



**THE IMPACT OF PERI-URBAN DENSIFICATION ON
BASIC SOCIAL SERVICE DELIVERY IN
ENTSHONGWENI AREA IN ETHEKWINI
MUNICIPALITY**

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ABSTRACT

Since the fall of apartheid peri-urban areas have been rapidly densifying due to a number of factors, including the revocation of laws that restricted the movement and settlement of black people in urban areas, limited space in the core areas and high land prices in urban areas. These factors have resulted in poor people moving into peri-urban spaces in order to access opportunities in urban core areas. Peri-urban areas in most municipalities tend to be poorly provided with basic social services as they place emphasis on areas that are within their development plans. The rapid growth of peri-urban areas without any defined pattern makes it difficult for local governments and municipalities to provide services. The lack of institutional integration and general planning by municipal officials and other stakeholders has resulted in peri-urban areas being unliveable. The aim of the study was to investigate the impact of peri-urban densification on basic social service delivery in eNtshongweni area, eThekweni municipality. The study was guided by the following objectives, to determine the nature of densification in eNtshongweni and how services are provided in peri-urban areas. Furthermore to determine the nature of services available in eNtshongweni area, outline and discuss planning implications of peri-urban development along with the role of the urban development line as a planning tool and the social impacts of densification. The main research question to be addressed by the study was to find out the impact of rapid peri-urban growth on service delivery on local municipalities. Qualitative and quantitative research methods were adopted for this study. Urbanization theory and the bid rent curve theory were the theoretical bases for this study. Urbanization has contributed to rural and peri-urban spaces adopting the urban form and has led to expectations that urban services will be extended to nearby peri-urban areas. Uncontrollable population growth in urban areas has also resulted in the saturation of core areas, increasing demand for land for development outside the urban areas. The bid rent theory argues that as one moves away from the urban core, land prices start to drop until one reaches another urban or suburban area. This is one explanation for poor people occupying land in peri-urban areas. The main findings indicate that rapid peri-urban densification has impacted service delivery in eNtshongweni. For example, the municipality has found it difficult to meet the service demands of residents due to rapid growth, the socio-economic status of the community and the fact that the area falls outside the urban development line. However densification has also created some opportunities for service delivery as increased demand has created the

threshold required for the provision of social and structural services. The provision of basic structural and social services in eNtshongweni has proved slow and challenging. The main reason is that the low economic status of people living in the area has made it difficult for community members to contribute to the provision and maintenance of the services provided by eThekweni municipality. Another factor is inadequacies in the strategic planning policies adopted by the municipality in catering for peri-urban areas. For example, areas falling outside the adopted urban development line such as eNtshongweni are not provided with the same level of services as urban areas. The rationale is that it is not cost effective to provide the same level of services throughout the municipality. This has led to slow and poor service provision in peri-urban areas such as eNtshongweni. It has been argued that the urban development line should be extended to include areas like eNtshongweni to ensure more consistent service delivery. It is also recommended that the municipality services peri-urban areas such as eNtshongweni according to the specific needs and demands of the community and aligns these with the economic status of the community to ensure sustainability and effectiveness.

COLLEGE OF HUMANITIES

DECLARATION - PLAGIARISM

I, Nhlanhlayakhe Peter Nkwanyana declare that

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Signed

.....

Supervisor: Dr Lovemore Chipungu

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LIST OF ABBREVIATIONS

DFA	Development Facilitation Act
GEAR	Growth, Employment and Redistribution
GIS	Geographic Information Systems
GWCL	Ghana Water Company Limited
GWSD	Ghana Water and Sanitation Department
IDP	Integrated Development Plan
LUMS	Land use Management System
LEFTEA	Less Formal Township Establishment Act
LAP	Local Area Plans
NEMA	National Environmental Management Act
PDA	Planning and Development Act
RDP	Reconstruction and Development Programme
SDF	Spatial Development Framework
SDP	Spatial Development Plan
STATS SA	Statistics South Africa
UD	Urine Diversion
UDB	Urban Development Boundary
UDL	Urban Development Line
UN	United Nations
UNDP	United Nations Development Programme
U.S EPA	United States Environmental Protection Agency
VIP	Ventilated Improved Pit
VTPI	Victoria Transport Policy Institute
WCED	World Commission on Environment and Development
WCPSDF	Western Cape Provincial Spatial Development Framework

CHAPTER ONE: INTRODUCTION TO THE STUDY

1.1. Introduction

This study investigated the impact of rapid peri-urban densification on basic social service delivery in eNtshongweni area, eThekweni municipality. Peri-urban densification has increased the demand for basic services on the outskirts of urban areas, creating challenges for both residents and local government. Peri-urban areas are often characterised by poor spatial planning and poor social integration. The challenges confronting residents include a lack of and/or poor basic service provision and poor living conditions. Furthermore, poor living conditions have adverse effects on the environment. Uncontrolled population growth in peri-urban spaces can put a strain on environmental resources due to a number of factors such as clearing ecologically valuable vegetation for housing and over-population. However, peri-urban densification also offers relief in already heavily populated urban spaces. Local municipalities often find it difficult to provide basic services such as clean water and sanitation to these areas as they tend to grow rapidly without any particular pattern.

1.2. Background

Peri-urban spaces are becoming more important due to numerous factors such as the need for easy access to urban spaces where most job opportunities are available to low income people. In the case of South Africa, apartheid planning systems created spatial discrimination by locating the majority of black people away from economically productive land and placing them in townships on the urban outskirts. Barry (2002) notes, that, black people were placed in areas far from the urban core as a strategy to keep them poor. The apartheid legacy has significant economic and social ramifications for black people that are trapped in a cycle of poverty because of the past. It is for this reason that the prospect of economic opportunities in the urban core areas has drawn previously deprived people to peri-urban spaces. The demise of apartheid in 1994 encouraged free movement of black people into economically productive urban areas and resulted in the rapid development of peri-urban settlements.

Another reason for the growth of peri-urban areas is people's desire to move from poorly serviced rural areas to obtain better services in urban areas. However, most urban spaces are already overcrowded and competition for space is extremely high (Kombe, 2005). Land in close proximity to urban centres is very expensive due to the high quality services provided by municipalities, as these areas take priority when it comes to implementing development plans

and spatial planning. Low income groups invade land on urban edges in order to be located within reasonable distance of urban centres and take advantage of some of the services provided in these areas. Land values on the urban edges are generally low due to the fact that these areas are poorly serviced by municipalities because of conflicting land rights and other factors (Kombe, 2005). Moving into the urban edge makes it cheaper to commute to the urban core for employment, better education and other everyday services.

Peri-urban areas can play a crucial role in reducing uncontrollable population numbers within urban areas. For example, properly serviced peri-urban areas can draw people from core areas into smaller nodes and thus relieve pressure on the urban core. Chirisa (2010:15) argues that, *“adequate supply and delivery of urban basic services in peri-urban areas can mitigate and alleviate many of the problems of the city and the city dwellers which have to, in the long run absorb the population of these areas”*. Therefore, municipalities can use peri-urban areas to help bridge the gap between rural and urban areas by bringing services closer to nearby rural areas.

1.3. Problem Statement

Peri-urban areas tend to receive poor services because most municipalities focus on improving the spaces covered by their development plans. The rapid growth of peri-urban areas without any defined pattern makes it difficult for local governments and municipalities to provide services. The lack of institutional integration and general planning by municipal officials and other stakeholders has resulted in peri-urban areas being unliveable (Chirisa, 2010; Torres, 2008; Kombe, 2005; Allen, 2003).

Scholars agree that peri-urban areas in developing countries are mainly the result of overpopulation due to rapid urbanization and that these peri-urban zones are perceived as zones of social and environmental hazards (Chirisa, 2010; Torres, 2008; Kombe, 2005; Allen, 2003). Dar es Salaam in Tanzania is a case in point. Its population increased by 4.2 % per annum between 1988 and 2002 and it was estimated that these figures would double by 2015 (Kombe, 2005). Such rapid increase in the urban population contributes to the growth of peri-urban informal settlements.

Kombe (2005) points out that, while in many cases local municipalities and central government formulate plans for peri-urban development, these fail to materialize due to financial

constraints and inadequate resources. The same constraints hamper the provision of basic structural services in these areas (Kombe, 2005).

Furthermore, the growth of peri-urban areas threatens the natural environment. Such areas generally have sensitive ecosystems that act as lungs for busy, polluting urban areas. For example, Allen (2003) explains that the carrying capacity of peri-urban areas is often exceeded which leads to soil degradation, making these areas vulnerable to floods and rendering them unproductive.

Torres (2008) argues that peri-urban areas in developing countries are not only typically badly regulated but also present appalling sanitation and significant environmental problems, including deforestation and pollution of river streams. The pollution of rivers is a major problem because water provision is often poor and residents rely on rivers and streams for water for drinking and cooking. Starkl, Nanninga, Bisschops, López, Martínez-Ruiz, Murillo and Essl (2013) note that water management in peri-urban areas is an issue of serious concern as centralized metropolitan systems only serve the urban core. Peri-urban areas are generally poorly supplied with water connections and sanitation services. They are neglected by development plans because most metropolitan municipalities tend not to plan for development beyond the urban edges.

