rights as a study participant or if you are concerned about an aspect of the study or the researchers then you may contact:

HUMANITIES & SOCIAL SCIENCES RESEARCH ETHICS ADMINISTRATION

Ms Phumelele Ximba
Research Office, Westville Campus
Govan Mbeki Building
Private Bag X 54001
Durban
4000
KwaZulu-Natal, SOUTH AFRICA

Tel: 27 31 260 3587
Fax: 27 31 2604609
Email: ximbap@ukzn.ac.za

Thank you for agreeing to take part in the project. Before we start I would like to emphasize that:

- Your participation is entirely voluntary;
- You are free to refuse to answer any question;
- You are free to withdraw at any time.

The interview will be kept strictly confidential and will be available only to members of the research team. Excerpts from the interview may be made part of the final research report. Do you give your consent for: *(please tick one of the options below)*

Your name, position and organisation, or	
Your position and organisation, or	
Your organisation or type of organisation <i>(please specify)</i> , or	
None of the above	

to be used in the report?

Please sign this form to show that I have read the contents to you.

----- (signed) ----- (date)

----- (print name)

Write your address below if you wish to receive a copy of the research report:

CONSENT

I _____ have been informed about the study entitled Assessing the rational of linking the delivery of housing with the provision of clean water and proper sanitation in low-income settlement by Mr Abongile Mpofu.

I understand the purpose of the study. I have been given an opportunity to answer questions about the study and have had answers to my satisfaction.

I declare that my participation in this study is entirely voluntary and that I may withdraw at any time
If I have any further questions/concerns or queries related to the study I understand that I may contact the researcher at

School of Built Environment and Development Studies,
University of KwaZulu-Natal
Durban 4001
Tel: 031 260 2923
Cell: 078 382 9554
Email: mpofua1@gmail.com

If I have any questions or concerns about my rights as a study participant, or if I am concerned about an aspect of the study or the researchers then I may contact:

HUMANITIES & SOCIAL SCIENCES RESEARCH ETHICS ADMINISTRATION

Ms Phumelele Ximba
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I hereby provide consent to:

Audio-record my interview	YES / NO
Video-record my interview	YES / NO
Use of my photographs for research purposes	YES / NO

Signature of Participant

Date

**Signature of Witness
(Where applicable)**

Date