



**UNIVERSITY OF
KWAZULU-NATAL**

Dissertation Topic:

Assessing the sustainable provision of water and sanitation services after *in-situ* upgrading of informal settlements: A case study of Cato Crest

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DECLARATION – PLAGIARISM

I, hereby confirm that all the information contained in this dissertation is my own work and has not been previously submitted to the School of Built Environment and Development Studies or any other body for any purposes. Work and ideas that have been or adopted from other authors or sources are rightfully acknowledged.

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Date:

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DEDICATION

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Table Contents

Declaration	i
Acknowledge	ii
Dedication	iii
List of Maps	viii
List of Figures	ix
List of Tables	x
List of Abbreviations	xi
Abstract	xiii
Chapter One: Introduction to the study	1
1.1 Introduction	1
1.2 Research Problem.....	3
1.3 Research Objectives	4
1.4 The Main Research Question.....	4
1.5 Subsidiary Questions	4
1.6 Hypothesis	5
1.7 Study Justification	5
1.8 Structure of Dissertation.....	5
Chapter Two: Research Methodology used for the study	7
2.1 Introduction	7
2.2 Research Methodology	7
2.3 Primary Sources.....	8
2.4 Sampling Method	8
2.5 Tools for data collection	9
2.5.1 Interview.....	9
2.5.2 Questionnaires.....	10
2.5.3 Case study	10
2.5.4 Secondary sources of data	11
2.6 Data Analysis	11
2.7 Limitation of the study	11
2.8 Conclusion	12

Chapter Three: Conceptual and Theoretical Framework	13
3.1 Introduction	13
3.2 Conceptual Framework	13
3.2.1 Informal settlement.....	13
3.2.2 <i>In-situ</i> Informal Settlement Upgrading.....	13
3.2.3 Informal Settlement Upgrading.....	14
3.2.4 Sustainable provision of water and sanitation.....	15
3.3 Theoretical Framework.....	16
3.3.1 Decentralization Theory	16
3.3.2 The Basic Needs Approach.....	18
3.3.3 Human Right Based Approach	20
3.4 Conclusion	21
Chapter Four - Literature Review in the International Context	22
4.1 Introduction	22
4.2 The global water and sanitation crisis	22
4.3 Water as basic need.....	24
4.3.1 The importance of sanitation on health	24
4.3.2 The importance of water and sanitation on the environment.....	24
4.3.3 The importance of sanitation on the economy	25
4.4 The Sustainable use of water and sanitation.....	25
4.5 Case Study: The Hanna Nassif Community Managed Settlement Upgrading Project – Tanzania	28
4.6 Literature Review in the South African Context	30
4.6.1 Service delivery and service payment.....	30
4.6.2 <i>in-situ</i> Upgrading of Informal Settlements	31
4.6.3 Case Study: Zilweleni <i>in-situ</i> Upgrading - Durban	32
4.7 Role players in provision of water and sanitation	33
4.7.1 Responsibility of the State.....	33
4.7.2 The role of Metro and District Municipalities	33
4.8 The supply of Water and Sanitation in South Africa	34
4.9 Sustainable use of water and sanitation contributing to sustainable human settlements.....	35
4.10 Legislative Framework on the provision of water and sanitation	36
4.10.1 Constitution of the Republic of South Africa (1996)	36
4.10.2 The Housing Act no 107 of 1997.....	36

4.10.3 The National Water Act no 36 of 1998	37
4.10.4 The Water Services Act no 108 of 1997.....	37
4.10.5 The Municipal System Act no 32 of 2000.....	38
4.11 Proposed solutions to municipality for sustainable supply of water and sanitation.....	38
4.11.1 The Protection of water resources	38
4.11.2 Consumer education on sustainable use of water and sanitation	39
4.11.3 Simplifying connection and billing procedures for poor household.....	39
4.11.4 Eliminate distorted tariffs for poor households	40
4.12 Conclusion	40
Chapter Five: Historical background of the study area (Cato Crest).....	41
5.1 Introduction	41
5.2 Geographical location of Cato Crest.....	41
5.3 Historical background of Cato Crest.....	43
5.4 Socio-economic information of Cato Crest	45
5.4.1 Demographics.....	45
5.4.2 Employment Status	46
5.5 Facilities/ amenities and services before and after upgrading	46
5.6 Conclusion	49
Chapter Six: Research findings, data analysis and interpretation	50
6.1 Introduction	50
6.2 Gender representation of informants involved in the case study.....	50
6.3 The access and use of Municipal water and sanitation	51
6.3.1 Access to safe drinking water before <i>in-situ</i> upgrading.....	51
6.3.2 Water collection before the upgrade	52
6.3.3 Access to water after upgrade	53
6.3.4 Access to Sanitation.....	55
6.3.5 Access to sanitation after the upgrade	56
6.4 Capacity to pay for water services.....	58
6.5 Quality of Water Supplied.....	59
6.6 Satisfaction of service provided.....	60
6.7 Roles and responsibilities of officials involved in the provision of water and sanitation.....	62
6.8 Challenges experienced by municipality in providing water and sanitation	63
6.9 Improvement strategies for municipal services water and sanitation.....	66

6.9.1 The revival of Ward Committee.....	66
6.9.2 Water committee as monitoring mechanism	67
6.10 Research findings relating to literature	67
6.11 Conclusion	69
Chapter Seven: Summary of findings, Conclusion and Recommendations.....	70
7.1 Introduction	70
7.2 Summary of the main findings	70
7.3 Conclusion	72
7.4 Recommendations	73
7.4.1 Education on health and water management	73
7.4.2 Communication and information distribution.....	74
7.4.3 Restoration of ward committees.....	74
References.....	76

List of Maps

Map 1: Locality Map of Cato Crest.....	42
Map 2: Bird eye view of Cato Crest.....	43

List of Figures

Figure 1: Employment Status of Cato Crest.....	46
Figure 2: Cato Crest Primary School.....	47
Figure 3: Cato Crest Library	48
Figure 4: Cato Crest Community Hall.....	48
Figure 5: Gender of Respondents	50
Figure 6: Water before upgrade	51
Figure 7: Collection of water before upgrade	52
Figure 8: Water admission after upgrade	53
Figure 9: Upgraded house with pipe water to dwelling	54
Figure 10: Communal Standpipe.....	54
Figure 11: Type of sanitation use	56
Figure 12: Chemical Toilets.....	57
Figure 13: Employment Status	58
Figure 14: Quality of water supplied.....	59
Figure 15: Communal standpipe low flow of water	60
Figure 16: Water on the road	65

Table 1: Sanitation facilities before upgrade 55

List of Abbreviations:

BESG:	Built Environment Support Group
CAB:	Community Ablution Block
CBD:	Central Business District
CDC:	Community Development Committee
DWAF:	Department of Water Affairs and Forestry
EIA:	Environmental Impact Assessment
EUf:	European Development Fund
EWS:	EThekweni Water and Sanitation
GDP:	Gross Domestic Product
GNP:	Gross National Profit
IDP:	Integrated Development Plan
ILO:	International Labour Organisation
JMP:	Joint Monitoring Programme
MDG:	Millennium Development Goal
RDP:	Reconstruction and development Programme
SAHRC:	South African Human Right Commission
SANDEC:	Department Water and Sanitation in Developing Countries
UNICEF:	United Nations Children Emergency Fund
UN:	United Nations
UNCHS:	United Nations Center for Human Settlement
UNV:	United Nations Volunteers
UNDP:	United Nations Development Program
VIP:	Ventilated Improved Pit

WHO: World Health Organisation
ZRA: Zilweleni Residence Association
ZDT: Zilweleni Development Trust

Abstract

This research study assesses the sustainable provision of water and sanitation in in-situ upgrading of informal settlements. This is achieved through assessing issues such as lack of clean water and proper sanitation using Cato Crest in-situ housing project as the case study. The Cato Crest area falls under eThekweni Municipality (Ward 101). Cato Crest is located along edges or crest of Cato Manor, it is roughly seven kilometers toward the west of the Durban CBD.

This research introduces the topic based on the provision of clean water and proper sanitation for low income people in an urban settlement. This research further offers an overview of the research problem, research aims and research objectives. The aim objective of this research was to assess the sustainable provision of clean water and proper sanitation services in upgraded informal settlements and to assess if people continue to use the municipal services even beyond their in-situ upgrading of informal settlements.

This study used qualitative research method to collect data. The theoretical framework for this study was based on decentralization theory, the basic needs approach, and human right based approach. Interviews were conducted with eThekweni Water and Sanitation officials and household surveys were conducted from the case study. This study involved the use of both primary and secondary data to obtain a thorough assessment of the problem of water supply and sanitation in the Cato Crest area.

Access to water and adequate sanitation has been a challenging issue in Cato Crest area. The study's findings showed satisfaction with regard to the provision of clean water. The study also found high level of dissatisfaction with regards to the provision of sanitation, some respondents raised concerns that the chemical toilets were not safe especially for women and children at night because some of the doors could not close and there was no light once the sun had set, this raised the important issue of safety.

The study concluded that, the pace of municipal services such as water and sanitation is still perceived to be slow compared to the growing needs of the population therefore it is important for the government to continue investing in delivering basic services to all South African citizen.

Chapter One: Introduction to the study

1.1 Introduction

Sections 24 and 27 of the South African Constitution clearly state that “everyone has the right to have access to sufficient food and water, *to an environment that is not harmful to his or her health or well-being and to have the environment protected, for the benefit of present and future generations*. The state must take reasonable legislative and other measures, within its available resources, to achieve the progressive realisation of these rights” (The Department of Water Affairs and Forestry, 2002).

The 1994 White Paper on Water Supply and Sanitation Policy characterizes satisfactory sanitation as an urgent need to provide sanitation for essential wellbeing and as a practical necessity including the security of both underground and surface water. Routine waterborne sanitation is much of the time not sensible, suitable nor attainable as a minimum services standard in the short term due to its cost. The Ventilated Improved Pit latrine (VIP), if developed to an acceptable standard and adequately maintained, gives a proper and sufficient essential level of sanitation service. Sufficient essential procurement is defined as one well-constructed VIP toilet per family unit (Tissington, 2011). In December 2014, the BBC news published an article entitled “poor water and hygiene kills mothers and new-borns”. The article stated that in Tanzania many mothers and new-borns were dying because of a lack of sanitation, safe water and hygiene while giving birth (Mundasad, 2014). This demonstrates that the absence of water and sanitation is impeding the wellbeing of new-born babies.

According to South African Human Right Commission (2012), the supply of water and sanitation to family units in informal settlements is especially testing to municipalities as these settlements do not have appropriate housing or a water and reticulation foundation. Informal settlements are residential locations that do not comply with local authority requirements. They are situated in areas that have not been declared for residential use and are therefore unauthorized (Chikoto, 2009). One of the reasons they occur is that urbanisation has grown quicker than the capability of government to accommodate migrants and provide adequate infrastructure and land. Informal settlement are characterised by residences that are insufficient, lack effective

management and governance, in an environment that is unsuitable for development, population densities that are unrestricted and they are areas of progressively high risk with respect to health (Chikoto, 2009).

The delivery of water and sanitation facilities rests upon local government (The Department of Water Affairs and Forestry, 2002). Regarding area 84 of the Municipal Structures Act, the obligation to provide water and sanitation services rests with the metropolitan municipality. Nonetheless, the Act permits the minister of provincial and local government affairs to approve a local municipality to perform these capacities or execute these services (The Department of Water Affairs and Forestry, 2002).

Women are regularly barred from choice in regards to water and sanitation, but their needs are occasionally prioritized (Zetu, 2010). Where water and sanitation services are situated a long way from the home, women and children are most vulnerable because they are the ones who are responsible for collecting water for their households. Women additionally require special facilities for menstrual cleanliness and with respect to protection; furthermore sanitation for women raises issues of monetary expense and physical security (Zetu, 2010). An absence of access to sufficient water and sanitation impacts on the vast majority's entitlement to health, education and environment (South African Human Right Commission 2012). The absence of access to water implies that informal settlement inhabitants have no method for guaranteeing individual cleanliness or looking after sick relatives and companions. Without an adequate provision of sanitation facilities people are forced to dispose of human waste in fields or in open spaces (South African Human Right Commission 2012).

From the above literature, it is clear that water and sanitation are basic needs for human survival. Due to water becoming a scarce resource, this research is vital in policy formulation and implementation in South African urban centres and the research will assist in making the provision of water and sanitation sustainable long after *in-situ* upgrading projects have been completed.

1.2 Research Problem

Access to safe drinking water and sanitation is basic to all humans. This adds to the right to health, education, security and an environment that is harmless to human wellbeing or prosperity (South African Human Right Commission, 2012). An absence of access to water and sanitation hinders access to other rights as well as exacerbates the weakness of specific groups of individuals such as women, children and individuals with incapacities (South African Human Right Commission, 2012). Water and sanitation are fundamental to the well-being of all people whether rich or poor.

According to South African Human Right Commission (2012) more than 400 million school days are lost every year because of illness brought on by absence of access to water or access to a poor water source. A study carried out by the World Health Organization in 45 developing nations demonstrates that women and youngsters bear the essential obligation regarding water gathering in the majority of households (South African Human Right Commission, 2012). This is time not spent working at salary generating employment, caring for relatives, or going to school. More children die as a result of an absence of access to safe drinking water and sanitation than intestinal sickness and HIV/AIDS together (South African Human Right Commission, 2012).

The issue of inadequate water and sanitation is not just about the spread of deadly maladies; the procurement of sufficient water and sanitation is critical to human dignity, diminished neediness, natural sustainability and general mental wellbeing (Tissington, 2011). One of the significant difficulties of the 21st century, which mankind is still a long way from overcoming, is the truth of the everyday water and sanitation battle for millions of peri-urban inhabitants (Paterson *et al.*, 2007)

In the case of South Africa massive population growth is being experienced in peri-urban informal settlements. Supplying sufficient water and sanitation is turning out to be troublesome, due to officially existing administrations and hardships and the complex ecological, financial and social configuration of informal settlements (Currie *et al.*, 2014).

According to the World Health Organisation (2012), satisfactory sanitation incorporates sanitation facilities that hygienically isolate human excreta from human contact. As of 2007, the South Africa Department of Water Affairs has made efforts to eradicate the use of the inadequate sanitation system which is commonly known as

the bucket system. Regardless of these endeavours there are still a large number of individuals who are required to use the bucket and other unacceptable systems (Currie *et al.*, 2014). Most of the general population without sufficient sanitation live in consistently sprawling informal settlements.

This study seek to assess the sustainable provision of water and sanitation services after the upgrading of informal settlements.

1.3 Research Objectives

The research seeks to accomplish the following objectives:

1.3.1 To review policy documents that relate to the provision of water and sanitation.

1.3.2 To assess if people continue using municipal services like water and sanitation even beyond the upgrading of their informal settlements.

1.3.3 To unpack the roles and responsibilities of various officials who are involved in the provision of water and sanitation.

1.3.4 To identify challenges which are experienced by municipalities in providing water and sanitation in upgraded informal settlements.

1.3.5 To provide recommendations on improvement strategies for municipal services water and sanitation.

1.4 The Main Research Question

To what degree do people in upgraded informal settlements continue using water and sanitation after the formalisation of their settlements?

1.5 Subsidiary Questions

1.5.1 Which policy documents relate to the provision of water and sanitation?

1.5.2 Do people continue using municipal services like water and sanitation even beyond the upgrading of their informal settlements?

1.5.3 What are the roles and responsibilities of various officials who are involved in the provision of water and sanitation?

1.5.4 What are the challenges experienced by municipalities in providing water and sanitation in upgraded informal settlements?

1.5.5 How can municipal services water and sanitation be sustained after upgrading of informal settlements?

1.6 Hypothesis

The provision and use of water and sanitation during and after the upgrading of informal settlements continued even beyond the upgrading of informal settlements to create sustainable human settlements.