EThekweni municipality (Durban) is no exception and peri-urban areas like eNtshongweni lack basic services. Environmental hazards in the form of deforestation, poor sanitation and pollution of water bodies are typical characteristics of peri-urban areas in most developing countries (Starkl *et al.*, 2013). ENtshongweni has much in common with peri-urban areas in developing countries like Mexico, Tanzania and so on. This study thus investigated the social impacts of poor basic social service delivery in eNtshongweni and some of the issues that result in poor service delivery in this area.

The growth of peri-urban areas in South Africa has been greatly influenced by the country's history of racial segregation. The majority of black people were relegated to the outskirts of urban areas with poor service delivery. The demise of the apartheid regime in 1994 saw the removal of these spatial restrictions.

However, more than 20 years into democracy, peri-urban areas in South Africa remain poorly serviced and are characterized by poverty, poor infrastructure, environmental degradation and poor planning (Sim, Sutherland and Scott, 2014). EThekweni municipality has adopted policies

and strategies to improve life in the urban areas. For example, it has adopted the concept of the urban edge to spatially map the extent to which services will be provided by the city (Sim *et al.*, 2014). This compounds problems for peri-urban areas because most fall outside the urban edge.

The use of the urban edge has created confusion because it is difficult to determine how far it extends, as in some cases it has shifted due to development. EThekwini municipality then came up with the Urban Development Line (UDL), which was initially developed by the water and sanitation unit (Sim *et al.*, 2014). The purpose of the UDL is to protect the natural environment from encroaching developments (Sim *et al.*, 2014).

1.4. Aim

The aim of this study was to investigate the impact of peri-urban densification on basic social service provision in eNtshongweni area, eThekwini municipality.

1.5. Objectives

In order to achieve this aim, this research was guided by the following objectives:

- Determine the nature of peri-urban densification in eNtshongweni area
- Determine how services are provided in peri-urban areas
- Assess the nature of services available in eNtshongweni area
- Outline and discuss the planning implications of peri-urban development
- Determine the role of the UDL as a planning tool
- Analyse the social impacts of peri-urban densification

1.6. Research Questions

1.6.1. Main Research question

What is the impact of peri-urban growth on service provision in local municipalities?

1.6.2. Sub-questions

1. What is the impact of peri-urban densification on service provision?
2. What environmental challenges result from rapid peri-urban development?
3. What is the UDL and what role has it played in determining service provision on the outskirts of urban areas?
4. Has the UDL been an effective planning tool?
5. What are the implications of uncontrolled peri-urban development for planning?

1.7. Dissertation Structure

Chapter one presents an introduction to the study, the problem statement and the aim of the study. It provides a broad explanation of the nature of peri-urban areas in developing countries and links this to the context of this study. The problem statement offers a clear outline of the research problem that was investigated. The aim and objectives and the research questions that guided the study are also outlined.

Chapter two discusses the research methods employed to conduct the study. Both qualitative and quantitative research methods were employed. A brief introduction to the case study of eNtshongweni is also provided. The primary data was collected by means of surveys and key stakeholder interviews. These provided the basis for the data analysis presented in chapter five. This chapter also highlights the study's limitations.

Chapter three presents the conceptual and theoretical framework which underpins peri-urban growth. Concepts (peri-urban, urban sprawl, urban edge, etc.) and the urbanization theory as well as the bid rent theory are linked to the issue under study and explain past and current trends in peri-urban areas. The literature review focuses on service provision in peri-urban areas and land uses as well as the impacts of peri-urban densification. The final section discusses precedent studies on peri-urban densification and service delivery in India, Kenya and Ghana.

Chapter four focuses on South Africa with examples of peri-urban areas in eThekweni. It seeks to explain trends in peri-urban densification and social service provision in the South African context. Pre-apartheid, apartheid and post-apartheid policies that encouraged and discouraged spatial discrimination on the basis of race are discussed.

Chapter five presents and discusses the study's findings based on the analysis of the data gathered for this study and on secondary data from eThekweni municipality relevant to the area under study.

Chapter six provides recommendations and a conclusion based on the study's findings.

1.8. Summary

This chapter introduced the research study and highlighted the social impact of poor service delivery due to rapid peri-urban densification in eNtshongweni. The background provided insight into the general nature of peri-urban areas and the reasons why the poor invade and

settle in these areas. The reasons include land prices and the fact that racial discrimination in the past has resulted in the rapid growth of these areas in recent years. The main aim of this study was to investigate the impact of rapid peri-urban densification on social service delivery in eNtshongweni. The study's objectives were highlighted and the chapter ended with an outline of the structure of the dissertation.

CHAPTER TWO: METHODOLOGY

2.1. Introduction

ENtshongweni was chosen as the area under study to investigate the dynamics of rapid peri-urban densification within the context of this study and its objectives. The study area is located some 30 kilometers west of Durban and it is outside the urban development line. It was selected because it easily accessible to the researcher compared to other peri-urban areas in eThekweni and both the traditional and formal authority are functional. This provided an interesting opportunity for dissecting the gap played by each authority in provision of social services and the role played in controlling rapid densification in area.

Methodology provides the basis for meeting the overall objectives of the study, as it has been outlined. The main objective of this study is to investigate the impacts of peri-urban densification basic service provision in eNtshongweni area in eThekweni.

2.2. Study Area

ENtshongweni is located in the outer west region of eThekweni and it falls just outside of the urban development line. It further located close to Mpumalanga Township on the west and close to hillcrest on the east.

2.3. Research Design

Burns and Grove (2003:195) state that research design is “*a blueprint for conducting a study with maximum control over factors that may interfere with the validity of the findings*”. Furthermore research design has been described as a strategy that describes how, where and when data will be collected and analyzed (Parahoo, 1997:142)

The research design for this study is mainly descriptive or explanatory. The reason for using a descriptive design is so help answer questions on what peri-urban areas are, why is eNtshongweni area densifying and what implications for the community in the area come about because of this. Descriptive research design also seeks to explain what the urban development line is and its implications on spatial planning in eThekweni, especially for areas such Ntshongweni that fall outside of it. In order to meet the overall objectives of this study and to answer the general research questions one had to employ a descriptive research strategy.

2.4. Research Methodology: Qualitative and Quantitative

Qualitative and quantitative research methods were employed as a tool to gather data for this study. The reason for using qualitative was so that the researcher could explain the way people in eNtshongweni make sense of their space as well as their experiences. Qualitative research has been described differently by various scholars, for example, Merriam (2009:13) described it as a method whereby a researcher is “*interested in understanding the meaning people have constructed, that is, how people make sense of their world and the experiences they have in the world*”. Parkinson and Drislane (2011) further explains it as a method where a researcher, researches using methods such as participant observation or case studies which result in a narrative or descriptive account of a setting or practice.

Burns and Grove (2003:19) describe a qualitative approach as “*a systematic subjective approach used to describe life experiences and situations to give them meaning*”. The researcher in this study intended to mainly explain the social impacts of peri-urban densification in the selected case study (Ntshongweni area). On a broader scale the researcher also discusses the concept of the urban development line and how it has shaped spatial planning in eThekwini municipality.

Quantitative research was used mainly for the close-ended survey questions that the researcher had designed. The reason for using quantitative research method is that it is clearer and it can be easily tested for validity (Kumar, 2011). By quantifying the research results one limits the involvement of researcher’s emotions on the subject under research. It was used to give a clear indication of the situation taking place in eNtshongweni based on the level of satisfaction for the provision of basic services.

2.5. Sampling and sampling methods

Sampling involves taking a representative selection of a population and using the data collected as research information (Maxwell, 2005). The purpose of sampling in qualitative and quantitative research is to get an in-depth understanding of the factors being studied (Kumar, 2011).

The total number of households in eNtshongweni is about 2000 according to eThekwini municipality GIS data. A two-staged sampling approach was used in this study. The first stage involved selecting 10% of the households in the area which came to 200 households. The second stage involved clustering of households into groups which corresponds to the study

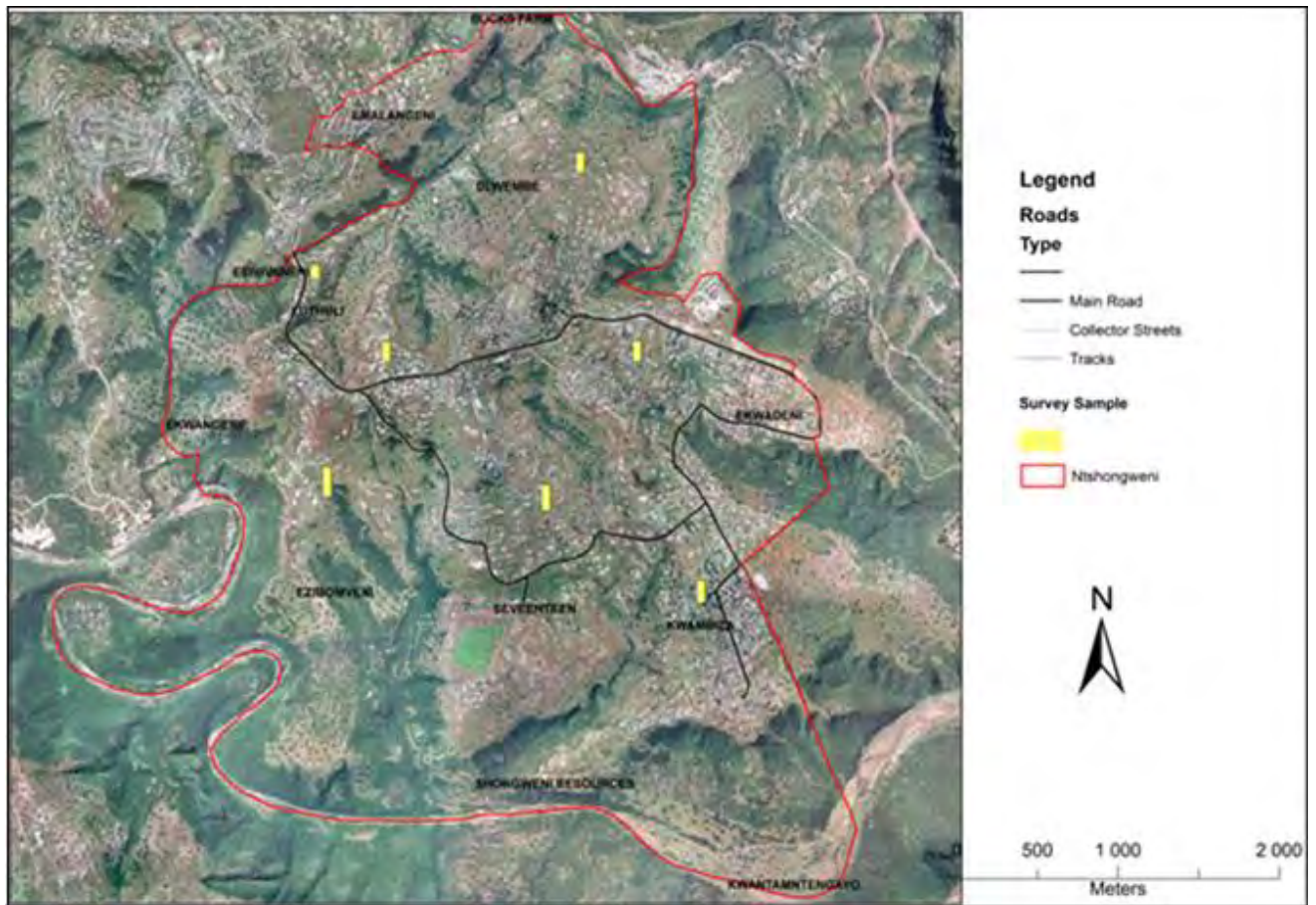
spatially as far as service delivery in the peri-urban area is concerned. This brought the sample size to 50 households.

Random sampling

Random sampling was used to select households that were targeted for participating in the survey. The study area was divided into seven clusters or sections shown in Figure 2.2 (on page 10). The clusters or sections were selected on the basis of population density and their spatial location from the main road. In each of the different Ntshongweni sections or clusters the sample was chosen based on household distance from the main road. This created a road bias as noted in Chambers (1983) but to counteract this bias other factors such as density and accessibility were incorporated in the selection of households.

The densely populated areas within a distance of three hundred meters were used as the first category for the first sample. The second sample was chosen based on a distance of three hundred to six hundred meters from the main road. The last sample was selected based on the distance of more than six hundred meters onwards. Every fifth household from the first house selected was picked for the survey. However if the fifth house was not willing to partake in the survey for any reason, then the next available house was picked. This was to ensure that the survey covers a large area. Geographic Information Systems data from the eThekweni municipality was used to inform the selection of the desired sample.

Figure 2.1: Survey Sample



Source: Researcher (2015)

Purposive sampling

The key consideration in purposive sampling is the researchers' judgment as to who can provide the best information to achieve the objectives of the study (Kumar, 2011). In order to get valuable information on provision of basic services in peri-urban areas, municipal officials that are responsible or in charge of directing services were purposefully selected to take part in this study. Only specific people that were likely to possess useful information for this study formed part of the sample. Only two traditional leaders and a councilor that are responsible for this area and three municipal officials were interviewed.

Secondary data

Secondary data in the form of literature was consulted in order to understand the key principles of peri-urban spaces and also some of the general resulting factors. House-hold survey that was recently done by the municipality was used to study the socio-economic profiles of the population being studied. These were available from the eThekweni municipal offices and they

gave a better understanding of socio-economic changes over the past five years. This information was linked with spatial changes observed from GIS maps and images. Newspaper articles, journals and similar studies obtained from the municipality were used to explore the general trends and impacts of densification. Similar trends observed were discussed as means to enhance reliability of this study.

2.6. Primary Data

ENtshongweni area in eThekweni municipality was used as a case study to explore the social impacts of peri-urban densification. The case study selected is conveniently located close to rural areas (Zwelibomvu community), township (Mpumalanga) and urban areas (Hillcrest). It was possible to observe some of the impacts of rapid densification in the area under study and also the role that the urban development line has played in limiting service provision close to areas near the urban core.

2.6.1. Observations

Observation is another tool for collecting data which can assist a researcher to answer questions on a specific research question (Merriam, 2009). Observations give researchers the opportunity to document behaviour as it occurs in a certain setting, thus, making observations a first-hand source of information in comparison to interviews (Merriam, 2009). During observations the researcher took notes of behaviour, photos and setting of the area under study. For the purpose of this study, GIS aerial photos were also used to pick up and describe some of the changes in spatial character of the Ntshongweni area over the past ten years.

2.6.2. Interviews

Interviews are conversations that are used to collect or gather information that cannot be observed, for example, this information might include participant's feelings, interpretation of certain events and description of particular occurrences (Merriam, 2009). Kumar (2012:138) describes interviews as an "*approach to study perceptions, experiences and accounts of an event or gathering historical knowledge as viewed by individuals*".

2.6.3. Structured survey interviews

Target: Community Members

Structured survey questionnaires were used as the base for gathering primary data from community members. These structured questionnaires were used to gather specific information of some of the key issues that were identified as crucial for the study. Structured survey also ensured that participants did not deviate from the information required by the researcher. The

reason for using survey questionnaires was that they are quicker and easier to analyse. Survey questionnaires captured information on the accessibility and effectiveness of services provided to community. It also intended to identify services that are most essential from the community members' perspective. Information on the effectiveness of community leaders was also captured in the surveys.

2.6.4. *Semi-structured interviews*

Community leaders and Municipal officials

Semi-structured interviews were conducted with the purpose of identifying issues that were relevant for this research. Semi-structured interview guides narrowed the discussion topics to only relevant and specific issues. Issues tackled included the role played by the urban development line, the possible environmental impacts and social impacts in eNtshongweni area. Merriam (2009) states that in semi-structured interviews the researcher starts off by asking participants questions regarding topics that have been predetermined prior to the interview to explore relevant topics.

2.7. Research participants

The list of key informants that participated in the research is provided below. These informants are the source of valuable information that guided and informed the research.

Table 2.1: Key informants

Key informant	Organization	Type of information collected
Community members	ENtshongweni	Effectiveness and essential services
Chiefs (<i>Izinduna</i>)	Tribal Authority	Role played in provision of services and spatial allocations
Councillor	EThekwini Municipality	Community participation in development initiatives, role played in provision services and processes in delivering of services in the area.
Planners (One municipal official from various departments)	EThekwini Municipality (Water and sanitation, Economic and social development and Engineering Department)	Development trends and Policies e.g. the use UDL to guide spatial planning. Other strategic information.

Source: Researcher (2015)

One of the reasons for the selected people and departments was that all these officials have played a significant role in driving policy in the eThekweni. They provided a valuable input for this research and also assisted in understanding the topic at hand better. Community members gave their input on whether the level of services is satisfactory or not. Interviews were conducted with different key stakeholders to get different perspectives on the topic at hand; this made the research credible

2.8. Data analysis

Data analysis is a process of organizing, providing structure and meaning of the collected data (Kumar, 2011). In order to analyze the data collected during interviews, the researcher prepared a detailed description of the respondents' views. A synthesizing process followed which involved sifting data and putting the pieces together. Data analysis was based on specific themes that enabled the researcher to draw general statements guided by the phenomena under study and the participants' responses. Microsoft excel and ArcGIS was used as a tool for analyzing and organizing data. Lastly translation and theorizing of findings followed which involved systematic organization of the data.

2.9. Ethical considerations

Permission was obtained from gate keepers to conduct the survey and also all participants were given a consent form to get their permission to take part in the research and to ensure that all terms of the study were clear before they could participate. Trustworthiness of this study was ensured by going back to respondents with the research findings to check if it truly reflects the views of their responses given during the data collection process.

2.10. Limitations

However there are a number of difficulties that were encountered, especially during interviews with the traditional leaders as this thesis needed to be written in English. During interviews questions directed to traditional leaders were to be delivered and answered in isiZulu which is the language they understood best. This also allowed them to fully express their views. But also arranging meetings with these traditional leaders and other high profile municipal stakeholders was difficult because they were generally busy and their availability was unpredictable. This restricted data collection time and some of the stakeholders from other municipal departments could not make themselves available for interviews due to various reasons. The researcher overcame this by looking for alternative stakeholders that had the same level of information as those that refused to take part in the research.