Study Justification

The importance of this study is that it sought to assess the provision of water and sanitation services way after the upgrading of an informal settlement. It further narrowed down to look at an *in-situ* upgraded informal settlement to see how these two services, water and sanitation, were being used. The study aimed to contribute to existing knowledge, particularly in the housing sector, as it emphasises the utilization of water and sanitation services in new and existing human settlements.

1.8 Structure of Dissertation

Chapter 1

This chapter presents the introduction of the study and outlines the problem statement, the main research question, research objectives, subsidiary questions, hypothesis and study justification have all been provided.

Chapter 2

This chapter presents an outline of the research methodology used in the study, and the limitations of the study.

Chapter 3

This chapter presents the conceptual and theoretical framework.

Chapter 4

This chapter presents a literature review in an international and local context. Literature containing precedent studies on the provision of basic service such as water and sanitation is reviewed in this chapter.

Chapter 5

This chapter present historical background of the study area. It includes its geographical location and describes the development of facilities and services up to the present. Maps are presented to give clear description of the study area.

Chapter 6

This chapter presents research findings, data analysis and interpretation. Data is presented and analysed under specific themes. The chapter also analyses and relates the research findings to the theories and literature that was discussed in earlier chapters.

Chapter 7

This chapter presents a summary of findings, recommendations and conclusion. The summary of findings and conclusion looked at what degree the study has answered the research questions.

Chapter Two: Research Methodology used for the study

2.1 Introduction

This chapter presents the research method used in conducting this study. Doing any research requires that there be a method of collecting and analysing data. The objective of this chapter is to describe the relevant method of data collection and analysis.

2.2 Research Methodology

Social research has been defined by Thakur (1993), 'as the systematic method of discovering new facts of verifying old facts, their sequence, inter-relationship, casual explanations and the natural laws which govern them'. Thakur (1993) then gives the characteristics of social research, which is that social research deals with social phenomena. It studies the behaviour of human beings as members of society, and their feelings, responses, and attitudes under different circumstances. Qualitative technique was used to collect primary data.

According to Holloway & Wheeler (2010), 'qualitative research is a form of social inquiry that focuses on the way people make sense of their experiences and the world in which they live. A number of different approaches exist within the wider framework of this type of research and many of these share the same aim, to understand, describe and interpret social phenomena as perceived by individuals, groups and culture'. They further state that qualitative research explores the behaviour, feelings and experiences of people and what lies at the core of their lives.

Hennink *et al.* (2011) state that qualitative research is an approach that allows the researcher to examine people's experiences in detail by using a specific set of research methods such as in-depth interviews, focus group discussions, observation, content analysis or biographies. Hennink *et al.* (2011) further state that "the main distinctive features of qualitative research is that the approach allows for issues to be identified from the perspective of the study participants, and to understand the meanings and interpretations that they give to behaviour, events or objects".

This study utilised qualitative method to gather information, the reason being it tries to comprehend a given exploration issue or point from the perspective of the local population it involves. This form of data collection is effective in obtaining socially

specific information about the qualities, suppositions, practices, and social associations of certain individuals (Natasha *et al.*, 2011). Therefore, it was appropriate for this study to use the qualitative method to assess the provision of water and sanitation *in-situ* in the upgraded informal settlement in Cato Crest.

2.3 Primary Sources

According to Webster (1985) primary sources are original material collected by the researcher from proposed sources on which research is based. They present original thinking, report on discoveries or share new information. They are usually the first formal appearance of result and they present information in its original form neither interpreted nor condensed nor evaluated by other writers.

Therefore primary data collected in this study included the use of different tools, for example questionnaires and interviews, to gather information from stakeholders in the project of Cato Crest, including the ward councillor, community members and eThekweni Water and Sanitation officials.

2.4 Sampling Method

Sampling is the demonstration, procedure or arrangement of selecting suitable specimens or delegates as part of a mass with the final objective of choosing parameters or traits of the entire mass (Mugo, 2002). The study used two types of sampling, random and purposive.

Random sampling is defined as a sampling method which is straightforward in which every unit in a particular population has an equivalent chance of being incorporated into the study and the probability of a unit being chosen is not influenced by the choice of different units from the available population (Mugo. 2002). This type of sampling was used on the community of Cato Crest where the study was focused. The sample frame was 2000 households and the sample size that was used in this study was 30 participants to represent residents of Cato Crest. Participants were households who had previously lived in informal settlements and had benefited from the *in-situ*

upgrading of their informal settlement, and who were 18 years and older. The information that was needed from participants was, for example, sources of water and how the provision or lack of water and sanitation had affected the participants' lives. Furthermore, the study looked at the employment status of the participants in the study area and whether or not participants were satisfied with the services provided.

Purposive sampling procedures include selecting certain units or cases in light of a particular reason instead of selecting them randomly. This sampling was used on the officials who were interviewed for this study. These included the ward councillor and project manager.

2.5 Tools for data collection

Data was collected via household interviews and questionnaires for residents. Similarly, semi-structured interviews for officials in order to allow for follow up questioning in the case of unclear responses, so that data that was collected was clear for the purpose of data analysis.

2.5.1 Interview

According to Burns (1997, cited in Kumar, 2011) 'an interview is a verbal interchange, often face-to-face, or the telephone may be used, in which an interviewer elicits information, beliefs or opinions from the respondent'. Any person-to-person interaction either face-to-face or otherwise between two or more individuals with a specific purpose in mind is called an interview (Kumar, 2011). For the purpose of this study, data was collected using semi-structured interviews with the ward councillor and project manager who had knowledge and expertise on the issues on which the study was premised. The information that was needed from the ward councillor included the key problems encountered during the *in-situ* upgrading programme with regards to the provision of water and sanitation and crucial issues that the provision of water and sanitation in the *in-situ* upgrading project intended to address. Similarly, with the project manager, the information needed included challenges experienced by municipality in implementing the *in-situ* upgrading with regards to the provision of

water and sanitation and whether the beneficiaries were informed of the liabilities for utilizing the water and sanitation services.

2.5.2 Questionnaires

According to Kumar (2011), a questionnaire is a written list of questions, the answers to which are recorded by respondents. Kumar (2011) also adds that in a questionnaire respondents read the questions, interpret what is expected and then write down the answers. Furthermore, unlike the interview, in the questionnaire the responses are recorded by the respondents themselves (Kumar, 2011).

For primary data collection, closed and open ended questions in the form of questionnaires was used for household survey. The questionnaires covered a wide range of issues on socio-economic status of households and their views on delivery of services such as water and sanitation, and whether the participants still used the basic water and sanitation services provided by the municipality after their settlement had been completed. In addition, pressing challenges that the participants faced in relation to service delivery like water and sanitation and the type of water and sanitation systems that participants used in their homes were addressed. The questions that were asked of households were informed by the study objectives.

2.5.3 Case study

Neale *et al.* (2006) depict a case study as a story about something fascinating, extraordinary or one of a kind. The case study gives the story behind the outcome by catching what happened to achieve it and can be a good chance to highlight an undertaking's success or to convey regard for a specific test or trouble in a venture. Cases may be chosen at random. A case study of Cato Crest was used in this study; it was selected because it had a population that reflected a desired attribute, in that it was an *in-situ* upgraded project with provision of water and sanitation that was completed more than 5 years ago and was regarded as worth the evaluation.

2.5.4 Secondary sources of data

Secondary sources of data are second hand accounts of events, places, people or topics which are based on researchers' experience (Wood, 1991). Secondary data is defined as data that has been collected, interpreted and recorded by researchers. The study used information from books, journal articles, newspapers, government documents, online material and periodicals as secondary sources of data.

2.6 Data Analysis

The study used thematic data analysis to analyse data that was collected from informants. Thematic analysis is a qualitative explanatory technique for distinguishing, dissecting and reporting themes within information. It negligibly composes and portrays the information sets in points of interest. However, as often as possible it goes beyond this and translates different parts of the research topic (Braun & Clarke, 2006). The objectives and key questions were sources of some of the themes used to analyse the findings.

2.7 Limitation of the study

The limitations that were encountered during data collection include the fact that interviews had to be postponed or permanently cancelled on a specific date they were scheduled to take place but after several attempts, eventually they took place. Another major limitation of this study was that of financial constraints as well as time. Nevertheless, the researcher conducted the research successfully and with confidence that it provided accurate information on assessing the provision of water and sanitation services after *in-situ* upgrading of an informal settlement in the area of Cato Crest.

2.8 Conclusion

This chapter presented the methodological framework of how the case study was selected, how the data was collected and analysed. It presented methods used in conducting research and a justification of research instruments. This chapter also presented limitations of the study that might have influenced the outcome of the whole research study.

Chapter Three: Conceptual and Theoretical Framework

3.1 Introduction

The objective of this chapter is to recognize various concepts and theories that were applicable to this study. This was done with a view to attaining an understanding of how these concepts and theories influenced sustainable provision of water and sanitation in the *in-situ* upgrading of an informal settlement. The following concepts are defined and contextualised to the study: informal settlement, *in-situ* upgrading of settlement and sustainable provision of water and sanitation. Then the chapter goes on to discuss the following theories which inform the study: decentralisation, the basic needs approach and human right based approach.

3.2 Conceptual Framework

3.2.1 Informal settlement

The UN-habitat (2006) describes an “informal settlement as a settlement with families, located in an urban area in which the people live in inadequate housing and lack basic municipal services like water and sanitation, refuse disposal, electricity, access roads exposing households to health hazards making them disposed to diseases”. Habitat III (2015) defines informal settlements as residential areas where housing may not comply with current planning and building regulations and they usually lack basic services and infrastructure. Inhabitants have no security of tenure *vis-vis* the land or dwellings they inhabit.

In the South African context, Massyn and Lizarrald (2008) define informal settlements as areas of unplanned and unapproved housing of predominantly indigent or poor persons with poor or non-existing infrastructure or sanitation. For the purpose of this study informal settlement refers to settlements that lack basic services such as water and sanitation. In essence, they are settlements that are characterized by inadequate basic services and municipal infrastructure (UN-habitat, 2006).

3.2.2 *In-situ* upgrading of Informal Settlement

Ziblim (2013) defines *in-situ* upgrading as developing an existing informal settlement where it is located by gradually extending to the residents, infrastructure, land tenure and social services such as electricity, water and sanitation. Cities Alliance (2011)

describes *in-situ* upgrading as an approach that seeks to improve the negative conditions within informal settlements without impacting negatively on residents' social, economic or physical capital. Such involvements are formulated in association with informal settlement residents.

Fyhr (2012) further explains *in-situ* informal settlement upgrading as a scheme that means the settlement keeps its current structure. The footprint for each household is kept and the upgrading takes place on exactly the current site. This enables the slum dwellers to stay in their community but still get access to better housing and infrastructure. For the purpose of this study *in-situ* upgrading refers to upgrading that takes place on exactly the same site (Fyhr, 2012).

3.2.3 Informal Settlement Upgrading

Abbott (2002) refers to informal settlement upgrading as any sector-based intervention that improves the quality of life of the people affected. Xulu (2014) further defines informal settlement upgrading as an approach that involves the improvement and upgrading of shacks through the provision of infrastructure and basic services such as fresh water and sanitation in the process legalising the land occupied by the people informally.

It has to be acknowledged that upgrading of informal settlement occurs on the land, which people have already occupied. There are often major physical constraints in that the majority of informal settlements tend to occupy land that is either environmentally degraded or prone to natural disasters such as floods (Abbott and Douglas, 2001). According to Huchezermeyer and Aly (2006), the purpose of upgrading is to create and develop human settlements that are sustainable for future generations to come.

For the purpose of this study, informal settlement upgrading refers to the improvement and upgrading of shacks through the provision of basic services such as clean water and proper sanitation.

3.2.4 Sustainable provision of water and sanitation

Gheorghiu *et al.* (2011) define sustainable development as 'a course of change in order to create a harmonious environment between resource exploitation, investments, technological and institutional changes to improve the present and future potential of human needs'.

The need for providing quality water and sanitation is widely recognised as a vital component of economic and social development. The provision of basic services such as water and sanitation addresses some of the most critical needs of human beings. Safe water and good sanitation are vital to the protection of community health by limiting the transmission of infectious diseases and by assisting in the maintenance of a sanitary home environment (Okonkwo, 2010). There are many definitions of basic water and its supply but for the purpose of this study water is referred to as basic water that is provided during and after the upgrading of an informal settlement. This study is conducted with the belief that informal settlement upgrade should bring about improvement to the lives of the people residing in informal settlements.

The Oxford dictionary defines sanitation as conditions relating to public health, especially the provision of clean drinking water and adequate sewage disposal. Sanitation as a system of containment and sanitisation of human excreta is of greatest importance as it prevents spread of diseases and protects both the environment and human health (Drewko, 2007). Sanitation systems form a hindrance against the spread of diseases brought about by pathogens and different organism present in human excreta. The most effective ways of improving health and preventing sicknesses in informal settlements is the provision of infrastructure, essential services, sanitation systems which meet acceptable standards and promotion of hygiene (Drewko, 2007). For the purpose of this study special attention is paid to the provision of an essential sanitation facility that is effectively accessible to households and that reduces the risk of the spread of sanitation sicknesses in upgraded informal settlements.

3.3 Theoretical Framework

3.3.1 Decentralization Theory

In the early years of its presentation in mainstream advancement in the 1970s decentralization was more frequently connected with wastefulness by government (Osei-Kufuor & Bakade, 2013). The strategy and routine of decentralization at that time was to quicken improvement, break bureaucratic bottlenecks emerging from centralised government planning and administration and take an interest in globalizing economy (Osei-Kufuor & Bakade, 2013). During the early 1990s the talk around decentralization enlarged to grasp other societal foundations, including the private sector and civil affiliations. The World Bank in 1992 employed decentralization as a system to reinforce the public sector administration, elevate guidelines and organizations to give an anticipated and straightforward structure for public and private business and advance responsibility for monetary and budgetary execution (Osei-Kufuor & Bakade, 2013).

Worldwide development organisations essential drove decentralisation changes which related decentralisation with the state moving backward, the expansion of bureaucratic control and the marketization of social services (Osei-Kufuor & Bakade, 2013). The idea and practices of decentralization now put attention not just on the exchange of power inside government but additionally on the sharing of authority, power and obligations among broader governance organizations (Osei-Kufuor & Bakade, 2013).

Falleti (2004) defines decentralization as a process of transferring power by an arrangement of policy reforms aimed at exchanging obligations, assets or power from higher to lower levels of government. He arranges decentralization policies as having a place in one of three classes, administration, fiscal and political decentralisation (Falleti, 2004). This study takes into consideration administrative decentralization since it seeks to redistribute authority, responsibility and financial resources for providing public services among different levels of government (Neven, N.D).

Then again, Rondinelli *et al.* (1989) consider decentralization to be 'the transfer of commitment with respect to planning, management, the raising and allocation of resources from local government and its agencies to handle units of government agencies, subordinate units or levels of government, semi-free public authorities or

non-legislative private or voluntary organisation'. Decentralization in these two definitions results in a circumstance where public goods and services are given principally through local government to citizens to fulfil their necessities. In terms of goods and services this theory is tested in this study since basic services such as water and sanitation are the responsibility of the municipality.

Rondinelli *et al.* (1989, cited in Bonga, 2007) state that more efficiency in delivery of basic services is achieved when public services are provided under conditions of free choice and involvement of local institutions than when central government is the sole provider. In this study this means poorer people receive basic services since the provision of basic services such as water and sanitation is the responsibility of the municipality. Slater (1989) who carried out studies on decentralization in Tanzania states that decentralization extends and consolidates the regional power of the state on the local people. Likewise, Ghana used the same method to push political costs onto alternative levels of government but still maintained overall authority. Brazil after going through two decades of military rule used the same strategy to build its revenue base by using local government as a tax collection structure. Therefore, it can be seen that the concept of decentralization could be manipulated to achieve a variety of objectives (Bonga, 2007).