Another limitation was the inconsistent information provided by community leaders, municipal officials as well as community members. The researcher combated this by providing an objective analysis and presentation of facts, as the facts were carefully contrasted. Navigating around the study area also posed challenges due to poor road quality and the difficult terrain. This was managed by walking to each targeted household instead of driving.

2.11. Summary

This chapter laid out the research methods that were employed for this study. Qualitative and quantitative research methods formed the basis for the methodology. The random sampling and purposive sampling exercises were used for this study. Household surveys and semi-structured interviews were used to collect data from various stakeholders such as community members, community leaders (chiefs (*izinduna*) and the ward councilor) and municipal officials. Data analysis tool used was Microsoft excel and ArcGIS.

CHAPTER THREE: CONCEPTUAL AND THEORETICAL FRAMEWORK

3.1. Introduction

This chapter is made up of three parts; the first being the conceptual framework which provides an introduction on key concepts that are relevant to the context of this study. The second part is the theoretical framework which forms the base for the general understanding of the urbanization theory and the bid rent curve. These two theories provide the backbone for understanding the dynamics of peri-urban densification in the context of the current study. Then the third part is the literature review. In this section debates by various scholars on peri-urban densification matters are unpacked. Precedent studies on densification and peri-urban development are analysed in order understand the trends around peri-urban development in different parts of the world.

3.2. Conceptual Framework

3.2.1. Peri-urban areas

Peri-urban areas have been defined in various ways by many scholars and there seems to be no one term to define what constitutes peri-urban areas. Iaquina and Drescher (2000) define different types of peri-urban areas based on their origin, for example they define these locations as areas that are far from the city resulting from migration and circulation. They also acknowledge that peri-urban areas can be located close to the city on the urban fringe that results from the natural increase in population and migration (Iaquina and Drescher, 2000). In contrast other scholars like Boischio *et al.* (2006); Zhao *et al.* (2009) refer to peri-urban areas as the ‘urban fringe’, while Friedberg (2001) defines them as the ‘urban periphery’ and Tjallingii (2000) defines them as the ‘urban edge’. Peri-urban areas are not only zones of direct impact experiencing immediate demands of land from urban growth and pollution, but they are also market related zones of influence that are recognizable in terms of the handling of natural resources and agricultural products (Simon *et al.*, 2006).

Barry (2003) defines peri-urban areas as zones of transition with a mixture of urban and rural attributes in terms of land uses. These zones borrow attributes from both surrounding rural and urban areas. Douglas (2006:18) further describes peri-urban as an “*interaction zone, where urban and rural activities are juxtaposed, and landscape features are subject to rapid modifications, induced by human activities*”. Peri-urban areas are zones that fall outside the urban development line since they develop on the urban edge. In the context of this research peri-urban areas have been identified as zones that are inadequately managed by local

municipalities. Simon; McGregor and Thompson (2006:7) further elaborates that “*a peri-urban area is not only a zone of direct impact experiencing the immediate impacts of land demands from urban growth and pollution, but is also a wider market-related zone of influence that is recognizable in terms of the handling of agricultural and natural resource products*”.

The development of peri-urban areas in South Africa is unique because it resulted from the previous apartheid regime that racially segregated black people. Most of the previously disadvantaged black people were located far from the central business areas. After the fall of the apartheid regime the racially discriminated people flocked back into urban areas for economic opportunities because there were no restrictions on where they could reside. Barry (2002) further emphasizes that, peri-urban areas in towns and cities of South Africa were made unique by the racial segregation policies, colonial and the apartheid laws.

3.2.2. Urban sprawl

Urban sprawl refers to the excessive, scattered and low density suburban development resulting from high urban population (Brueckner, 2000). Urban sprawl is perceived to be environmentally unsustainable because of motor vehicle pollution, as sprawl demands high motor vehicle use. The nature of sprawling developments requires high automobile utilization and the greenfield development reduces green spaces (VTIP, 2006).

3.2.3. Peri-urbanization

Peri-urbanization refers to a process in which rural areas located on the urban outskirts of established cities become more urban in character. This change occurs in physical, social and economic terms (Webster and Muller, 2002). Peri-urbanization is characterized by the rehabilitation of old habitats and construction of new homes along the village outskirts while the farming nature of these villages is kept intact even in new development (Urban Habitat, 2012).

3.2.4. Urban ecology

Within the natural sciences, urban ecology addresses biological patterns and associated environmental processes in urban areas, as a sub discipline of biology and ecology (Endlicher *et al.*, 2011). In this sense, urban ecology endeavours to analyse the relationships between plant and animal populations and their communities as well as their relationships to environmental factors including human influences. Urban ecology is understood as a multidisciplinary approach to improving living conditions for the human population in cities, referring to the ecological functions of urban habitats or ecosystems for people and thus including aspects of

social, especially planning and sciences. Urban ecology is the study of ecosystems that includes humans living in cities and urbanising landscapes (Endlicher *et al.*, 2011). It investigates ecosystem services which are closely linked to patterns of urban development.

3.2.5. Sustainability

Sustainable development has been defined as development that meets the needs of the present generation without compromising the ability of future generations to meet their own needs (WCED, 1987). A sustainable lifestyle protects the natural processes that form part of human life and culture and acknowledges that large biotic and abiotic systems are essential to human life, health and culture (Norton, 1992). Development planning needs to take consideration of the natural processes and environment so as to ensure that there is very little environmental impact in peri-urban spaces.

3.2.6. Deforestation

Deforestation is the permanent removal of forests and woodlands for different purposes such as industry, housing and other personal uses (Web 1, Frey, 2002). It is estimated that forests contain at least 50 per cent of the earth's animal species and over 70 per cent of plant species (Frey, 2002, Robledo and Blaser, 2008). Frey (2002:1) further argues that continued deforestation reduces biodiversity and could also lead to other negative impacts such "*as soil erosion, nutrient depletion, flooding, increased levels of greenhouse gases, disturbances in the carbon cycle and loss of forest products such as pharmaceuticals, timber and fuel*". Population growth has also increased the demand for land which also contributes to deforestation.

3.2.7. The urban edge

The urban edge has been defined by the Western Cape Provincial Spatial Development Framework (WCPSDF) (2005) as a demarcated line to manage, direct and to control the outer limits of development in around urban areas. The purpose of an urban edge is to establish limits beyond which urban development should not occur and most importantly to promote environmental efficiency and effectiveness in the economy for all (WCPSDF, 2005). Urban edges mark the transition between rural and urban areas as they are located on the peri-urban spaces. The urban edge as a spatial concept continues to form a vital part of the South African strategic spatial planners' 'toolbox' to reshape the country's cities to be more equitable and integrated, while attempting to achieve environmental sustainability and economic efficiency targets (Sim *et al.*, 2014).

3.2.8. Urban fringe

The urban fringe is defined as an area extending from about ten to fifty miles outside the core of a city. This area is in transition where land as well as occupational and social structures awaits transformation into suburbia (Friedberger, 2000). Expected development potential rather than agricultural value determines land values. It is further argued that these spaces are characterized by diversity. While taxes are low services remain poor and residents depend on wells and rivers for water, they also use septic tanks for sewage (Healy and Short, 1985).

3.2.9. Infrastructure

Generally infrastructure is defined as the physical framework to which goods and services are delivered to the public (Goel, 2002). Canning (1998) divides infrastructure into two, there is the physical infrastructure and the social infrastructure. The physical infrastructure includes services such as roads, electricity, water systems, transport, sewer lines, communications etc., whereas on the other hand infrastructure is comprised of educational facilities, healthcare centers, shopping centers, churches etc. (Canning, 1998 and Goel, 2002). These services also form part of basic social services that are necessary for everyday functioning of communities.

3.2.10. Densification

Densification has been defined as the increased use of space both horizontally and vertically within an area and it is accompanied by increased population numbers or threshold (City of Cape Town, 2012). Densification can stimulate economic opportunities and can draw services into an area. Densification can take place in developed areas of the city, on vacant infill sites within developed and undeveloped areas and on greenfield sites (City of Cape Town, 2012).

3.2.11. Urban Development Line

The urban development line (UDL) has been defined as a “*line demarcating the extent to which development can be allowed to in the long run*” (eThekweni Municipality, 2010b: 17, cited by Sim *et al.*, 2014). The UDL was intended to allow for convenient, efficient, equitable and sustainable settlement form (Sim *et al.*, 2014). The underlying principle for the UDL was to ‘draw a line in the sand’ to protect agricultural and ecological resources of the city in the long term in the interests of promoting resilient city development (Sim *et al.* 2014; eThekweni Municipality, 2010b). The UDL was intended to be a fixed line to protect the rural periphery for future generations, requiring the city to be autocratic about the line (Markewicz, 2013).

3.3. Theoretical Framework

3.3.1. Urbanization Theory

3.3.1.1 Urbanization as a process

Urbanization has been described as the process of population concentration in urban areas (Tisdale, 1942). In this process the majority of people are located in urban areas and they are not reliant on farming for their wellbeing. Urbanization has been argued to be a process that resulted from the inability of cities to maintain or contain their growth, therefore the urban traits started trickling out onto the hinterland (Davis, 1955). Ritz (2004) states that urbanization is a process whereby people come together and settle in an area, eventually these develop social institutions. It is further argued that during this process dense settlement patterns prevail due to increasing land demands (Ritz, 2004). Tisdale (1942:312) further defines urbanization “*as a process of radiation whereby ideas and practices spread out from the urban centre into surrounding areas*”. Urbanization has been mainly driven by rural-urban migration (Leon, 2008; Pacione, 2005), however other scholars such as Majumdar (1978); Nagle (2000) argue that most of the urban growth stems from natural increase (more births than deaths) rather than migration. Another driving factor of urbanization is the reclassification of rural spaces and their settlements (Pacione, 2005; Nagle, 2000). Reclassification due to formalization and the spill of the urban form onto rural areas plays a significant role in driving the urbanization process (Jones and Visaria, 1997).

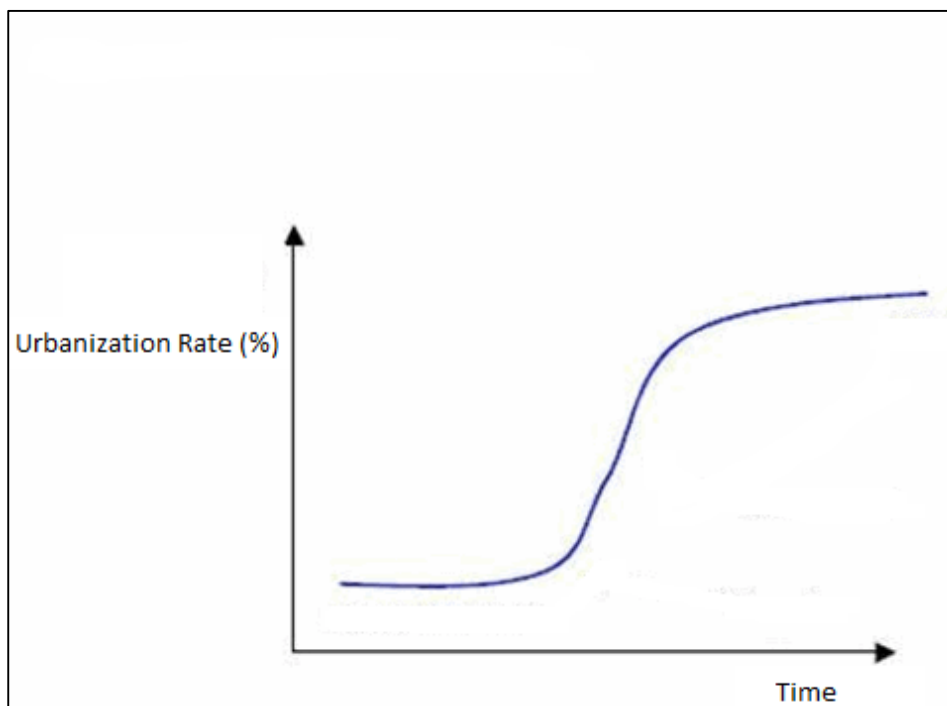
The urbanization process can also be driven by industrialization as was the case in the early years of technological innovations that escalated urban growth, however industrialization is not always the cause of urbanization (Davis, 1955). It has also been argued that urbanization results from large and small scale industrial and small scale commercial and financial set up of cities. This leads to expansion of the urban form out into the hinterland in pursuit of new territories.

3.3.1.2. Urbanization trends

Urban spaces in developing countries are generally filled with poor people because of few employment opportunities in rural areas. The majority of people that migrate from rural to urban areas are unskilled and they are forced to settle for low paying jobs. That is why it is difficult for them to afford land in urban areas and thus they choose to establish informal settlements in peri-urban areas (Pacione, 2005). Leon (2008) and Ritz (2004) argue that due to urbanization in the twenty first century more than half of the world population lives in urban

areas. The rate of urbanization has rapidly increased over the years. For example, Leon (2008) argues that sub-Saharan Africa urban areas have risen from 10 % in the 1950s to an alarming 35 % in the mid-2000s. The urbanization curve in Figure 3.1 indicates the growing percentage of population numbers in urban areas over time. This illustrates that more and more of the world population is moving into urban areas. This is not surprising since most amenities such as education facilities, basic services and employment opportunities are available in urban areas (Ritz, 2004). Initially urban population grows gradually and most of the population is fairly dispersed due to primary economic activities such as agriculture. From there the urban population rises steeply indicating that a large number of the urban population is in urban centres (Northam, 1975). The final stage shown in the diagram is where the curve starts to flatten due to the limits that some share of the urban population can no longer be urban (Northam, 1975). This is why the urbanization curve has an ‘S’ shape meaning that at some point the growth of urban population or urbanization is in equilibrium.

Figure 3.1: The urbanization curve



Adopted: Pacione (2005: 82)

Urbanization is one of the major contributors to urban sprawl and consequently peri-urban growth but there are many other dynamics that also lead to this. In the case of South Africa the legacy of apartheid has contributed significantly to the migration of people from rural areas to urban areas. After the fall of the apartheid regime, those that were restricted from moving

into urban areas have seized on the opportunity to flock into urban spaces for social and economic benefits (Maluleka, 2013). Living in cities allows individuals and families to take advantage of the opportunities of proximity and diversity of the market place. It is no surprise that people move into cities to seek economic opportunities (Turnham, 1993).

3.3.1.3. Challenges of urbanization

Some of the challenges that are brought about by urbanization include social exclusion and geographic discrimination, whereby some areas and members of society are left out from the economic benefits of urban growth (Rao, 1974). For example peri-urban or urban fringe communities are poorly provided with services (Sim *et al*, 2014). Mishra (1998) argues that urbanization also leads to creation of slums and housing shortage due to rapid population growth. Rao (1974) further argues that private investors battle to make substantial profit from providing low cost housing in the newly urbanized areas and even near the urban core.

Increased population growth and urbanization also means that there will be a growing demand for water provision and sanitation services. Therefore the demand for clean water and adequate sanitation remains a major challenge in most cities (Sutherland and Lewis, 2012; Mishra, 1998; Rao, 1974). The spread of slums and informal housing escalates sanitation problems (Mishra, 1998).

The issue of transport and traffic is another challenge that results due to urbanization in many developing countries. It is important to note that these challenges are sometimes an indirect effect of urbanization, for example population growth in urban spaces means there is going to be a demand for more transport alternatives (Ramachandran, 1989). Traffic congestions are a result of more cars on the road which is also a result of population growth. The absence of properly planned transport routes in urban areas causes serious problems in emerging urban areas and also in established urban areas (Mishra, 1998; Rao, 1974).

On the other hand urbanization, also brings about opportunities such as the prospect for expanding economies. Increased population can provide the threshold for local businesses and markets. Economic activities could prosper due to formalised markets and could attract potential investors to newly urbanized areas. Costs for providing bulk services may be reduced as it is normally cheaper for local municipalities to provide these services in areas where there is enough population to pay for them (Sutherland *et al*, 2014). Concentration of people into small areas provides opportunities for such.

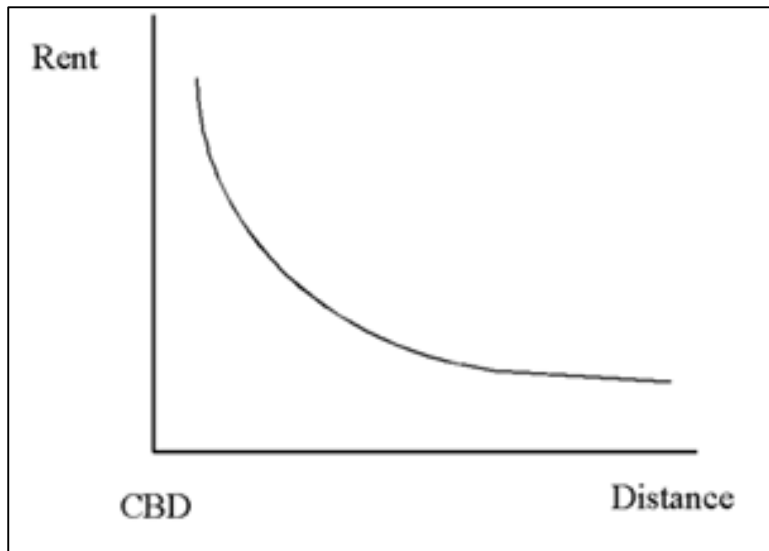
3.3.2. The bid rent theory

The bid rent theory of 1964 by William Alonso can be applied to explain the logic behind rural residents migrating to peri-urban areas and invading agricultural land (Trussell, 2010). Peri-urban areas in most developing countries are a result of rapid urbanization and the carrying capacity of most cities has almost been reached. This explains the outward expansion of urban developments toward the periphery (Allen, 2003, Chirisa, 2010). The bid rent theory states that land prices close to the city are very costly, but as you move away from urban centres prices start to drop (Trussell, 2010). Low income groups in developing countries cannot compete or even afford to buy land close to urban centres, therefore they invade open spaces within urban areas or they build their informal housing on the outskirts to enjoy some of the benefits of living close to urban centres (Murray, 2008, Areola *et al.*, 2014).