The most common reasons advocating decentralization are that it contributes to good governance in two key interrelated ways. First it improves public sector responsiveness and secondly it improves public sector accountability (Stanton, 2009). The argument in favour of decentralized service delivery is that when local people participate in the decision making process, services will then fulfil locally identified needs. Grindle (2007) argues that decentralization improves government accountability since it brings government closer to local people, for example when people can elect their local government officials they can be held more directly accountable for their actions or inactions (Stanton, 2009). Hence in this theory the study uncovers whether local government exercised its constitutional mandate to provide basic services such as water and sanitation to people who live in areas which in the past were settled informally.

3.3.2 The Basic Needs Approach

During the 1960s the impressive economic growth of less developed countries was accompanied by increasing conditions such as relative poverty, inequality, unemployment and wide rural-urban imbalances and these undesirable accompaniments created a genuine desire to give a new meaning to development that would simply equate it with growth of gross national product (GNP) (Farooq, 1988). In the mid-1970s the International Labour Organization (ILO) attempted a worldwide study that concentrated on the disappointment of past advancement systems. It was at the ILO's World Employment Conference in 1976 that attention toward the new importance of improvement found expression as the Basic Needs Approach. Today every less developed nation perceives meeting the essential needs of the poor as one essential target of advancement (Farooq, 1988).

The basic needs approach methodology provides for the fulfilment of essential requirements to the poorest individuals in society. The basic needs approach seeks to create conditions whereby those individuals not currently enjoying basic needs can accomplish a minimum standard of living, characterized by an individual's consumption of food, shelter and clothing and access to fundamental social services, including safe drinking water, sanitation, medical services, public transport, education and cultural opportunities. The basic needs approach expressly looks for a redistribution of the economic advantages of advancement for poor people. It goes for a more straightforward fulfilment of the direst needs of the poor as opposed to those that happen through the indirect impact of general growth in national income (Allen & Anzalone, 1981).

This approach infers a redistribution of the social product as well as looks for an adjustment in its creation. Its normative themes pressure both the needs and the reliance of these different needs and require a more noteworthy level of social investment with respect to poor people. Note that these worries are to be dealt with as unequivocal objectives of improvement and not as inferred by results of financial development. In this way of thinking the basic needs approach speaks to an inversion

of routine improvement strategy by trying to stimulate a stream-up procedure (Allen & Anzalone, 1981).

Certain fundamental questions arise as soon as one considers the implementation of the basic needs approach. What are basic needs? How is a basic needs approach different from those which have been pursued in the past? The basic needs approach should be viewed as an organising concept. Past development strategies have been a type of top-down approach in the sense that macro-economic goals for growth were set and then the benefits were to filter down to the population through nutrition, education, health and housing programmes, among others (Szal, 1980).

What the World Employment Conference emphasised is that such an approach has not worked to solve the poverty problem and thus it cannot be expected to succeed in the future. For many reasons the link between the social programmes and macro goals has not materialised or if it has, the benefits have not flowed to the intended recipients. The basic needs approach advocates a more micro view to planning in that the social programmes are designed and carried out, and they are designed in such a way as to lead to economic growth. Growth is a result of socially oriented programmes and not the reverse (Szal, 1980).

This approach focuses on meeting the basic needs of poor individuals in the shortest possible time. As mentioned above priorities are given to certain goods and services which are important for human survival and active incorporation into existing culture. These goods and services consist of: health and education, housing, public transport, food, clothing, safe drinking water and sanitation. In an effort to combat poverty Krige (1989, cited in Myeni, 2005) states that the basic needs approach inspires and advocates for the distribution of income and wealth, educating and training people, community participation in the development process, employment of the poor and empowerment with a bottom-up management style.

Eradicating the culture of dependency of people in government and promoting independent control through engaging in empowerment activities of the poor communities is one of the key focus areas of the basic needs approach. However, this approach has not met its objectives because development practitioners have a tendency to design projects and make decisions for poor people without a full

understanding of the situation and the needs of the people for whom the projects are designed (Myeni, 2005).

Thus in this approach the study tests the principles of redistribution of the economic benefits of development in favour of the poor and that social programmes are designed and carried out in such a way as to lead to economic growth. Also to ascertain the level of community participation, educating and training of poor people and the creation of employment for the poor through the upgrading projects.

3.3.3 Human Rights-Based Approach

A human rights-based approach is a conceptual framework for the process of human development that is normatively based on international human rights standards and operationally directed at promoting and protecting human rights. It endeavours to redress discriminatory practices and unjust distributions of power that impede development progress and analyse inequalities which lie at the heart of development problems (United Nations, 2006).

Under a human rights-based approach, the approaches, plans and procedures of development are tied down in an arrangement of rights and corresponding obligations set up by international law. This helps enabling individuals themselves, particularly the most marginalised, to take an interest in policy formulation and consider responsible individuals who have an obligation to act and to advance the sustainability of development work (United Nations, 2006).

There is no general formula for a human rights-based approach, yet United Nations organizations have agreed to various vital qualities: as development policies and projects are detailed, the principle target ought to be to satisfy human rights. A human rights-based approach distinguishes rights holders and their privileges and compares obligation bearers and their commitments and works towards strengthening the limits of rights holders to make their cases and of obligation bearers to meet their commitments. The standards and guidelines from worldwide human rights settlements seek to guide all improvement collaboration and programming in all segments and in all periods of the programming process (United Nations, 2006).

This approach is relevant to this study because the study assesses the provision of water and sanitation as every human being had a right to safe drinking water and

proper sanitation. This approach is also important for this study to uncover if local government has exercised its mandate to provide basic services to people who were previously living in informal settlements as basic services such as access to water and sanitation are human rights.

Therefore in this approach the study tests the principle of redressing biased practices and unfair distributions of power that obstruct development progress and analyse inequality which lie at the heart of development difficulties when this approach is being applied.

3.4 Conclusion

This chapter evaluated the conceptual and theoretical framework. Review of the conceptual framework was aimed at giving the research conceptual basis upon which the concept used in the research can be understood. Theoretical framework was aimed at placing the research within a framework of existing theories. Both conceptual and theoretical body of knowledge help in putting this study within a proper academic setting.

Chapter Four - Literature Review in the International Context

4.1 Introduction

The objective of this chapter is to present a literature review in an international and local context. Two precedent studies are present in this chapter to give more detail on the issue of *in-situ* upgrading regarding the provision of basic services. Legislative framework on the provision of water and sanitation in the South African context is also presented in this chapter.

4.2 The global water and sanitation crisis

Water is the essence of life on earth and is one of the most important natural resources. The accessibility of safe water and sufficient sanitation is essential for wellbeing reasons, as well as for economic improvement (Dundumaro, 2007). The significance of water and sanitation is seen at both local and international levels. Worldwide targets and activity arrangements are recorded in the United Nations Millennium Development Goal (MDGs); the International Decade for Action Water forever (2005-2015); and the 2008 International Year of Sanitation, to name only a few plans (Dundumaro, 2007).

Absence of access to safe water and adequate sanitation stands out amongst the most imperative dangers to human prosperity universally. Diseases coming about because of poor cleanliness, sanitation and water represent just about 10 per cent of the worldwide burden of illness (Grover *et al.*, 2008). Worldwide around 900 million individuals need access to safe water and 2.5 billion individuals live without access to enhanced sanitation which represents 80 per cent of those living in rural areas (Grover *et al.*, 2008).

Every day 4,000 children die unnecessarily from loose bowels and incalculable others are excessively debilitated, making it impossible to go to school (WaterAid, 2008). Women and children spend most of their time every day collecting filthy water. With no clean and protected latrines, individuals are susceptible to illnesses, absence of security and indignity, issues which are especially intense in overcrowded urban settlements (WaterAid, 2008). Sanitation, cleanliness and water from the mains supply is a crucial stride in overcoming poverty. Yet, in spite of water being reliably referred

to as a top need by poor groups, they have been neglected in the worldwide development agenda although sanitation could bring the best degree of profitability to any development intervention (WaterAid, 2008).

An expected 4 billion instances of diarrhoeal diseases happen every year, for example, rotavirus gastroenteritis which is responsible for around a large portion of the million deaths every year among children under the age five (Grover, *et al.*, 2008). Diarrhoea not only causes mortality, it can bring about hunger in youngsters, making them defenceless to different sicknesses resulting in about 860,000 deaths in each year, which is all unnecessary given that 94 per cent of the diarrhoeal cases are preventable (Grover, *et al.*, 2008).

By the year 2025 it is estimated that the world's population will be 7.8 billion, of which just above half will be living in urban areas (Dungumaro, 2007). Dungumaro (2007) noted that since widespread water supply and sanitation by 2015 is currently a generally recognized objective, this implies in urban territories 2.1 billion people will require sanitation services and an extra 1.9 billion individuals will require water supply.

There is potential for investment, new work in water innovation, frameworks, treatment, use and profitability, in spite of the fact that in numerous parts of the world economic advancement has been slow as has been interest in science. So as to keep pace with the current rate of growth and to have the capacity to meet rising levels of interest in water supply, diminishing water accessibility and maturing urban water infrastructure, advances in technology, innovation and best practice are required (Bigas, *et al.*, 2012).

Water and sanitation cannot be separated from each other. Without these fundamental services a large number of MDGs will come up short. Targets, for example, of maternal and child wellbeing, sex fairness, essential education and economic growth are all reliant on individuals accessing safe water, enhanced cleanliness and sanitation, the most fundamental of human needs (WaterAid, 2008). As the world's population keeps on developing as urban areas extend and there is expanding reliance on worldwide water assets these issues will become much more important. This, together with the effect of environmental change, implies there is an inevitably pressing need to handle the water and sanitation emergency (WaterAid, 2008).

4.3 Water as a basic need

4.3.1 The importance of sanitation on health

Around the world in poor urban communities, thousands of people especially children still die each day from preventable diseases related to poor provision of water and sanitation. Many more live with repeated diseases such as diarrhoea, skin infections, worm infestations and chronically challenged immune systems as a result of their unsanitary surroundings (Bartlett, 2005). According to Bartlett (2005) effects can be long term and may cause both mental and physical restrictions. Solutions will remain less than satisfactory if they fail to address the particular and disproportionate ways in which people especially children are affected by this problem. Therefore, it is important for water and sanitation to be accessible to every human being in order for these diseases to be prevented especially by children.

In the provision of safe water supplies for all, significant investments are being made. The health benefit of this investment, however, is limited where inadequate attention is paid to sanitation and health and hygiene promotion. International experience shows that once people's basic needs are met sanitation improvements, together with health and hygiene promotion, result in the most significant impact on their health, (White Paper on Basic Household Sanitation, 2001).

Sanitation programmes can have emotional health advantages since a number of infections are spread from hand to mouth or from hand to food to mouth as well as through drinking contaminated water. Providing sanitation facilities and enhancing cleanliness practices could impact various essential general well-being issues affecting a nation (White Paper on Basic Household Sanitation, 2001).

4.3.2 The importance of water and sanitation on the environment

Most of human activity impacts on the environment. Sanitation systems include the transfer and treatment of waste. Insufficiently maintained or improperly planned systems or an absence of sufficient sanitation can accordingly contaminate surface and ground water resources. Water systems can endure a certain level of contamination without creating the water quality to fall apart to such a degree that the water cannot be utilized. There are issues that influence the effect of sanitation

systems on water quality; for example, the kind of sanitation system, size and density of the settlement being served, the effect of acquiring water, limit of the administration supplier to deal with the system and extent of access to ground water and the soil type (White Paper On Basic Household Sanitation, 2001).

Contamination occurring because of failed or insufficient sanitation systems is connected with direct contact with faecal contaminated water and other wellbeing dangers, for example, blue baby syndrome in bottle-fed new-born babies caused by water borne sicknesses. The development of aquatic plants increases treatment costs and reduces recreational facilities of the water body. Poisonous green growth, loss of bio-diversity and exhaustion of the oxygen in the water can likewise bring about lost bio-assorted qualities and a complete movement in the regular biota of the stream (White Paper on Basic Household Sanitation, 2001).

4.3.3 The importance of sanitation on the economy

The monetary expense of insufficient sanitation on the strength of the community and on the earth has not been effectively evaluated, whilst the budgetary expense of giving an essential level of sanitation is effortlessly quantifiable. The United Nations Children's Fund and World Health Organization's resources into sanitation has decreased sickness and mortality, reduced medicinal services costs, produced higher labour efficiency, better learning abilities of school children, increased school participation particularly by young girls, fortified tourism and national pride, and diminished water treatment costs (White Paper On Basic Household Sanitation, 2001).

The potential financial advantage of enhancing sanitation can be gauged when it is considered that there are an expected 1.5 million cases of diarrhoea annually in children under five years of age. These could be prevented through the provision of sufficient water and sanitation services (White Paper on Basic Household Sanitation, 2001).

4.4 The sustainable use of water and sanitation

The adjective "sustainable" stems from the Latin verb "sustinere" which means to maintain. The English verb 'to support' means to keep up, go ahead, continue onward,

and keep from falling (Ukwandu, 2009). Currently sustainability is used by many people interchangeably with sustainable development. In this study sustainable is used interchangeably with 'water sustainability' and 'sustainable water use'. Schnook (2010) characterizes water manageability as providing or being supplied with water forever or, maybe all the more definitely 'supplying consistent fresh water for human usages and for other living things'. Gleick (1998) defines sustainable water use as; the use of water that supports the ability of human society to endure and flourish into the indefinite future without undermining the integrity of the hydrological cycle or the ecological systems that depend on it. The definition of sustainable water use provides an overarching framework by which decisions about human water use can be judged (Gleick, 1998). To make choices about how to distribute and use water resources, other goals and criteria need to be recognised. The rule which is set as an essential objective is the provision of a fundamental measure of water for meeting the key needs of people. Inadequate access to potable water is the immediate reason for much pointless mortality. The provision of a specific measure of crisp water to bolster the human digestion system and to keep up human wellbeing ought to be an ensured duty of the part of governments and water suppliers (Gleick, 1998).

There are several strategies that can be used to sustain the use of water. Planned resource management and coordinated use of rivers, including comprehensive planning might facilitate solutions for the issues of water quality and water supply and additionally address the impact of financial development, population and changes in the interest of water (Schulze & Perks, 2000). Regulations of stream courses through capacity dams and the control of evaporation and discharge to give suitable quantities of water at specific times to meet users' requirements would need proper and thrifty administration of water assets. Ground water is liable to be most seriously influenced, with the ground water table dropping because of decreased rainfall. To report exhausted ground water reserves, strict ground water administration frameworks ought to be set up with on time cautioning instruments (Mukheibir & Sparks, 2003).

Conservation of water and demand: reconciliation of water supply and demand for middle and extended terms is a key test for sustainable development in South Africa. Whereas there is planning for future bases of water supply, the immediate demand has been ignored. Reducing the demand can build abundance in supply making a more sustainable edge of safety for future drought. This could be through a range of

measures that encourage efficient water use including pricing policies, voluntary compliance, education, legal restrictions on water use, rationing of water or the imposing of water conservation standards on technologies (Schulze & Perks, 2000).

Reduction in water services misfortunes: the household sector has the highest expected development of water services and represents 15 per cent of the aggregate national use. The level of unaccounted for water in urban distribution systems is somewhere between 15 and 20 per cent which is seen as high by universal models (Mukheibir & Sparks, 2003). In this manner effective utilization of water will diminish treatment and dissemination costs.

Diminishment of misfortunes because of agribusiness: watering systems represent around 60 per cent of water utilized in South Africa. In numerous dispersion and watering system frameworks there are huge misfortunes (Mukheibir & Sparks, 2003). Elective watering system techniques and practices ought to be explored and set up to manage the water.

Re-utilizing and reusing of water: this should be possible by re-utilizing water inside of the system from which it was initially abstracted, particularly for industrial and domestic users or returning the water to the waterway in a fit state for further utilisation downstream. Beachfront towns particularly as a potential wellspring of extra water could reuse water before releasing wastewater into the ocean (Mukheibir & Sparks, 2003).

Control of water contamination and water quality: dirty or any water that is unfit for drinking or other uses can have a comparable impact on a diminished water supply. The supply of water is increased by decreasing water contamination thus building up water supplies during dry spells (Schulze & Perks, 2000). The protection of water quality presents a major challenge to water policy in South Africa (Mukheibir & Sparks, 2003).

Latest appraisals express that worldwide no less than 2.6 billion individuals need access to essential sanitation (WHO/JMP, 2004). The term 'sustainable sanitation' is once in a while utilized without what the author implies by the expression. There are a few academics who have been working with the conceptualization of sustainable

sanitation and all the more comprehensively in sustainable urban water management systems. Larsen & Gujer (1997) state the necessity to concentrate on the capacity that an urban water management system ought to have keeping in mind a practical end goal. Larsen & Gujer's (1997) proposed capacity is to ensure urban cleanliness, to guarantee drinking water of good quality and in adequate amounts to permit use for individual cleanliness, to incorporate urban horticulture into urban water management, to avert flooding and permit drainage of urban areas and to give water for recreation and for leisure parts of urban culture.

The primary goal of a sanitation system is to ensure and advance human wellbeing by providing a spotless domain and breaking the cycle of diseases. Dankelman *et al.* (2009) give standards for sustainable sanitation that were supported by the Water Supply and Sanitation Collaboration Council and SANDEC in 2000 which are: (1) human dignity, personal satisfaction and ecological security at family level ought to be the focal point of any sanitation approach; (2) in accordance with great governance standards, choice making should include interest of all partners, particularly the buyers and suppliers of services; (3) waste ought to be viewed as an asset, and its management ought to be comprehensive and frame a portion of incorporated water assets, supplement stream and waste administration forms and (4) the space in which natural sanitation issues are determined ought to be kept to a practicable size, for example, family, town and city (Dankelman, *et al.* 2009).

4.5 Case Study: The Hanna Nassif Community Managed Settlement Upgrading Project – Tanzania

The Hanna Nassif community managed settlement upgrading project was initiated by the Sustainable Dar es Salaam Project. This community-driven project was pursued to address issues relating to storm drainage, safe drinking water and infrastructure. The Hanna Nassif project was piloted through the ILO that encouraged Tanzania to restructure upgrading programmes as simultaneous income-generation initiatives for unplanned settlements. The Community Development Committee (CDC) of Hanna Nassif community members was formed in 1993 and the project implementation began in 1994 (Johnson & Gossmann, 2010).

The United Nations Development Program (UNDP), European Development Fund (EUF) and Ford Foundation were the main funders while the UN Center for Human Settlements (UNCHS) and United Nations Volunteers (UNV) served as associated agencies. The UNCHS mainly supported the local government in the implementation for sustainable human settlements policies, while the UNV worked in community level mobilization. Technical Team staffed by ILO and UN officials provided expertise in engineering and construction training (Johnson & Gossmann, 2010).

Through focus group discussions and structured interviews the Hanna Nassif community identified three key environmental problems in settlement: lack of safe drinking water, impassable access roads and lack of storm water drainage channels. Infrastructure was developed using local resources, labour-based technology and community contracting as well as financial support from within the community aided by technical assistance from ILO and UN agencies. The project stemmed from a particular set of long standing community needs and history of inactivity around improvement; because of this it was considered demand driven. Community contributions included CDC support and management as well as financial and labour resources (Johnson & Gossmann, 2010).

The main impacts included physical improvements particularly in water management systems and income generation through the acquisition of technical and non-technical skill sets through on the job and contracts needed to implement the projects. Water supply was established by installing water kiosks that were jointly owned between individual plot holders and the CDC. Sanitation was implemented as a result of community organisation and the formation of solid waste management teams that the municipal council contracted to manage in the settlement. Furthermore, microfinance institutions contributed to facilitate the process of tenure. The overall process led to enhanced civil society participation, which was both an input that allowed for the success of the Hanna Nassif upgrading programme and was observed as one of the major outcomes as well (Johnson & Gossmann, 2010).

The key lessons from the Hanna Nassif community settlement upgrading are that it was community led and implemented and employed labour intensive strategies that benefited the community in the short term through increased employment and long

term through more savings and an improved standard of living (Johnson & Gossmann, 2010).

4.6 Literature Review on the South African Context

4.6.1 Service delivery and service payment

There is a relationship between services delivery and service payment; therefore, it is important that they are define in this part of the study. Definition by Crous (2002) of service delivery reads as ‘service delivery is concerned with the provision of a services or product by a government body or government to a community that it was promised to or which is expected by that community.’ Martin (2000) states, ‘service delivery should be design around the needs of end users, rather than departmental bureaucracies or the convenience of delivery institutions.’ On the other hand Ismail *et al.* (1997) defines services payment or charges as charges levied on users of the various services that are provided by a local authority.

Municipalities need a reliable source of revenue to provide basic services and perform their functions and the provider of basic services to the community (www.joburg.org.za). Municipalities also need continuous funding to deliver quality services to their populations. Inadequate services can make it difficult for municipalities to attract business to an area and will limit job opportunities for citizens. Municipalities faces big challenge in their work to provide services to the residents and many municipalities fall short. Often the reason given is lack of resources (www.idasa.org.za). Majikijela (2007) states that ‘local authorities are directly linked to the accessibility of resources. In this instance, they experience severe cash flow difficulties due to high levels of non-payment of services. The difficult of non-payment is more serious than it appears to be, because widespread non-payment can lead to disorder. Non-payment for municipal services can thus be singled out as the one factor with the possible to destroy municipalities in South Africa.’

This means that there is a direct relationship between service delivery and service payment, which means that if citizens pay their monthly rates municipalities would be able to provide quality services and if they do not pay for municipal services, municipalities would hardly be able to provide services to its residents (Majikijela, 2007). Kroukamp (2001) states that ‘cost recovery goes hand in hand with service

improvement. User charges are required to reflect the value of the service provided to clients. These charges must not simply be a convenient way to raise funds.’

4.6.2 *In-situ* Upgrading of Informal Settlements

In-situ upgrading in South Africa is an alternative to other mechanisms that have been employed in the past such as relocation to Greenfield housing projects for informal settlement dwellers. The option of *in-situ* upgrading minimizes the disturbance to social and monetary systems by lessening the quantity of family units that are migrated to another site or somewhere else on the site (Masiteng, 2012). South African strategies towards informal settlements are in line with a worldwide pattern that supports *in-situ* upgrading rather than migration (Patel, 2009). The approach is guided by the conviction that redesigning, which formalizes residency plans and acquires state services, likewise enhances general wellbeing, expands income streams for districts, intercedes to give better quality low salary housing, and that an upgraded settlement turns into a steady establishment for the monetary and social reintegration of heretofore underestimated and rejected segments of urban society (Patel, 2009).

A portion of the key attributes which streamline *in-situ* methodology are: it involves a push to hold the number occupants in a location as could be expected under the circumstances and to wipe out or minimize migration; it requires broad and frequently difficult social engagement with nearby inhabitants on the off chance that it is to succeed; it is tedious, generally taking somewhere around 7 and 12 years from idea to fulfilment in light of genuine case histories (Misselhorn, 2008).

In situ upgrading speaks to an incremental or dynamic change to the conveyance of housing. Hensher & DelMistro (2009) mention three principle stages in the dynamic change of an informal settlement; specific procurement of essential level services tending to the fundamental wellbeing needs of the group; intermediate level services which are concerned with socially and culturally acknowledged levels of services and extreme level services for the comfort of the occupants.

4.6.3 Case Study: Zilweleni *In-situ* Upgrading - Durban

In 1989 a small community of 84 tenant households in the area of Desai in southern Pinetown formed Zilweleni Residence Association (ZRA) to protect themselves against eviction by the landowners. In 1990 a non-government organisation (NGO) called Built Environment Support Group (BESG) was approached by ZRA with a request for assistance in negotiating the buying of the land and upgrading the settlement (BESG, 1998). The community of Zilweleni felt it would be better if it formed its own trust to oversee the whole development in the area which became known as Zilweleni Development Trust (ZDT). The objective of the Trust comprised encouraging community participation in the upgrading of Zilweleni, helping members acquire housing, raising funds for the Trust and providing security of tenure and also managing the funds in accordance with the objectives of the Trust. The Trust consisted of five community members to be developers (Masiteng, 2012).

According to Masiteng (2012) the project was implemented in 1994 and ZDT appointed BESG as the project manager. Community members of Zilweleni were involved in many aspects of the project, including site pegging, toilet construction, allocations and security. Sinqobile Contractors, a partnership of unemployed residents who were trained in basic building skills, was formed to assume the construction of toilets for the project. A community block yard was established to make concrete blocks for the toilets (BESG, 1998).

According to Masiteng (2012) although plot sizes and shapes were irregular the overall living environment created was much better than most new housing projects, as investment in existing housing was preserved, existing vegetation was maintained and existing economic and social network remained undisturbed. The granting of secure tenure and the provision of basic services resulted in a building boom in Zilweleni as households saved up money and began upgrading their houses by adding on concrete block extensions or replacing their existing structures with concrete (BESG, 1998).

The key lessons from Zilweleni project is that it was one of the first instances where a community-based development organisation acted as developer in South Africa. The project clearly demonstrated the success of the community-based development model for *in-situ* upgrading and shows how *in-situ* upgrading can result in a much better

quality living environment than relocation to a Greenfield area or a rollover upgrading project would have. The Zilweleni community afterward named the area Sinqobile (Masiteng, 2012).

4.7 Role players in provision of water and sanitation

4.7.1 Responsibility of the State

The state is obliged by the constitution to realise the rights written in the Bill of Rights. Draft White Paper on Water Services (2002) state that all spheres of government have the obligation of water responsibility and they share the commitment to understand and acknowledge the fundamental rights to sanitation and water supply. National government is, however, recognised as the custodian of the nation's water assets. This suggests national government has the obligation to guarantee that the water assets are protected, used, developed, conserved, managed and controlled in a socially equitable and economically beneficial and sustainable manner (Hofmeyr, 2012).

The right of access to sufficient water should be understood to mean that although the state is not obliged to provide water freely it is under an obligation to create mechanisms that enable people to have access to sufficient water. In the event of resource constraints which limit the ability of the state to fulfil its obligations the state is still obliged to provide a plan of action that demonstrates that the full realisation of the right would be achieved over time. Moreover to get maximum results available resources should be utilised effectively, with priority being given to assuring every citizen the satisfaction of the most basic requirement as well as the provision of essential services including access to sufficient water and adequate sanitation (South African Human Rights Commission, 2001).

4.7.2 The role of Metro and District Municipalities

The functions of water and sanitation are particularly important for several reasons. Firstly, these are major revenue generating functions for many municipalities. Secondly they are highly complex functions since they combine infrastructure design and provision, natural resources management, operations and maintenance, credit

control and community awareness issues such as infrastructure maintenance, health and hygiene. Making effective policy decisions for water and sanitation is a challenging task for any municipality (Atkinson, *et al.*, 2003).

According to City of Cape Town (2008), the district municipality is in the first instance accountable for the provision of water and sanitation services and through its Environmental Health Practitioners to promote health and hygiene awareness and to monitor the health of its communities. The district municipality must also take responsibility for driving the process set in the White Paper on Basic Household Sanitation at the local level for creating an enabling environment through its municipal by-laws and for taking responsible decision on levels of service to ensure that they are both appropriate and affordable. District municipality is required to develop an Integrated Development Plan (IDP), which is aimed at the integrated development and management of its area of jurisdiction. One specific part of this plan is a Water Services Development Plan that reviews current service levels and backlogs and sets clear objectives with quantifiable performance indicators. Using these objectives, a domestic sanitation business plan is developed that includes a detailed strategy development process. Local government officials and councillors are encouraged to participate in the development of this coherent strategy and to agree on the priorities and approaches (City of Cape Town, 2008).

4.8 The supply of Water and Sanitation in South Africa

Since 1994 the new government has embarked on a plan to equitably supply water to all people irrespective of their socio-economic condition (Kariuki, 2008). These intentions were written into the Reconstruction and Development Programme (RDP). One of the RDP's main objectives was to attain not only economic growth but also equity in basic service delivery (Kariuki, 2008).

The test confronted by the present government of service delivery was 'to lessen the politically-sanctioned racial segregation excess whilst simultaneously raising the level of service provided' (Gool, 2013). The recently elected South African government, in 1994 embraced different methods to amend these excesses by guaranteeing 'a more sensible circulation of public services' (Gool, 2013). The top priorities were water and

sanitation, with importance placed on providing services to the previously deprived, poor households quickly and efficiently (Nnadozie, 2011).

Correcting measures involved fusing the privilege to satisfactory and sustainable water supply and sanitation service in Section 27 (1b) of the Bill of Rights in the Constitution of the Republic of SA 1996 (No.108 of 1996); passing numerous Acts, White Papers and policies concentrated on water supply and sanitation services; and executing programmes to reduce the water supply and sanitation backlog. The White Paper on Water Supply and Sanitation (1994) further expresses that execution checking is required to 'guarantee that the norms are kept up' and 'that satisfactory basic services scope is accomplished and looked after' (Department of Water Affairs and Forestry, 2002)

The water sector representing structures was changed to combine guidelines for the local municipalities and rural governments where they were already each exclusively in charge of water supply and sanitation services. The Department of Water Affairs and Forestry was then tasked with controlling the water sector after 1994 (Gool, 2013).

Prominent advancement has been accomplished. The rate of family units lacking access to toilets was reduced from 18 per cent in 2001 to 7 per cent in 2011 and the rate of families deprived of access to piped water dropped from 16 per cent in 2001 to 9 per cent in 2011 (Statistics SA, 2011).

4.9 Sustainable use of water and sanitation contributing to sustainable human settlements

When providing a water supply and sanitation among other services a local government must be developmental. The idea of developmental local government proposes that districts must add to the improvement of the community towards an environment with a socially and economically supportable future, notwithstanding the procurement of essential services. At the point when providing services, for example water supply and sanitation, municipalities consistent with their established order become developers. Water supply, roads and sanitation, when they have an effect on the environment, ought to be overseen so as to guarantee that assets are utilized

ideally and not to the detriment of the present and future since this is vital for development to be maintainable (Hofmeyr, 2012).

The World Commission on Environment and Development cited in Hofmeyr (2012), states that 'sustainable development is development which addresses the matters of the current without comprising the ability of the future generations to meet their own needs. This description emphasises the key characteristic of adopting a long term approach towards enhancing the quality of life of people today and in the future. Sustainable development in this context is about improving the quality of life for all time and human well-being in particular for those greatest affected by inequality and poverty and is understood to require the balancing of social, economic and environmental factors. The objectives of municipalities include the obligation of giving just and responsible administration to their groups, guaranteeing the procurement of reasonable administrations, advancing a sheltered and solid environment and including groups and group associations in its matters (Hofmeyr, 2012).

4.10 Legislative Framework on the provision of water and sanitation

4.10.1 Constitution of the Republic of South Africa (1996)

The South African Constitution of 1996 contains a provision on the right to water and sanitation. Section 27 (1)(b) of the Bill of Rights states that '*everyone has the right to have access to sufficient water*' and section 27(2) obliges the state to '*take reasonable legislative and other measures, within its available resources, to achieve the progressive realisation*' of everyone's right of access to sufficient water. Further, lack of access to adequate sanitation can lead to compromised water supply sources (Tissington, 2011). This piece of legislation is relevant to this study since the constitution governs the right to water and sanitation. The objectives of this constitution have not been fully met especially in peri-urban areas due to lack of sufficient funds from the government.

4.10.2 The Housing Act no 107 of 1997

The Housing Act 107 of 1997 is an essential piece of housing legislation in South Africa, which lawfully entrenches policy principles outlined in the White Paper: A New Housing Policy and Strategy for South Africa published in 1994. The point of this

legislation is to accommodate the sustainable housing development process by setting down general standards material to housing development in all areas of national, provincial and local governments in support of housing development (Mbatha, 2009). It is relevant to the study not just on the grounds that sanitation is a crucial element to sufficient housing but also in light of the fact that the legislature has connected sanitation rollout to its housing delivery programme through the National Housing Subsidy (Tissington, 2011). The objectives of the Act have been met in most cities in South Africa though the government still needs to make sure that the implementation of this Act is carried out properly.