3.3.2.1. The bid rent process

The bid rent theory considers the pricing system by which vacant land around the urban core is allocated to households. Each household formulates a bid rent function setting the maximum price they are willing to pay in order to live at a certain distance from the urban core or centre (Galster, 1977). Usually the closer a household is from the urban centre the higher the rent or land prices. Galster (1975) further argues that these bids are a function of a household's preferences for land, commuting time and other goods, its income and per mile out of pocket transportation costs. Therefore households compete for sites that are in accordance with their bid rent function.

However the household rent function is not only determined by plot size and distance from work (Trussell, 2010). But it is also a function of other factors, such as accessibility, the size and quality of unit located on it, neighbourhood and pollution conditions, public service availability, race related attributes and so on (Galster, 1975).

Figure 3.2: The bid rent curve

Adopted: Trussell (2010:6)

Land away from the city centre becomes more affordable to low income groups and that is why they cluster around urban centres. It must be noted that there are many real world factors that must be ignored when applying this model. For instance, Trussell (2010) argues that Alonso's 1964 model made three general assumptions in order for it to be applied, the first being that cities exist on a featureless plain, without rivers, hills and other obstacles that might affect travelling cost. The second assumption is that transport costs are a linear function of distance from the city centre (Trussell, 2010). Lastly Alonso assumes that the city contains the vast majority of employment and that all other employment is distributed evenly through the metropolitan areas (Trussell, 2010). The use of the bid rent curve for this study gives a clear indication of the rationale behind most low income peoples' reasoning and circumstances. Applying the three previously mentioned assumptions can be problematic due to the fact that cities today are much bigger and very diverse than in the 20th century (Trussell, 2010).

3.3.2.2. Bid rent trends

Adam (2014) explains that peri-urban land that was used for agriculture becomes a target for informal settlements. Trussell (2010) argues that the reason for occupation of low income groups on the periphery is due to low land costs. Therefore peri-urban agricultural land is invaded because of this reason. Chirisa (2010) points out that due to poor services in peri-urban areas land prices are very low hence; low income groups can acquire land cheaply.

Land rights in peri-urban areas are under threat due to urban expansion. This often means that customary land rights are undermined (Adam, 2014). As informal areas and settlements are made formal then the process of acquiring land in peri-urban areas requires legal rights. A case study of Bahir Dar city in Ethiopia demonstrates how peri-urban landholders are often excluded from their land when developments reach their peri-urban door step. Adam (2014:1) argues that “*Ethiopia’s urban expansion and development strategy has been based on the acquisition of land by government from adjacent peri-urban areas*”. This has created insecurity among peri-urban low income landholders.

Peri-urban land has grabbed the attention of different actors who wish to develop the land for their own personal interests. This resulted in competition between those that wish to acquire land for informal activities or development and those that wish to develop it formally (Adam, 2014). In most cases informal land owners are bought out of pristine and most valuable land due to lack of legal rights to their land (Adam, 2014). This was exactly the case in Bahir Dar city where government was buying land for its own development purposes at the expense of low income land owners (Adam, 2014). Therefore a sense of insecurity among low income groups was created as urbanization was creeping closer and closer towards peri-urban land.

The land tenure issues have been in existence in Ethiopia since the 1970s and have created social conflict and political unrest (Adam, 2014). The case study of Bahir Dar city provided insight into how peri-urban land owners feel about being dispossessed their land. In 1975 the new government declared that all land, whether rural or urban, was state property (Adam, 2014). Government then has rights to peri-urban land, which puts low income groups without legal rights for their land in a difficult situation because government can come and claim land that is deemed to have development potential. Therefore Adam (2014:4) argues that “*peri-urban areas are often the object of compulsory land acquisition in order to accommodate urban expansion processes and this has led to loss of land rights and livelihoods of the local land owners*”. Land owners in peri-urban Ethiopia are under constant worry because they are not assured land rights as the state owns and controls land acquisition rights. Their livelihoods are under constant threat as more and more of peri-urban land which they use for agriculture is being converted to residential land to support urban expansion (Adam, 2014).

In other developing countries like South Africa customary land rights are acknowledged by government. For example in eThekweni municipality traditional authorities have rights to allocate land to citizens without the consent of the state. However this does not mean that peri-

urban areas are better serviced or looked after by these local governments. Sim *et al.* (2014) argue that local governments tend to neglect areas that fall outside of the urban development line. This is due to a number of factors including that it is often expensive to scale out services to areas that are far out but also the issue of land rights plays a significant role (Sim *et al.*, 2014). Conflict between formal and informal authorities often results in service provision being delayed in peri-urban areas. Areas that are outside the urban development line are characterised by unplanned spatial growth which makes it difficult for local municipalities to meet the demand for services and settlement growth is also difficult to monitor.

3.4.1. LITERATURE REVIEW

3.4.2. Peri-urban areas

Peri-urban areas are characterised by various land uses, varying socio-economic status and ecologically valuable but vulnerable systems (MacGregor-Fors, 2010; Parkinson and Tayler, 2003). Urban fringe areas have a significant socio-economic role to play in most developing countries because they can be used as zones of economic opportunities through agriculture or any other relevant means. Municipalities can use these areas by mixing various complementary land uses to improve the socio-economic status of those living in poverty. But there are various challenges that government officials are faced with in terms of using peri-urban areas for social and economic development. One of these challenges is the provision of basic services in peri-urban areas to make them liveable, but this is often hindered by the growing environmental concerns and the limited institutional capacity of municipalities (Sutherland and Lewis, 2012; Girad, 2011).

The environmental concerns over peri-urban developments also dictate how urban fringe areas can be used. But in most cases the environmental aspects associated with the development of peri-urban areas are ignored in favour of commercial and residential development projects (Areola *et al.*, 2014). Peri-urban areas were initially zoned as agricultural and environmentally sensitive areas but due to varying demands for economic development this has changed. Land conversions have presented the most environmental concerns in peri-urban areas, for example spaces that were previously used for agriculture or zoned as ecologically sensitive have been converted to commercial or residential zones (Trefon, 2011; MacGregor-Fors, 2010; Simon, 2008). This is where the environmental issues in peri-urban areas come about as big plots of peri-urban land are altered.

3.4.3. Understanding peri-urban spaces

In understanding what constitutes peri-urban areas, Trefon (2011) classifies them as areas located close to densely populated urban settlements that are characterised by rapid population growth and severe environmental degradation. But they are also linked to extractive and productive economic activities for subsistence and trade; they result from government structures that bring together state agencies and traditional authorities (Trefon, 2011; MacGregor-Fors, 2010). The combination of all these factors results in conflict and rivalry over peri-urban space and its resources (Trefon, 2011). They are zones of rapid change which is not always desirable due to potential social conflicts, spatial conflicts and environmental degradation (Mbiba and Huchzermeyer, 2002). Peri-urban areas are closely linked to neighboring metropolitan areas in terms of their functionality. Ravetz *et al.* (2013) further argues that a peri-urban area is where the urban structure transitions into the rural landscape. This explains why there is a great link and attributes of the urban form in peri-urban areas. These urban form attributes are intermixed with those of rural form.