4.10.3 The National Water Act no 36 of 1998

Like the Housing Act, the Water Act (1998) is recognised as the highest water law in South Africa. The motivation behind it is to guarantee that the country's water assets are secured, preserved, utilized, created, controlled and overseen in ways which consider: (i) meeting sustainable fundamental human needs; (ii) elevating even-handed access to water, reviewing the past standards of racial and gender service conveyance arrangements and (iii) advancing the proficient, supportable and advantageous utilization of water in the interest of the general population (DWA, 1998). In relation to this study the adequate provision of water in upgraded informal settlements addresses the aims of this Act in meeting basic human needs in a sustainable way. The objectives of this Act have been met in most parts of South Africa although there is a huge problem of water scarcity in South Africa.

4.10.4 The Water Services Act no 108 of 1997

The Water Services Act 108 of 1997 is an essential piece of legislation identifying availability and providing water services to family units and other municipal water clients by local government in South Africa. The primary objectives of the Water Services Act are to accommodate the right of access to essential water supply and the right to fundamental sanitation, and to protect adequate water sources in such a way that is harmless to human wellbeing or prosperity (Tissington, 2011).

Relating this Act to the study, there is a strong role for the local municipality to discuss all challenges linking to water supply with the local community. It is crucial that the wellness of every citizen is given recognition so that growth and development become

a reality. Service delivery practices and a focused commitment by municipal officials can influence growth and sustainable development (Monashane, 2011). The objectives of this Act have not been met more especially in informal settlements because there is a lack of infrastructure.

4.10.5 The Municipal System Act no 32 of 2000

The Local Government: Municipal Systems Act no 32 of 2000 (Municipal Systems Act) gives the techniques and apparatus to empower districts to inspire their groups monetarily and socially, and ensure reasonable general admission to fundamental services. It seeks to engage low income people and guarantee that municipalities build up service tariffs and credit control arrangements that consider their needs (Tissington, 2011). In the context of this study IDP is the core to the delivery of fundamental services such as water and sanitation within the municipal area. The objective of this Act has been met by most municipalities abiding by their IDPs.

4.11 Proposed solutions to municipality for sustainable supply of water and sanitation

4.11.1 The Protection of water resources

Traditional zoning practices often do not take into account the location of drinking water sources and as a result might permit growth near public wells. This practice can impact the supply and quality of drinking water sources. Fertilizer, for example, when used on agriculture lands or sites with extensive landscaping can mix with runoff water and contaminate ground water sources (United States Environmental Protection Agency, 2004). Most zoning practices focus on the designated use of a zoned area and do not consider the location of drinking water sources or the impact development can have on these sources. Some municipalities have chosen to restrict or prohibit development near drinking water sources using approaches such as ordinances. Limiting development near public wells helps direct development to existing communities including infill and brownfield sites (United States Environmental Protection Agency, 2004).

Also, the municipalities need to coordinate development planning with sewer and water management. Often plans for water and sewer service expansion are more

heavily influenced by utilities projections for future demand than by a community's growth priorities. Sewer and water management can play a major role in directing a municipality's growth by determining when and where new infrastructure investment will occur. Decisions on how and where to provide sewer services, affect not only the quality of wastewater treatment available to residents but also where open land can be developed (United States Environmental Protection Agency, 2004).

4.11.2 Consumer education on sustainable use of water and sanitation

The lack of proper water supply and sanitation services degrades water quality in rivers, seas and lakes. The poor often directly depend on these water bodies for their water needs and they suffer the most. The provision of water supply and sanitation services is an important part of building communities that can take control of their lives and make real strides on the path to sustainable development (Ubilava, 2003).

There is a great need for a water management education system. The water management education system should start with the main consumers of water resources. These are farmers, manufacturers and households. These groups of people are the main users of water resources and main pollutants of rivers basins. To further protect water resources and sanitation, it is important and significant for farmers, manufacturers and households to work out a water management education programme, which are the main points of water management. One of the main points of an education programme is access to internet. Development of an internet network in the rural sector is a significant fact for improving and encouraging the education programme. The water users can deal with their problems, exchange information and give each other advice on ways to use water and sanitation sustainably (Ubilava, 2003).

4.11.3 Simplifying connection and billing procedures for poor households

The poor often face financial and legal barriers in order to have access to water and sanitation services, even when piped water services are physically within their reach. The connection costs are the main barriers for the poor to connect to the utility network in areas where this network is available. Franceys (2005) cited in Ryan & Adank (2010)

suggests that water utilities need to adjust their connection policies, reducing official charges with costs amortised over several years. Mara (2005) cited in Ryan & Adank (2010) also suggests that water utilities should recoup connection costs through an increasing tariff structure, rather than charging connection costs. The increasing tariff structure could be based on a portion of the wages of the households rather than on amount of water consumed. The first tariff block would be provided at a very low price or would then not be priced at all (Ryan & Adank, 2010).

4.11.4 Eliminate distorted tariffs for poor households

There are several situations in which the poor pay relatively high tariffs for basic consumption. Administrative or regulatory actions may be required to eliminate these distortions. Block tariffs are generally designed to provide low tariffs for a basic essential household's consumption and to discourage excessive use by those who consume more than a basic volume of water. However, such tariffs may penalize the poor when several households use one connection (Triche, *et al.*, 2009).

A system of verifying the number of poor persons or households using each connection and adjusting the applicable tariff accordingly can be introduced to solve the problem. Such a system is best administered at the community level perhaps by a community association and the number of persons should be verified periodically to prevent abuse. Water charges may also be distorted when poor people pay their water bills as part of their rent. Greater transparency can be achieved by requiring landlords to inform tenants of the amount of the water bill and to justify the amount included in the rent (Triche, *et al.*, 2009).

4.12 Conclusion

This chapter reviewed the literature in the international and local context. The review of literature was aimed at giving the research the basis upon which the concept used in the study can be understood. The provision of basic services such as water and sanitation provides households who were previously living in informal settlements with a sense of well-being. The legislative framework was aimed at placing the study in line with existing legislation that can guide the study. All this was done to assist in framing this study within a proper academic setting.

Chapter Five: Historical background of the study area (Cato Crest)

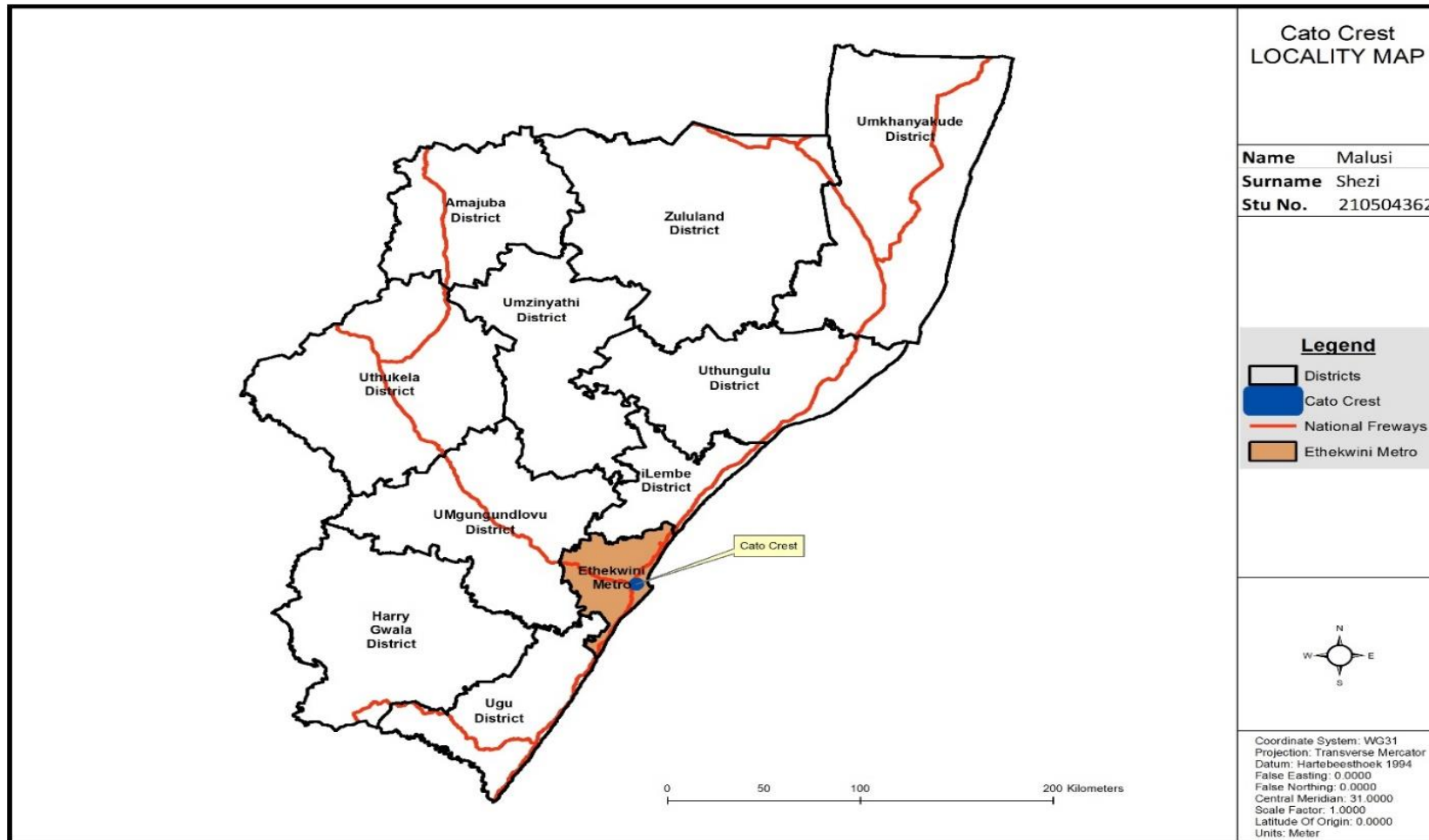
5.1 Introduction

This chapter will exhibit a depiction of the Cato Crest *in-situ* housing project. It will then give the geographical location and history of the area. The establishment of the area will likewise be incorporated. Socio-economic data of Cato Crest will be presented, for example, employment status, demographics and household wage. Facilities/amenities and services previously provided, then those provided after the upgrading will be specified towards the end of this part to give the reader an idea what facilities were available before and what facilities were provided with the upgrading.

5.2 Geographical location of Cato Crest

Cato Crest is situated along the edges or crest of Cato Manor. Roughly, seven kilometres toward the west of the Durban focal business districts, this area of Cato Crest is regularly serviced by public transport that takes under 10 minutes to reach the central business district (CBD). An essential component in forming its past and present has been its closeness to the Durban CBD (Madlala & Jonawski, 2004).

Map 1: Locality Map of Cato Crest



Source: Author (2016)

Map 2: Bird's eye view of Cato Crest



Source: Department of Human Settlement (2015)

5.3 Historical background of Cato Crest

The area known as Cato Crest is one of six informal settlements that incorporate the group of Cato Manor, a group with a rich history. The name Cato Manor was taken from the first Mayor of Durban, George Cato. George Cato was given the 1800 hectares of area in 1845 as payment for an area he owned at the beachfront that was then required and re-possessed for military purposes. Throughout the following half century George Cato and his relatives cultivated the sloping and ripe soil of Cato Manor. When the new century started, the area was sold and subdivided in little parcels to white landowners (Madlala & Jonawski, 2004).

Quite a bit of this area was leased to Indians who had chosen to live in South Africa after their agreements as manual workers had terminated between 1900 and 1930 (Madlala & Jonawski, 2004). To set up new businesses they needed land near Durban for developing market gardens. This period additionally sees a relentless deluge of

Africans from the periphery areas looking for employment in eThekweni. Africans basically began creating shacks alongside the uMkhumbane River that snakes through the area while different landowners in Cato Manor started leasing to African workers. South African laws of the time kept non-white individuals from possessing land or erecting dwellings in the urban regions. In 1932 the Durban Municipality consolidated Cato Manor, and the African informal settlers were proclaimed illegal residents. Yet the enduring convergence of Africans to the urban regions proceeded. To help control this rising national problem the government responded by introducing a series of influx control laws (Madlala & Jonawski, 2004).

In the Cato Manor area, it was estimated that 50,000 individuals were residing in the area by the mid-1940s. The conditions in Cato Manor were common of an urban slum of that size at the time, with congestion preventing appropriate methods of sanitation. This gave weight to the conflict between the Indian and African population of Cato Manor in 1949 (Madlala & Jonawski, 2004). Understood as the Cato Manor Riots, and supposedly started by the attack on an African child by an Indian man, a two-day long violent protest resulted in numerous Indians leaving the settlement. The riots additionally brought about the neighbouring white inhabitants putting weight on municipal government to evacuate all unlawful tenants. According to Peterson (1994), this upheld the execution of the Group Areas Act and the Native Urban Areas Act in the following years.

These two government Acts were utilized as the foundation for compelling evacuations of both landowners and occupants of the Cato Manor Area. In the 1950s the township of Chatsworth was constructed to house the Indian inhabitants of Cato Manor while in 1957 the township of KwaMashu was completed for the re-settling of people of colour. By the late 1960s all that remained in Cato Manor were a couple Hindu sanctuaries amongst the various avocado, litchi and mango trees that had been the pride and delight of the Indian market garden specialists (Madlala & Jonawski, 2004).

Somewhere around 1968 and 1980, Cato Manor was to a great extent empty and left uncultivated. Escalating brutality in the African townships amid the last phases of battle in contravention of politically-sanctioned racial segregation in the late 1980s and the approaching scrapping of the Group Areas Act in 1991 provoked a new influx of settlement. Another squatter settlement had risen in Cato Manor by the late 1980s. It is from this that the present occupants of Cato Manor follow its beginnings. The principal territory to be re-occupied was the upper edge of what today is called Cato Crest (Madlala & Jonawski, 2004).

5.4 Socio-economic information of Cato Crest

5.4.1 Demographics

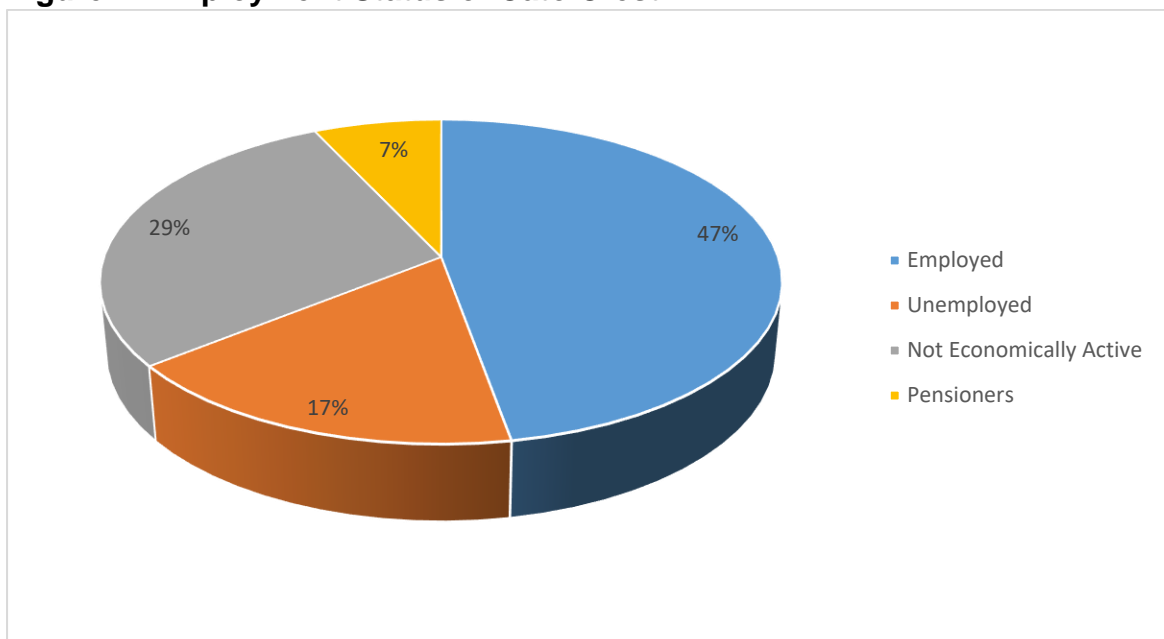
Cato Manor is 1800 hectares and Cato Crest comprises 97 hectares of the 1800 hectares. It forms a portion of Ward 30 and is home to an estimated 23,836 individuals, of which females make up 12,725 and males make up 11,111 (eThekweni Municipality, 2012). The number of inhabitants in Cato Manor is nearly 100% African, characterised by rich differing qualities of ethnic groups with Zulu prevailing, trailed by Xhosa, Sotho and Ndebele amongst others. Outsiders from other African nations and immigrants have settled in the area, including individuals from Malawi, Burundi and Zimbabwe (Madlala & Jonawski, 2004).

Zulu is the most spoken language, even though most occupants know how to communicate in English to varying degrees. There are various religious groupings alongside the variety of ethnic groups. While a few inhabitants claim to be supporters of the main Christian churches, for example Catholic or Anglican, recent years have seen the ascent of different types of Christianity for the most part stemming from the United States. On the edges of Cato Crest, a few times each year extensive tents are set up, while inhabitants can be found in numbers singing and advancing towards the tents where revivalist preachers deliver their sermons. (Madlala & Jonawski, 2004).

5.4.2 Employment Status

The economic active section of the population in Cato Crest which is employed in the formal sector is about to 47 %. The high rate of unemployment which includes people seeking work forms 17 %. The non-economically active which comprises youth under 15 years of age and elders represents 29 % in the area of Cato Crest, and 7 % represents the pensioners. All the employment figures above do not distinguish between who is skilled or semi-skilled and unskilled (eThekwini Municipality, 2012).

Figure 1: Employment Status of Cato Crest



Source: eThekwini Municipality (2012)

5.5 Facilities/amenities and services before and after upgrading

The Cato Crest informal settlement had no legitimate services and infrastructure. The informal settlement inhabitants had no roads to permit vehicular movement. Pathways and small roads were made by informal settlement occupants yet these were not appropriate as they needed an essential legitimate plan and consisted of gravel. The small roads and pathways were not suitable for cars, children and elders during overwhelming rainfalls. There were only shared stand pipes for water in the area (Mbambo, 2013).

In this study area there is evidence of well designed roads and footpaths. In terms of facilities in the study area of Cato Crest, there is also evidence of social amenities. There is a primary school, Cato Crest primary school (figure 3) as well as a secondary school which is located at 60 Malver Road Mayville. Other most important social amenities in the area of Cato Crest are a Cato Crest public library (figure 4), and also a multiple purpose community hall (figure 5). Residents in the area of Cato Crest use the Cato Manor Clinic which very close since the area of Cato Crest is within Cato Manor.

Figure 2: Cato Crest Primary School



Source: Google Map (2016)

Figure 3: Cato Crest Library



Source: Author (2016)

Figure 4: Cato Crest Community Hall



Source: Author (2016)

5.6 Conclusion

This chapter has presented the historical background of the study area which is Cato Crest housing project. Upgrades that have occurred in the area have tried to move the area from being an informal settlement to a more formal settlement. This chapter highlighted the overall employment status of the area of Cato Crest according to recent Census statistics. The chapter also showed that the area of Cato Crest is integrated within its surrounding areas. The location of the study area is very close to the Durban CDB and was the site of a huge political battle that occurred in the apartheid era.

Chapter Six: Research findings, data analysis and interpretation

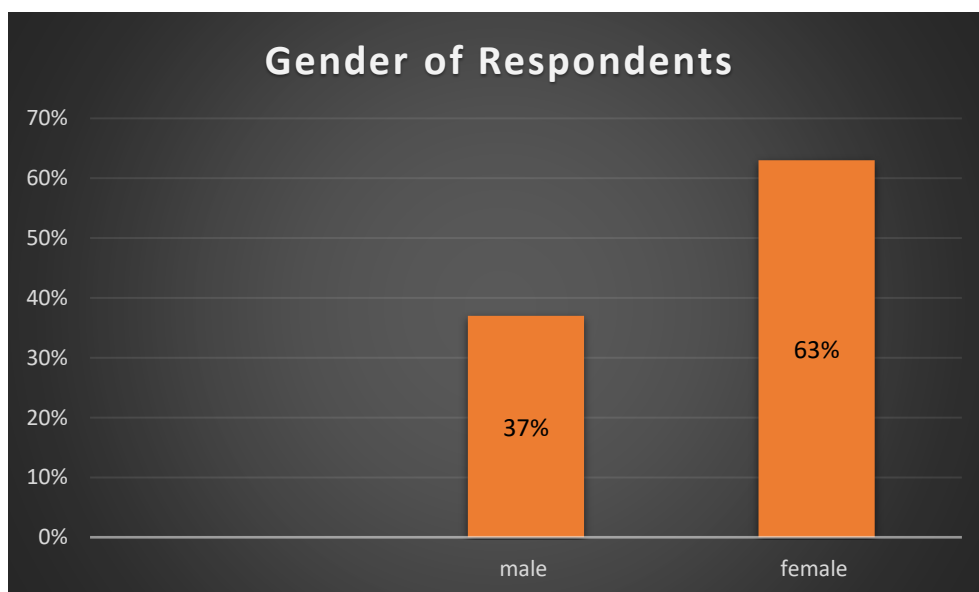
6.1 Introduction

This chapter presents and discusses the study's findings on assessing the sustainable provision of water and sanitation after the *in-situ* upgrading of informal settlements. The researcher administered questionnaires and conducted semi-structured interviews with the members of the community, project manager and ward councilor. This chapter comprises five themes. The first theme examines the gender representation of informants. The second theme looks at the use of municipal water and sanitation. The third theme looks at the role and responsibilities of stakeholders who were involved in the provision of water and sanitation in the area of Cato Crest. The fourth theme deals with the challenges which are experienced by the eThekweni municipality in providing water and sanitation in informal settlements, and the last theme looks at the water and sanitation improvement strategies proposed by the community of Cato Crest.

6.2 Gender representation of informants involved in the case study

This section presents gender information of the respondents.

Figure 5: Gender of Respondents



Source: Field Survey (2016)

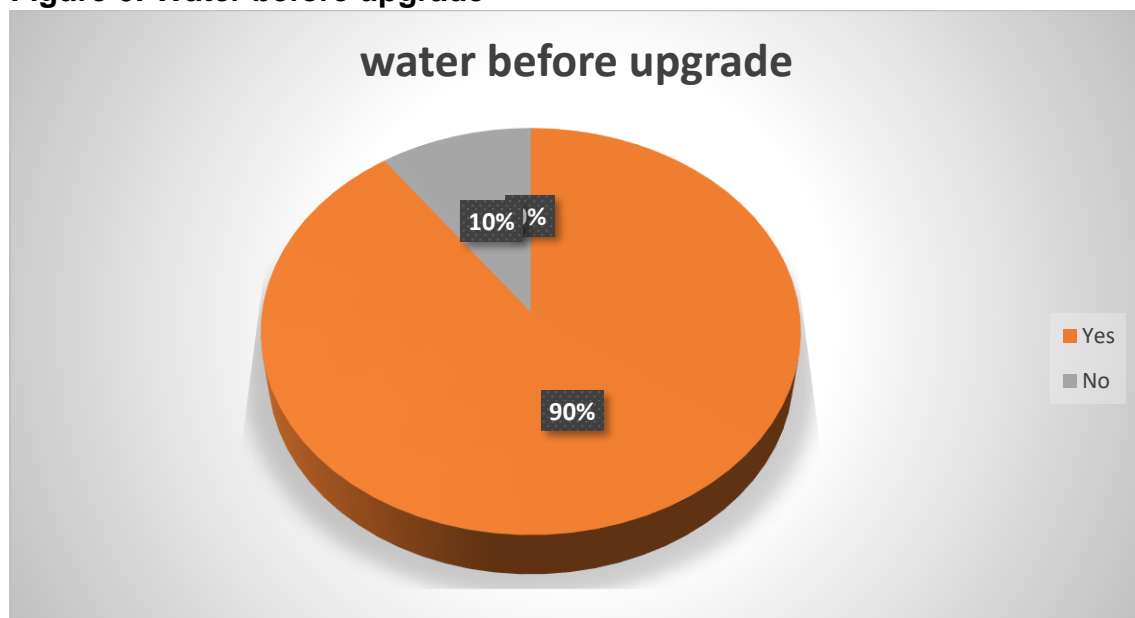
Figure 5 above shows that out of all the people who responded, 11 (37%) of them were males and 19 (63%) were females. This could mean two things; there were fewer males who participated in this study than females or it could be that there were more households headed by females than males in the settlement. This could also be attributed to the fact that most of the interviews were conducted at the communal stand pipes during peak hours, where this was the time when the majority of residents, in particular women and girls, collected water for the evening meal and hygienic purposes.

In terms of the gender of respondents above this information is in line with the generally accepted view that females constitute about 51.3 % of the total population in South Africa (Statistics SA, 2011).

6.3 The access and use of Municipal water and sanitation

6.3.1 Access to safe drinking water before *in-situ* upgrading

Figure 6: Water before upgrade



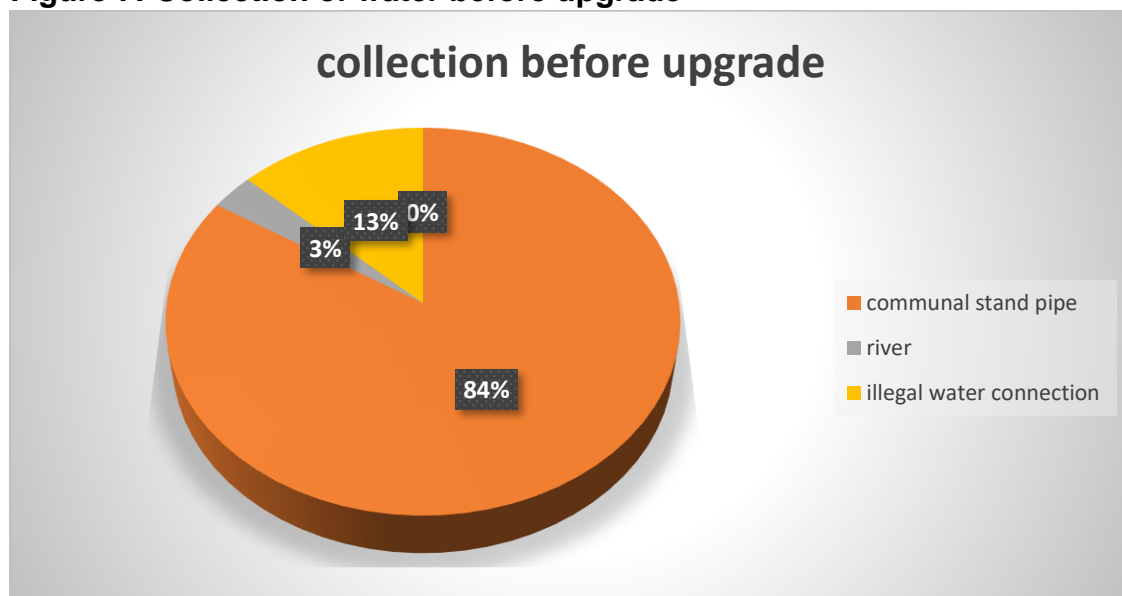
Source: Field Survey (2016)

Findings from the study area revealed that there was provision of safe drinking water. With regard to accessibility of water, findings of Cato Crest revealed that 90 % of the

respondents indicated that they had access to safe drinkable water while the remaining 10 % indicated they had no access to safe drinkable water since they collected water from the river. It is clear that the higher levels of satisfaction with water accessibility for households in Cato Crest settlement has been stimulated by the water provision initiatives undertaken by the eThekweni municipality to provide water to all people.

6.3.2 Water collection before the upgrade

Figure 7: Collection of water before upgrade

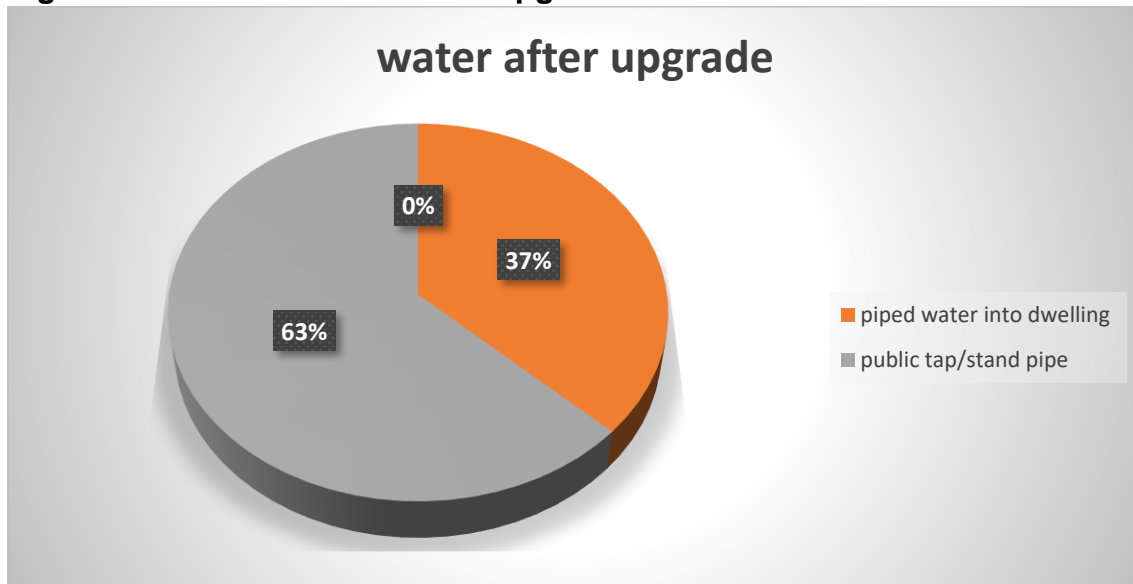


Source: Field Survey (2016)

The pie chart above shows that in the findings from the study area 84 % of the respondents indicated that before the installation of services water was sourced from communal standpipes, while 3 % indicated water was sourced from the local river. The remaining 13 % of the respondents indicated water was sourced from illegal water connections. Based on the above findings communal stand pipes were used by most people in Cato Crest and it could be argued that communal stand pipes brought change to the area and they were preferred by most residents of Cato Crest.

6.3.3 Access to water after upgrade

Figure 8: Water admission after upgrade



Source: Field Survey (2016)

All participants agreed that they still used the water provided by the municipality. The above pie chart shows that out of all the respondents in this study 37 % did have water connected to their houses and 63 % used communal standpipes for water collection.

Two points emerge from the above pie chart and its figures. The first is that 37 % were able to pay the water bill at end of each month. This suggests that there was a level of income. However, the second point is that 63 % used free water since communal stand pipes were for use by everyone and no one was obliged to pay for that water provided by the municipality.

The 37 % of the respondents who had piped water into their dwellings had water meters that were installed by the eThekweni Water Service (EWS) when they were providing water and sanitation to the community of Cato Crest. Therefore, this means these respondents had completed all applications forms from EWS in order to be billed for the water they used monthly, enabling them to have a better sanitation system, which is the flush toilet system, inside the house. The 63 % who utilized public standpipes used a different type of sanitation, which is discussed below.

Figure 9: Upgraded house with pipe water to dwelling



Source: Author (2016)

Figure 10: Communal Standpipe in Cato Crest providing safe drinking water.