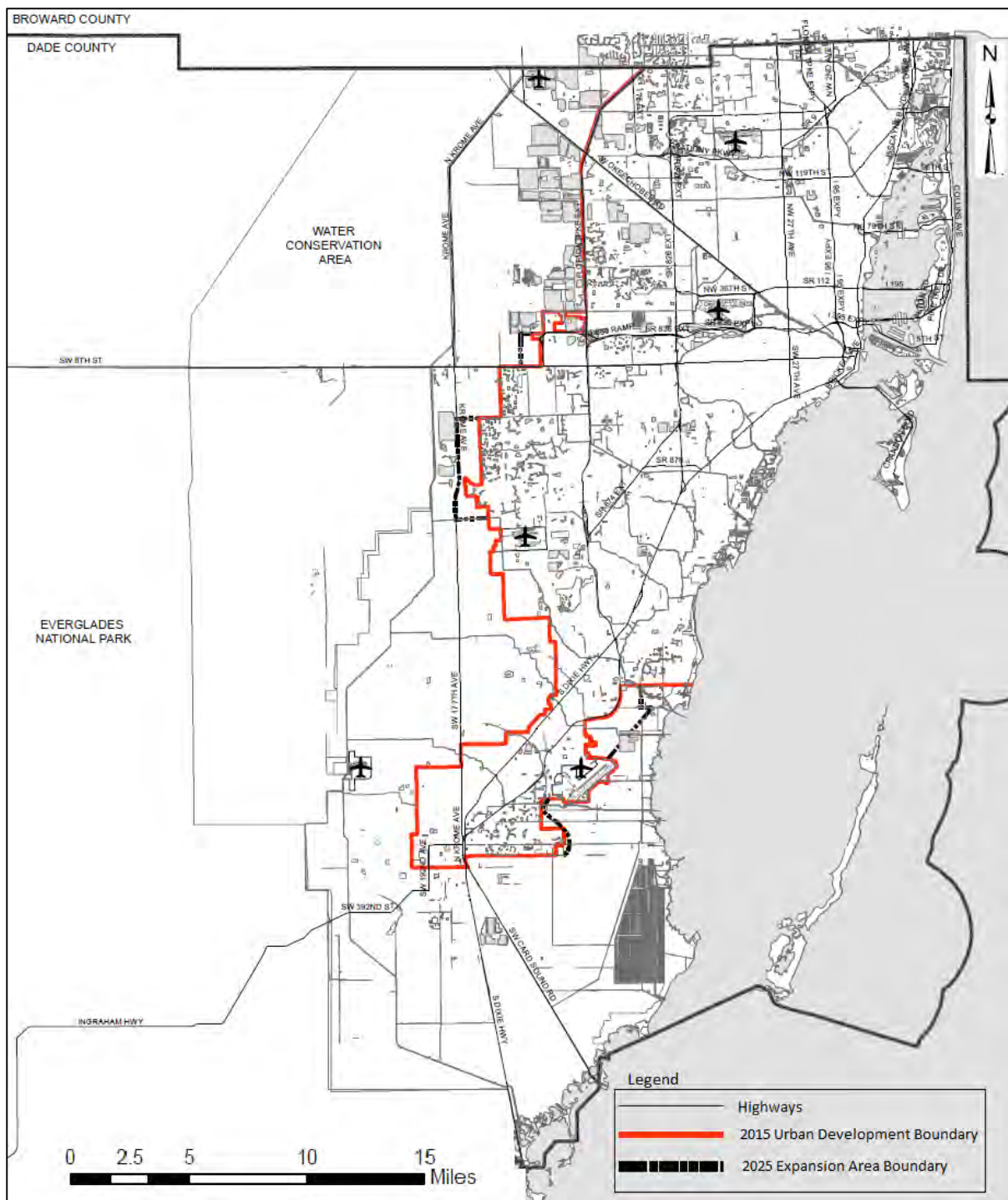
Urbanization has been distinguished as the main process that contributes to the development of peri-urban areas around the globe (Ravetz *et al.*, 2013). Factors such as rapid population growth and industrialization are the drivers of peri-urbanization (Ravetz *et al.*, 2013). This has increased the demand for land to be used in commercial production and other social purposes. They are characterized by contrasting social status due to the nature of their development (Mbiba and Huchzermeyer, 2002). In order to understand the nature of peri-urban areas one would have to understand the complex processes that have led to their development. These processes vary according to context, for example in developing countries peri-urban areas are very different to those of developed countries. However there are similarities that can be distinguished. For example agriculture is a common land use and environmental degradation is also common (Trefon, 2011; MacGregor-Fors, 2010). The socio-economic systems in peri-urban areas will always have an impact on the natural environment hence it is critical to explore the resulting environmental factors.

3.4.4. Urban Development Line

Many cities around the world have developed growth management strategies to direct growth to certain desired parts of the cities (Sim *et al.*, 2014). The urban development boundary (UDB) in the United States has been actively used in Miami since the 1970s and was drafted into the city's master plans as early as 1983 (U.S Environmental Protection Agency, 2012). The boundary has been used as a measure to protect the natural environment and contain

development but also to ensure densification of urban centers (U.S EPA, 2012; Sim *et al.*, 2014). There is also an urban services boundary that is widely used in the U.S to determine how far infrastructural services can be rolled out from the urban centers (Horn, 2009). Figure 3.3 on page 28 clearly shows the urban development boundary employed by the Miami city officials. The intentions of adopting this strategy was for compact development and protection of green spaces as previously mentioned. The red line is the boundary line that has been demarcated as the cut off point for development. Similar strategies have also been adopted in other countries like Australia, Denmark and the United Kingdom (Sim *et al.*, 2014).

Figure 3.3: Miami Dade County (Urban Development Boundary)



Source: U.S EPA (2012)

3.4.5. Land use in peri-urban areas

In order to understand the impacts of peri-urbanization, one needs to understand that changes in land use have effects on socio-economic forces and biophysical conditions of peri-urban areas (Tavares *et al.*, 2012). Understanding the significance of gradual reorganization of land in order to adapt its spatial structure and use to social demands has become an important tool

for management, but it has also created challenges for land use planning management (Tavares *et al.*, 2012). In rapidly expanding urban areas, different land uses and spatial planning tend to spill over or be adopted by urban fringes. Therefore peri-urban areas change their spatial character due to the influence of nearby urban areas instead of the socio-economic demands of people on the urban fringes (Kombe, 2005; Parkinson and Tayler, 2003). Peri-urban areas are mainly characterised by a mixture of land uses due to varying demands for land by different bodies (Parkinson and Tayler, 2003). The governments' institutional and financial incapability to meet the socio-economic demands of people on the urban fringes has been identified as the main contributor to land use change taking the form of nearby urban areas (Kombe, 2005; Sutherland and Lewis, 2012).

Gradual urban encroachment over time significantly results in peri-urban land use change shifting from farming or agricultural form to more industrial and commercial form (Adam, 2014; Bittner and Sofer, 2013; Tavares *et al.*, 2012). Agriculture or farming is one of the major land uses in peri-urban areas as it helps sustain livelihoods of the peri-urban poor but because of the impacts of urbanization, agricultural land has become less productive and other commercial land uses have been adopted (Adam, 2014; Naab, Ndiye and Kasanga, 2013). Population densification is one of the factors that contribute to replacing agricultural land, due to high demands for residential land and for construction of road networks.

Scholars such as Areola *et al.* (2014) and Tavares *et al.* (2012) argue that land use changes in peri-urban areas do not only reflect the influence of municipal master plan approvals or their encroachment, but they also demonstrate a systematic transition related to urban areas. Spatial characteristics of peri-urban areas have traces of decisions that planning officials from municipalities have made. Tavares *et al.* (2012) further argues that understanding this influence will assist decision makers form strong policies for future spatial management and for development of peri-urban areas.

3.4.5.1. Land use change In Developing countries

The municipal capacity to provide services plays a significant role in determining whether peri-urban areas comply with regulations for sustainability and in determining the degree of influence on land use changes. In developing countries the municipal capacity to extend services to peri-urban areas often poses significant challenges and often leads to socially and environmentally unsustainable peri-urban livelihoods (Sutherland and Lewis, 2012; Kombe, 2005; Parkinson and Tayler, 2003). In most developing countries local governments usually

lack the financial capacity and institutional backing from national government to sustain dominant land uses such as farming and other small scale agricultural activities (Sutherland and Lewis, 2012; Kombe, 2005).

The case of peri-urban densification or growth in developing countries poses a lot of challenges because of land rights that involve complex processes to resolve due to traditional land tenure and also the existence of western forms of land rights (Naab *et al.*, 2013; Sutherland and Lewis, 2012; Kombe, 2005). In most cases central governments have to find means to stretch out services to peri-urban areas beyond the urban edge and that are not in their initial development plans (Sutherland and Lewis, 2012; Parkinson and Tayler, 2003). This usually means more money should be spent on these areas, even though they are perceived as unproductive and unsustainable. The transition from agrarian to urban economies of industry and services often implies change of land uses for peri-urban and rural areas (Areola *et al.*, 2014; Naab *et al.*, 2013). The transition often leaves the rural and the peri-urban poor in deeper poverty as farming is eroded away.

Urban expansion often results in rural land being converted to commercial, industrial and residential land uses (Adam, 2014; Areola *et al.*, 2014; Bittner and Sofer, 2013; Naab *et al.*, 2013). As more people look for improved socio-economic opportunities, the world cities become heavily populated (Areola *et al.*, 2014; Naab *et al.*, 2013; Parkinson and Tayler, 2003). There are environmental and social challenges that have come about due to this. Areola *et al.* (2014) argue that soil quality in some peri-urban areas is poor which leads to soil erosion and it blocks drainage channels causing segregation of low income groups in dangerous and worst areas. The high number of people moving into towns and cities looking for economic security create social problems such as overpopulation (Areola *et al.*, 2014; Naab *et al.*, 2013). Other social problems as stated by Areola *et al.* (2014); Sutherland and Lewis (2012) include the exacerbated costs of providing basic infrastructures such connections to road networks, sewers, water mains and drainage pipes for the municipality. This generally results in poor services in peri-urban areas and poor communities living in these areas are left vulnerable to environmental hazards which create severe social problems (Chirisa, 2010).

3.4.5.2. Land use change In Developed countries

Developed countries are better suited to deal with the changing land uses in their peri-urban areas, for example they have better land management systems and they are able to impose restrictions on urban areas (Tavares *et al.*, 2012; Choy and Sutherland, 2008). Governments in

developed countries are able to preserve the spatial character of peri-urban areas through imposing policies that restrict any major land use changes (Tavares *et al.*, 2012). But also the fact that governments are able to provide services and to extend infrastructure out into peri-urban areas means that there are no significant land use changes as these areas are relatively developed.