Source: Author (2016)

6.3.4 Access to Sanitation

Cato Crest responses	Interval	Percentage
Pit latrine	27	90%
Bush	2	7%
Other	1	3%
Total	30	100%

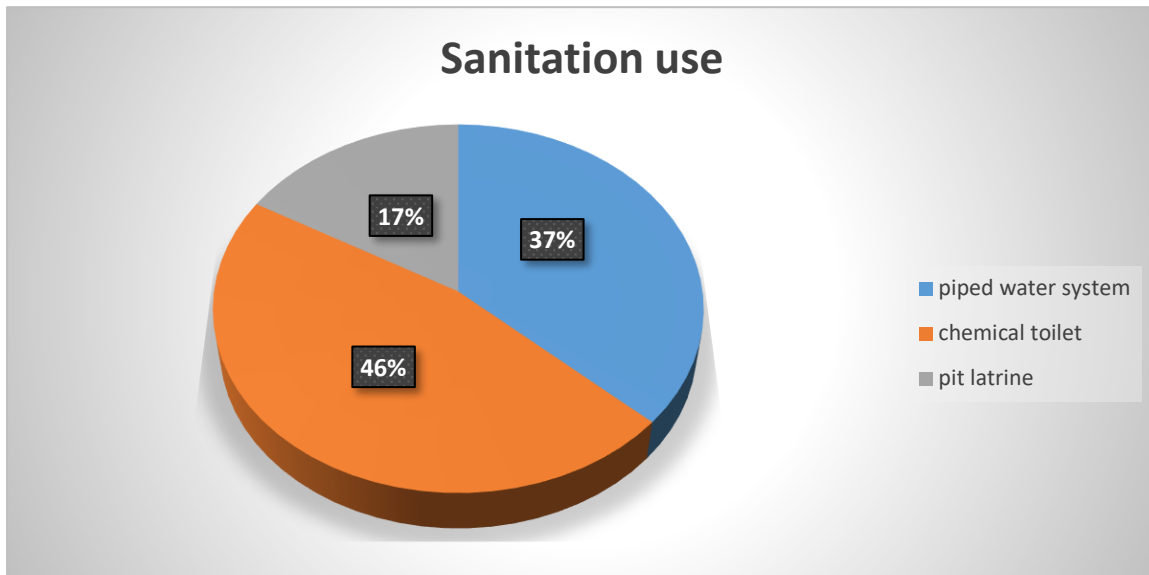
Table 1: Sanitation facilities before upgrade

Source: Field Survey (2016)

The table above shows Cato Crest findings that revealed that before the provision of sanitation facilities 90 % of the respondents indicated they used pit latrines and 7 % of the respondents indicated they used the bush. Findings from the study area indicated that there was a significant number of households that used pit latrines as a means of sanitation provision. These results can be attributed to the fact that the pit latrines were constructed near the individual household's informal dwelling. With regards to the use of the bush, this can be attributed to the fact of lack of space in informal settlements; when the households erected their shacks they built them close to each other therefore there was no space to build homemade pit latrines. There was also a considerable number of households who utilised sanitation other than that provided; respondents indicated other means of sanitation including the use of small open spaces at night.

6.3.5 Access to sanitation after the upgrade

Figure 11: Type of sanitation use



Source: Field Survey (2016)

An important aspect of a household's health and sanitary status is the household's toilet facility. All municipalities have the responsibility to provide basic sanitation facilities, which members of households can easily access (Kariuki, 2008). The pie chart above shows that 46 % of the respondents indicated they used chemical toilets (Figure 11) provided by the municipality (Figure 12), 37 % indicated they used the piped water system/flush toilet and 17 % said that they used the pit latrine system.

Chemical toilets store excreta in a holding tank that contains a chemical mixture to prevent smell caused by bacterial action. The contents of the holding tank must be emptied periodically and conveyed to sewage works for treatment and disposal. The chemical mixture usually contains a powerful perfume as well as a blue rinse. The system can be used where emergency sanitation is required, to decide on the best permanent solution. It should not be considered as a permanent sanitation option (CSIR Building and Construction Technology, 2003).

Figure 12: Chemical Toilets used by Cato Crest residents.



Source: Author (2016)

The study revealed that 37 % of respondents with flush toilets were connected to planned sewers. Flush toilets require a constant supply of water in order to function efficiently and that is the reason why households with flush toilets are connected to planned sewers. 46% of respondents were found to be using chemical toilets provided by the municipality, which are not connected to the municipal sewer system but are maintained by the municipality through toilet emptying services. Also 17 % of respondents reported to be using pit latrines as a means of disposing human waste. When a pit latrine is full a new pit latrine is dug next to the old one. This implies that there is a potential risk of sewerage seeping into the ground, which could contaminate underground water.

The variations in types of sanitation in Cato Crest are caused by the ability of the residents to pay for water. In this study, it was observed that 37 % of respondents paid for water every month because they had water connections to their dwellings. Therefore, the 46 % and 17 % of respondents using chemical toilets and pit latrines

did not have water connected to their dwellings as they used the communal stand pipes, where they did not pay for water.

6.4 Capacity to pay for water services

Figure 13: Employment Status



Source: Field Survey (2016)

Figure 13 above shows that out of all the people who responded in this study, 70 % were unemployed and only 30 % were in employment. This suggests two things; there were more people who were unemployed in this area than employed or it could be that based on the survey there were more unemployed people who took part in this study than those who were employed.

On the basis of the above findings it is clear that there was a high rate of unemployment in the study area of Cato Crest. The findings indicate that with regards to employment opportunities, residents of Cato Crest were not economically active. The South African National Housing Code (2009), with its programme for upgrading informal settlements, places an emphasis on the objective of upgrading settlements that are strategically well located to social and economic opportunities by addressing settlements that offer the opportunity of spatial restructuring and integration of the existing environment.

Even though the study area of Cato Crest is well located, roughly seven kilometers towards the west of the Durban CBD, the findings above show that residents of Cato Crest were not economically active. These findings reveal the economic status in South Africa, where there is a high level of unemployment in the country, and this is one of many serious problems that have negatively impacted the South African economy.

6.5 Quality of Water Supplied

The term 'water quality' is utilized to portray the microbiological, physical and concoction properties of water that determines whether it is suitable for use. A huge portion of these properties is controlled or affected by substances, which are either broken up or suspended in the water. Good water is hence free from all substances that can possibly endanger individuals' wellbeing (Kariuki, 2008).

Figure 14: Quality of water supplied



Source: Field Survey (2016)

Figure 14 above shows that the majority of the respondents in this study, 93 %, felt that the quality of water was good, but only 7 % claimed that the quality of water was poor. Customarily females know about water quality since they are by and large the essential clients and directors of water in the family unit (Jabu, 2006).

The respondents who were satisfied with the water provided by the municipality indicated that their satisfaction was based on the quality of safe drinking water provided. Respondents indicated the water provided enabled them to cook and clean. Respondents who were not satisfied with water indicated their level of satisfaction was based on the fact that water provided was from a stand pipe and not connected to their upgraded houses.

Figure 15: Communal standpipe with low flow of water in Cato Crest upgraded informal settlement.



Source: Author (2016)

6.6 Satisfaction of service provided

Most respondents (80%) indicated that the EWS took a long time to respond to infrastructural problems, which included reconnecting water when supply had been

disconnected due to accumulated arrears or defaulting on payments. A particular respondent stated “*when in a particular month one never paid on time or may be one has outstanding payment to make, the municipality take it time to fix the problem and the municipality put high fees of reconnection which at time one is unable to pay*”. These respondents also claimed that the municipality did not fix burst pipes on time which at times caused them pay high water bills at the end of the month.

On the other hand, of the respondents who used communal stand pipes some claimed that the communal stand pipes were far from their homes so that they had to carry the water more than 150 meters and some of them were old and did not have someone who would help with water collection. Another problem raised by respondents was that they had to queue for water collection especially during peak hours which meant there were not sufficient communal stand pipes in the area of Cato Crest.

The Water Services Act of 1997 provided for adequate sanitation facilities for poor households in informal settlements. The provision of safe sanitation has become the responsibility of local governments as they have the capacity to provide planned and improved sanitation integrated with water supply and other municipal services. Sanitation intervention by municipalities has been in the form of chemical toilets, VIPs and construction of communal ablution blocks (Xulu, 2014). In Cato Crest the municipality provided chemical toilets for residents to address the issue of inadequate sanitation in the area of Cato Crest since most people could not afford to have water connected to their dwellings in order to use the flush toilet system. In the study area three times a week, Monday, Wednesday and Friday, these chemical toilets were emptied and they required no water connection and very little water for operation (CSIR Building and Construction Technology, 2003).

When looking at access to sanitation in the case study area it was noted that even though sanitation intervention had been conducted by the municipality in the area, some respondents did not acknowledge having adequate sanitation as they still did not have flush toilets inside their homes. In addition, the respondents using the chemical toilets claimed that it was unsafe to use these sanitation facilities after sunset because they did not have light bulbs inside and some of the chemical toilets had

doors that could not close because they were damaged, therefore this was a major problem for women, young girls and disabled people.

6.7 Roles and responsibilities of officials involved in the provision of water and sanitation

When the researcher met with the eThekweni Water and Sanitation official it became clear that there were five departments which are involved in the provision of water and sanitation in general in eThekweni Municipality

❖ Water and Sanitation Design and Planning

Normally the process is that a representative from water meets with the project manager from housing. The purpose of the meeting is to establish existing water infrastructure. The demand and supply must be taken into consideration in terms of existing resources, for example: are there reservoirs capable of supplying the 'new' housing development or already existing housing development but with no water? Also is there a sufficient sewer infrastructure and treatment works and pump stations to move sewerage from the housing project in order for the community not to suffer from diseases? If necessary, an Environmental Impact Assessment (EIA) is done and if pipe laying requires the community's permission the project manager communicates with the community liaison officer.

❖ Customer Services Centre/Sizakala Centre'

The customer services centre ensures houses are metered and all necessary documentation is completed. Community Liaison Officer advises or creates awareness in terms of reporting leaks, payments, debt relief, regulations governing non-payment, damage and complaints.

❖ Finance

The finance department deals with all customers' accounts to check if they are in order with payments and ensure necessary accounting/financial compliance by the public.

❖ **Projects/Construction**

The personnel from the projects/construction department open projects and allocate funds. They also assign projects to relevant stakeholders such as project managers. Before a project can commence all processes from the supply chain management must have been followed.

❖ **Water Operations/ Wastewater Branches**

The people from water operations are directly involved in the supply of water in terms of the reservoir and they are also responsible for the treatment works and pump stations for wastewater.

6.8 Challenges experienced by the municipality in providing water and sanitation

❖ **Scarcity of Water/Drought**

There was a huge drought across the whole of South Africa at the time of the study, so that even the eThekweni Water and Sanitation departments were hit by this national drought problem. The eThekweni Water and Sanitation project manager stated that the water levels in three main dams supplying Durban were low at about 38 %. The area of Cato Crest was also affected because at times the residents only received water at specific times in the morning and in the evening because of the water shortage.

❖ **Vandalism and Security**

In Cato Crest there is a high rate of stealing steel and copper, so the municipality had to make sure that it used other materials such as plastic for water pipes to connect water to individual dwellings and for the additional stand pipes within the study area.

❖ **Illegal Connection**

The rapid population growth and constant migration to the Durban CBD and mostly to areas such as Cato Crest since it is near the Durban CBD in search

of employment opportunities and security have had a great impact on the growth of local informal settlements.

The project manager stated that because Cato Crest residents were living in an informal settlement where they did not pay for water and some residents used illegal water connections, they had not disconnected these illegal water connections. The project manager further stated that in a bid to stamp out illegal connections the municipality at times decided to cut off the water supply until the problem was solved. The illegal connections normally caused water shortages due to water wastage from leakages.

❖ **Non-payment for services**

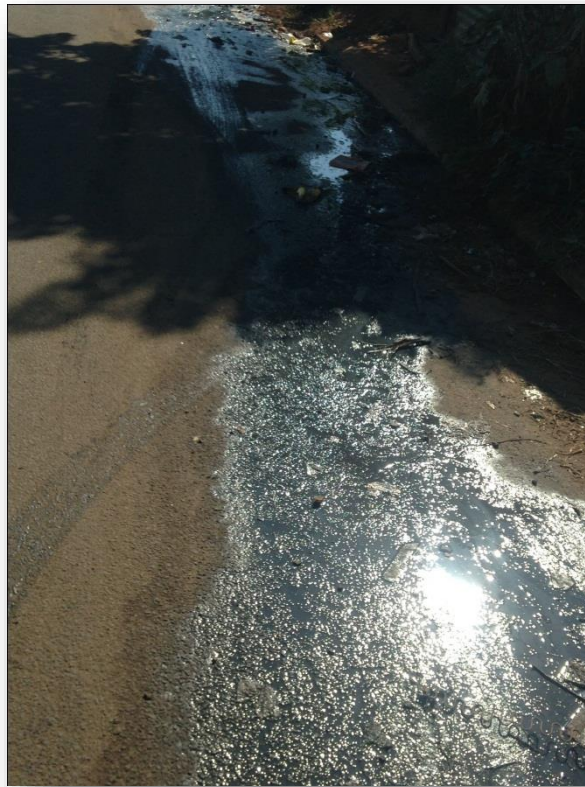
The provision of sustainable water requires funding. Financing is intended to come from cross-subsidisation through user tariffs (Mosime, 2014).

In Cato Crest the EWS which deals with water meters, made sure during the project that every household had to apply for the water meter for water to be connected to their dwellings in order to be billed monthly. The project manager said the challenge for Cato Crest residents was that as they did not pay for water before since they were using communal stand pipe it was a big problem that they would have to pay for water once it was connected to their dwellings. This was also verified with fewer application forms for water meters by the residents of Cato Crest, which had a negative impact on the income generated by municipality.

❖ **Bursts and leaks not being reported**

The project manager claimed that they had conducted a Cato Crest community meeting held in Cato Crest community hall. The purpose was the awareness on water preservation due to water scarcity. The residents were encouraged to report burst and leaking pipes to the municipality on their free toll number in order to reduce water wastage. The researcher observed that in the study area there were burst pipes and leaks because there was running water on the edges of the roads (Figure 16). Another issue was that because most of the residents of Cato Crest were getting water from communal stand pipes they were reluctant to report such problems.

Figure 16: Water on the road in Cato Crest upgraded informal settlement.



Source: Author (2016)

❖ **Cato Crest residents unhappy with the services provided**

The project manager stated that with the Cato Crest project the residents were not satisfied with the services provided because they thought every household was going to have water connected to their dwellings. When they were told that they needed to apply for a water meter in order for water to be connected to their dwellings it became a big problem for the residents of Cato Crest that even resulted in the community members embarking on a services delivery protest. When the municipality provided more communal stand pipes for the residents of Cato Crest there were still more residents who were not satisfied; the dissatisfaction was that the communal stand pipes were located far away from other residents and due to that they would have to walk a distance to collect water and come back to their residences. Again with the chemical toilets there was much dissatisfaction; many Cato Crest residents were unhappy due to the

fact that these chemical toilets were far from their dwellings and they were inaccessible at night because they did not have electricity.

❖ **Political interferences**

The project manager claimed that when the project for the provision of water and sanitation in Cato Crest had started three months previously, there was going to be a local election, so that there was huge political pressure and interference from the councillor to start the project. At the time not all sub-contracted contractors had been selected in order to start project, but because of the pressure from the ward councillor they had to take local contractors, who they had to teach what was supposed to be done throughout the project, the project manager stated.

❖ **Poor workmanship/contractors or in-house staff**

The project manager stated that with the Cato Crest project they had sub-contracted two local contractors to work hand-in-hand with the EWS unit and they hired 44 people from Cato Crest. The municipality had sub-contracted these independent contractors but they did not know what they were doing so this caused a huge delay of the project on the side of the municipality. Even with the EWS unit there was a lack of communication which then lead to the Cato Crest project being delayed and because of the delay it also increased the cost of the whole project.

6.9 Improvement strategies for municipal services water and sanitation

The community felt that there was room for improvement in terms of water supply and sanitation in the area of Cato Crest. The community of Cato Crest felt that the following should be done to improve water and sanitation.

6.9.1 The revival of ward committee

The community felt that the existence of ward committees should be revived in the area of Cato Crest. The ward committee's role would be to open communication channels to enable the residents to report their challenges, as well as successes. The

community had a firm belief that their water and sanitation needs could be negotiated in a good spirit once there were indications of transparency from the municipality and regular community meetings.

6.9.2 Water committee as monitoring mechanism

The water committee should be made up of residents staying in the same street or those close to certain points of communal stand taps. The great advantage of such committees at street level would ensure that vandalism of communal taps and leaking pipes would be attended to as soon as they were noticed. The committee would have to come up with management strategies to look after their water sources. One of the strategies would be to lock the communal taps to prevent wasteful use of water and damage to the taps.

6.10 Research findings relating to literature

The findings of the study based on participants' perspectives have revealed that in Cato Crest, lack of basic services had been improved by the provision of services such as water and sanitation to poor participants who previously had not had access to safe drinking water. This has proved Rondinelli's argument in the decentralization theory that more efficiency in delivery of basic services such as water and sanitation is achieved when provided under conditions of free choice and involvement of local institutions than when central government is the sole provider (Rondinelli *et al.* 1989 cited in Bonga 2007). The community of Cato Crest had been living in poor conditions for many years. Lack of adequate clean water and sanitation was a condition that was a product of and contributed to their poor living conditions. Based on the above findings the high levels of satisfaction with the quality of water provided for households in the Cato Crest area was encouraged by the water provision initiatives undertaken by eThekweni Water and Sanitation to provide water to all people.

The basic needs approach strategy aims at providing minimum levels of satisfaction of the needs of the poorest members of a society. These needs defined in terms of an individual's consumption of food, shelter and clothing and in terms of access to basic services, including safe drinking water, sanitation, health care, education and cultural

opportunities. The research findings proved that basic needs such as water and sanitation had been provided to minimum levels in the Cato Crest area for the benefit of poor people after their dwellings were upgraded. The basic needs approach also focuses on meeting basic needs of the poor in the shortest possible time. The research findings have shown that even before the upgrading of the settlement, there were minimum communal stand pipes provided by the EWS even though there were not enough and to some community members were located too far away. The provision of basic services such as water and sanitation has assisted Cato Crest residents to live in a healthy environment, conducive to well-being with minimal diseases and other threats.

The human rights-based approach is based on international human rights standards and operationally directed at promoting and protecting human rights. The principle target of the human rights-based approach is to satisfy human rights. The findings of the study based on the participants' perspective revealed that in the Cato Crest settlement the majority of poor people in this area did receive safe drinking water as their constitutional right, thus proving the human rights-based approach. Also with sanitation, some members of the community had flush toilets in their dwellings and others used the chemical toilets provided by the EWS to address the issue of proper sanitation. Some community members were not satisfied with the chemical toilets, especially women and children, since they were considered unsafe particularly at night. The findings from the study have also shown that the eThekweni Water and Sanitation as the provider of basic services such as water and sanitation, have exercised their constitutional obligation of providing water and sanitation to settlements which were previously not serviced with basic services such as water and sanitation. These findings also affirm the hypothesis in that the municipality of eThekweni understands its duty to provide basic services like water and sanitation to the urban poor even beyond the upgrading of their informal settlements.

6.11 Conclusion

Chapter six has presented the findings and analyses of the data collected from the study area of Cato Crest, which was collected through interviews and questionnaires with the project manager, ward councilor and Cato Crest residents.

The findings in this research revealed that the majority of residents of Cato Crest did receive safe drinking water before upgrading was provided. 90 % of the respondents agreed that they received water while only 10 % indicated they had no access to safe drinking water before the upgrading. After the service provision the study found that there was high level of access to water as residents indicated the water provided was of good quality in terms of clean and safe for consumption.

However, there was also dissatisfaction as some Cato Crest residents preferred to be connected with individual meters and also the residents with water connected to their dwellings were frustrated by the fact that when they reported to the EWS about leaks and burst pipes the EWS took time to resolve the issues which then caused them to pay high water bills. With regards to access to sanitation it was found there were moderate levels of access even after the services were provided due to affordability. 46 % reported to be using chemical toilets, 37 % reported to be using the flush water system and there was 17 % who reported to be still using pit latrines. The study also revealed that employment seemed to be a challenge as a large proportion (70%) of people were unemployed. This reveals that lack of jobs and poverty were among difficulties faced by the residents of Cato Crest.

The project manager also mentioned the challenges that the municipality faced when providing water and sanitation. The residents took it upon themselves to devise improvement strategies for water and sanitation. Lastly research findings were discussed in relation to theory and approaches that were used in chapter two. The next chapter will focus on the summary, findings and recommendations arising from the study.

Chapter Seven: Summary of findings, Conclusion and Recommendations

7.1 Introduction

The findings, summary and recommendations relating to the aims and objectives of the study are presented in this chapter. The main purpose of the study was to assess the provision of water and sanitation after the *in-situ* upgrading of informal settlements. The focus of this chapter is to give an overview of how the aim and objectives of this study have been realized. It will further give a conclusion of the entire study and offer recommendations.

7.2 Summary of the main findings

The conceptualization of this study was formed from its hypothesis that the provision and the use of water and sanitation during the upgrading of informal settlements continued even beyond the upgrading of informal settlement. The information collected from the respondents was analysed with themes emerging from the data.

It was revealed that 63 % of the respondents were female, and 37 % of the respondents were male. In the Cato Crest area, the women were responsible for water collection for their households. The study also revealed the employment status of Cato Crest where 70 % indicated being unemployed and 30 % employed.

With regards to access to basic services before *in-situ* upgrading, the study found that households in Cato Crest obtained water from various sources such as communal stand pipes, the local river and illegal water connections. The findings revealed that 84 % of the respondents used communal stand pipes, 3 % indicated using the river and the remaining 19 % admitted they used illegal connections.

The study found that most people in Cato Crest used communal stand pipes and even though there were few communal stand pipes before service provision it can be argued that communal stand pipes brought a level of change in the study area. With regards to sanitation, the study revealed that pit latrines, the bush and other means such as small open spaces were used as sanitation. Findings revealed that 27 % used

homemade pit latrines, 7 % used the bush and 3 % used other means such small open spaces.

On the question of access to basic services after the *in-situ* upgrade, the study revealed that 37 % of the respondents had piped water into their dwellings while 63 % used the communal taps/stand pipes. The 37 % of respondents were found to have some level of employment which could be the reason they had water connected to their dwellings because they could afford the water bill. With the 63 % who used communal taps, frustration was reflected by some that they still travelled to collect water. Some women still carried buckets on their heads. The issues of queueing at the communal water tap areas during peak hours was still a challenge.

The findings on sanitation revealed dissatisfaction by respondents. 37 % of the participants indicated that they used the piped water system, while 46 % used chemical toilets which were provided by the municipality, though they raised concerns that the chemical toilets were not safe especially for women at night because some of the doors could not close and there was no light once the sun had set, this raised the issue of safety especially to women and girls. 17 % of participants indicated that they were still using pit latrines which were next to their upgraded houses, because they could not afford to pay for water and they preferred to use the pit latrine next to their houses for safety reasons.

Concerning the issue of satisfaction with services provided. the study revealed that with regards to water provision, 80 % of the respondents using their own yard taps indicated dissatisfaction with the EWS with regards to responding quickly enough to infrastructure problems, including reconnecting water when supply had been disconnected mainly due to non-payment of water bills. There was also dissatisfaction with the municipality for not fixing burst pipes on time which then created a problem for residents having to pay high water bills.

On the other hand, some of the respondents who used communal stand pipes claimed that the communal stand pipes were far from their dwellings. The study also found that most people in Cato Crest joined queues and had to wait when collecting water from the communal stand pipes. The respondents using the communal stand pipes also revealed that it took them some time to get water and return to their houses, which was a problem as some Cato Crest residents were old and could not carry water by

themselves and walk the distance of 150 meters. It could be argued that water facilities were not sufficient to cater for all the residents of Cato Crest as these water sources were far from most of the households.

On the point of roles and responsibilities of the official involved in the provision of water and sanitation. When the researcher met with the eThekweni Water and Sanitation official it became clear that there were five departments which were involved in the water and sanitation in general in the eThekweni Municipality, as follows: water and sanitation design and planning; customer services centre/Sizakala centre; finance department; project/construction and water operations/wastewater branches.

Regarding the issue of challenges experienced by the municipality in providing water and sanitation, the project manager mentioned the following: Scarcity of water/drought; vandalism and security; illegal connections; non-payment for services; bursts and leaks not being reported; Cato Crest residents unhappy with the services provided; political interferences and poor workmanship/contractors or in house staff.

The residents needed a functional ward committee, comprising residents irrespective of their political affiliation. They believed in community leadership that would listen to them, have proper discussions with them and report on any challenges or achievements made, without hiding anything. They believed that some of their problems with water supply and sanitation could have long been resolved had there been a functional ward committee in Cato Crest.

7.3 Conclusion

The study has critically assessed the provision of water and sanitation after *in-situ* upgrading of informal settlements, using a case study of Cato Crest. This study revealed interesting findings that contribute to the existing body of knowledge in this research area. The study is topical and relevant to the present circumstances the country of South Africa finds itself in. Service delivery is at the heart of the political discourse of the country.

The pace of delivery is still perceived to be slow compared to the growing needs of the population. At the same time the government as the principal agent of providing these

basic services to South African citizens continually faces the challenge of balancing its constitutional mandate of providing all citizen with basic services and the demand for improved services with a limited ability to pay for them among the poor. It is critically important for the government to continue investing in delivering basic services to all South African citizens. The findings of this study provide some insights that can be explored through further research.

The study can therefore conclude that the eThekweni municipality has to a certain extent lived up to its mandate of providing basic services to the urban poor so that their lives are changed for the better. Of course the study found that there is more that still needs to be done to improve the housing conditions in informal settlements, which can only be achieved by ensuring that the eThekweni Municipality secures the support and cooperation from all relevant stakeholders who are responsible for delivering services to the people of the eThekweni Metropolitan area.

7.4 Recommendations

According to the findings of this study, the following recommendations have been identified to address the challenges of lack of basic services in *in-situ* upgraded informal settlements.

The study found that access to safe drinking water and sanitation is fundamental to the enjoyment of other rights such as the right to education, health, safety and an environment that is not harmful to human health or wellbeing. A lack of access to water and sanitation not only impedes access to other rights but heightens the vulnerability of certain groups of people such as women and people with disabilities (SAHRC, 2012).

7.4.1 Education on health and water management

The study recommends that there must be education covering aspects of health and water management. The municipality in partnership with the departments of health and education should promote health and water management to the community at large especially to school children. The issue of water management should be aimed at sensitising the community about using water sparingly and repairing or reporting

leakages (Musa, 2014). The other most important point regarding water is that civil society needs to be educated about the fact that South Africa is a water scarce country therefore everybody needs to use water efficiently. The benefit of educating communities about water management is that people will take the responsibility on how they use water and endeavour to avoid water wastage.

The study also found that there was a lack of knowledge and lack of awareness by communities with regards to their rights. This hampers service delivery as communities do not know how or who to approach when they face challenges regarding service delivery in their communities (Mdlongwa, 2014).

7.4.2 Communication and information distribution

The study recommends that improved communication and information distribution strategies should be implemented. Information is power, it enables people to make quality decisions about services or products. This is critically important even in providing basic services to consumers. The municipality should strengthen existing forms of information dissemination such as local newspapers (Mdlongwa, 2014). According to the majority of respondents, the most preferred methods are ward committee meetings and councillor public meeting. Regular meetings with the community should be renewed where they are non-existent or underutilised. This kind of communication will encourage public participation in key municipal processes like public consultations for IDPs which will result in big benefit to all communities.

7.4.3 Restoration of ward committees

Lastly the study found that there was a lack of ward committees. Therefore, the study recommends that the existence of ward committees should be enforced in upgraded informal settlements. In terms of section 59 of the Municipal System Act, the ward committee has duties and powers delegated to it by the municipality. It is the duty of the ward committee to create communication channels, as well as co-operative partnerships, between the community and the council (Musa, 2014). A functional and effective ward committee should ensure that the following take place: advise and make recommendations to the ward councillor on policy matters that affect the ward; assist

the ward councillor in identifying conditions, challenges and needs of residents; spread information, in the ward, concerning municipal affairs such as budget and service delivery options; and receive queries and complaints from residents concerning service delivery, communicate these to the relevant structure and provide feedback to the community on responses received (Musa, 2014).

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Appendix One

Interview questions and survey questions for the provision of basic services water and sanitation in *in-situ* upgraded informal settlement.

Interview questions for the Project Manager

1. What is your role in eThekweni Municipality (EThekweni Water and Sanitation)?
2. How does the provision of water and sanitation improve the lives of informal settlement residents during and after the upgrade?
3. In your opinion, do beneficiaries continue to use water and sanitation even beyond in-situ upgrading programme?
4. How can municipal services like water and sanitation be sustained after upgrading of informal settlements?
5. How is the situation on access to basic services in informal settlements?
6. What were challenges experienced by municipality in implementing the in-situ upgrading with regards to the provision of water and sanitation?
7. Were the beneficiaries informed of liabilities for utilizing the services water and sanitation and how were they informed?
8. Is in-situ upgrading programme, an appropriate response of dealing with the lack of basic services such as water and sanitation in informal settlements?

Interview questions for the Ward Councillor

1. What is your role as a Ward Councillor of Cato Crest?
2. When did you become a Ward Councillor for this area?
3. In your opinion, do beneficiaries continue to use water and sanitation even beyond in-situ upgrading programme?
4. Do you think the lives of informal settlements residents have improved after the in-situ upgrade with provision of water and sanitation? If yes how?
5. What are the crucial issues that the provision of water and sanitation in in-situ upgrading project intends to address?
6. What were the key problems encountered during the in-situ upgrading programme with regards to the provision of water and sanitation?

7. Is in-situ upgrading programme, an appropriate response of dealing with the lack of basic services such as water and sanitation in informal settlements?
8. What has the councillor done to improve the accessibility of basic services like water and sanitation to the residents

Interview questions for beneficiaries

1. Do you still use the municipal services water and sanitation since the project has been long completed?
2. Do you pay for water?
3. Does eThekweni municipality continue providing you with water?
4. Has your health been improved after the upgrade? In what way? explain
5. Do you feel that the Water Officials and Ward Councillor are doing enough in dealing with problems of basic services such as water and sanitation?

Questionnaire for the beneficiaries

Please tick (x) the appropriate and elaborate where necessary

A) Socio-Economic Profile

1. Gender of participants

Male	
Female	

2. Are you employed?

Yes	
No	

B) Access to municipal services

3. Before the housing upgrade, where did you collect water

A. Piped water into dwelling/own taps	
B. Communal stand pipe	
C. River	
D. Illegal connection	

4. After the completion of housing project, did you have:

A. Access to "improved water"	
B. Access to "improved sanitation"	
C. Access to sewer connection	

5. Level of Water supply

A. Piped water into dwelling	
B. Public tap/stand pipe	
C. Rainwater collection	

6. Type of sanitation used

A. Piped water system	
B. Chemical toilet	
C. Pit latrine	
D. Going to the bush	

7. What services utilities are accessible to your house?

A. Roads	
B. Water	
C. Public transport	
D. Electricity	
E. Other	

C) Municipal services satisfaction

8. Quality of water supplied

Good	
Poor	

9. Are you happy with the services provided?

Yes		No	
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If not specify the reasons?

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

10. Do you feel that this area needs further basic services improvements?

Yes		No	
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If so, what is you prioritized list?

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