Peri-urban areas in developed countries are not characterised as poverty stricken and overpopulated with little prospect for development as is the case in most developing countries (Naab *et al.*, 2013; Sutherland and Lewis, 2012; Kombe, 2005). Choy and Sutherland (2008) argue that peri-urban land uses in developed countries are driven by the peoples' desire to live peacefully and away from cities. Therefore peri-urban areas in developed countries are areas of harmony and peaceful living for those that want to be in touch with nature (Choy and Sutherland, 2008).

The spatial character and land uses are similar to those in developing countries, where agriculture is the dominant land use. But due to less pressure for economic development and residential space developed countries are able to preserve their peri-urban spaces in their natural form (Busck and Kristensen, 2014; Tavares *et al.*, 2012). Growth in peri-urban areas of developed countries is closely regulated by government and local municipalities try to prevent social conflict and incompatible land uses that might lead to environmental degradation (Bittner and Sofer, 2013; Tavares *et al.*, 2012).

3.4.6. Policy and Land use changes

Adam (2014); Bittner and Sofer (2013) argue that the evolving spatial patterns in peri-urban areas are a result of the shift from informal agricultural based activities to formal commercial activities and the extension of the built form into the rural urban fringe. These changes are a reflection of measures at household level to adapt to development and the changing policy at macro level (Bittner and Sofer, 2013). Changes in policy at macro level have resulted in land use changes in urban fringe areas. For example Bittner and Sofer (2013) argue that this change has resulted in urban fringe land uses adopting a character of the urban form. Agriculturally dominated areas or zones are generally forced to change character due to the pressures from rapidly expanding urban land form (Areola *et al.*, 2014).

Peri-urban areas have been affected both positively and negatively by adopting these urban form characteristics. Expanding urban form has resulted in integration of rural communities into the urban systems (Bittner and Sofer, 2013). In some cases this has resulted in social

conflicts. Rural urban fringe areas are characterized by conflict for different land uses, for example, “*incoherent land use patterns such as agriculture and non-agriculture activities, open spaces and out of town retail and service centres, farms and built up suburbia all compete for the same land*” (Bittner and Sofer, 2013:12; Parkinson and Tayler, 2003). However some of the positives include easier access to services and better economic opportunities due to new developments that might occur. In most cases rural urban fringe areas that are deemed to be economically valuable are protected by the government for the benefit of corporations (Maluleka, 2013). The poor are financially incapable of keeping hold of the most valuable lands; therefore they are driven out of the market by developers (Chirisa, 2010; Murray, 2008 and Barry, 2002). Rural urban fringe land is slowly losing its traditional character due to urban expansion (Bittner and Sofer, 2013).

Eakin, Lerner and Murtinho (2010) argue that peri-urban areas pose new institutional challenges because by nature these areas are characterised by complex processes, such as rural and urban land uses coexisting. In most cases these often lead to social disorder, land use conflicts and environmental problems. It is argued that policy to protect the environment and people in peri-urban areas is ineffective (Eakin *et al.*, 2010). Government is often incapable of providing adaptive mechanisms to environmental change as a result of limited financial capacity and other resources (Sutherland *et al.*, 2014; Sim *et al.*, 2014; Eakin *et al.*, 2010; Kombe, 2005). Peri-urban areas pose concerns for socio-ecological planning and vulnerability assessment (Eakin *et al.*, 2010). Due to the high dependence of peri-urban dwellers on the natural resource base it is important to measure their vulnerability to environmental risks (Adger, 1999).

3.4.7. Land Management - a Pro-Poor Approach

Land management and administration in peri-urban areas has become very important in developing countries due to rapid urban growth which has resulted in greater demands for peri-urban land (Nyarko and Adu-Gyamfi, 2012; Home, 2010; Murray, 2008). Peri-urban land in major cities is in demand for various land uses and developments. This has resulted in poor, low income groups being marginalised (Maluleka, 2013 and Murray, 2008). Land is prioritised for lucrative developments instead of being used to improve social conditions or to meet the housing demands by initiating social housing developments (Home, 2010; Murray, 2008).

Some authors such as Nyarko and Adu-Gyamfi (2012); Home (2010) argue that because of high demand for land by various bodies for varying uses government institutions at the national

and local levels, as well as the traditional leadership structures, have been unable to manage the transition in peri-urban areas efficiently. There is always conflict of interest when it comes to how peri-urban land should be utilised and in the end the poor are always left in a difficult socio-economic state. The existence of formal and informal tenure systems creates problems on its own because it results in some areas being left out of development plans by local municipalities, especially those under traditional ownership. For instance in most African countries land that is under traditional authority is poorly serviced and planned because municipal authorities are often restricted when it comes to controlling plot allocation and initiating development plans (Sutherland and Lewis, 2012; Kombe, 2005). However in some countries the government has seized land rights from traditional authorities as a means to avoid tenure conflicts and unregulated allocation of land (Adam, 2014). Having government as the only legal and formal body to control land rights does not necessarily mean that all problems of the peri-urban poor can be easily resolved. But multiple tenure systems can create opportunities for inclusive and successful development initiatives if all bodies concerned work together.

In order for land to be used productively for the benefit of the poor, a pro-poor land management strategy has to be adopted. This entails that decision making prioritizes the interests of those in poor peri-urban and rural areas but not leaving out those in urban areas. Nyarko and Adu-Gyamfi (2012) argue that when creating a pro-poor land policy it is vital to take into account the conditions of those living in extreme poverty. This policy should be driven by the socio-economic demands and needs of those it intends to assist.

The poor are said to be living in poverty in peri-urban areas due to the fact that land used for farming has diminished as a result of the increasing demand for residential land uses. Hence some authors such as Nyarko and Adu-Gyamfi (2012); Sutherland and Lewis (2012); Home (2010) emphasize this point by stating that the poor continue to be trapped in poverty partly because they cannot access and use land they require to cultivate crops, construct houses and establish businesses. Pro-poor policies should be implemented with intentions to ensure that the poor have access to land services at a price they can afford (Zhao *et al.*, 2009; Kombe, 2005). Government should provide security of tenure to the poor by protecting them from being evicted from economically productive land in urban, rural and peri-urban areas (Nyarko and Adu-Gyamfi, 2012).

3.4.8. Decentralization of Urban Growth Management

It has been argued that centralized approaches have been unable to reach the peri-urban areas as most of the attention tends to be given to the urban core (Parkinson and Tayler, 2003). The underlying reasons for ineffective centralised approaches have been associated with high population numbers and the need to scale out services while taking the natural environment into consideration (Parkinson and Tayler, 2003; Blair, 2001). There is a shift in most developing countries from a centralized approach where governments make decisions for its entire people to a decentralized approach which recognizes the connection amongst local government, citizen and private sector (Zhao *et al.*, 2009; Bittner and Sofer, 2013; Parkinson and Tayler, 2003). Zhao *et al.* (2009) argue that this shift has caused conflict between growth and governance of metropolitan peripheries. Local government changes its role from providing public services to monitoring and providing regulatory framework in a decentralized approach (Zhao *et al.*, 2009).

In some instances different actors are allowed to debate for the interest of development and local government has a limited influence in terms of development initiatives to be undertaken. The development process under the capitalist system is driven mostly by the demands of the market; hence the low income groups in periphery areas will not have their interests' prioritized (Zhao *et al.*, 2009; Bittner and Sofer, 2013). Zhao *et al.* (2009) further emphasizes this argument by stating that urban growth management is faced with challenges arising from uncertainties of local development initiatives or projects. Generally developments of peri-urban areas are initiated by private actors that want to use the land to generate revenue (Maluleka, 2013). The governments' role previously was to provide a safety net for its citizens, but due to decentralization this role has been slightly undermined as a result of the increasing power of the private sector and international investors (Zhao *et al.*, 2009).

The United Nations Development Programme (2004) paper states that decentralization can also lead to development that meets the needs of local people. However in order for this to be possible development initiatives will have to be inclusive of different stakeholders from all levels including the national, provincial, municipal, district, town and village levels. Representation that is inclusive of all affected stakeholders can and will lead to beneficial development initiatives for all parties involved (Zhao *et al.*, 2009).

3.4.9. Provision of Basic Social Services

Most municipalities in peri-urban areas are faced with steep challenges of providing basic social services for their people (Starkl *et al.*, 2013; Sutherland and Lewis, 2012). This mainly affects low and middle income countries as the majority of their governments lack the institutional and financial capacity to provide basic services (Maluleka, 2013, Sutherland and Lewis, 2012; Kombe, 2005). Urbanization and rapid population growth has led to the demand for land to accommodate new developments and housing needs (Choy and Sutherland, 2008).

3.4.9.1. Water, Waste Water Management and Sanitation

Water provision and waste water management are top of the agenda on peri-urban service provision debates. Starkl *et al.* (2013) argue that peri-urban water management in developing countries poses serious concerns and this issue lacks sustainable solutions. Sutherland and Lewis (2012) point out that water is considered a social good which makes it a fundamental tool for transformation and development in any country. This makes water management and provision very critical to the development of peri-urban areas, as this resource in most cases is poorly provided to these areas. Management of natural water resources is crucial to the wellbeing of citizens especially in areas that are characterised by poverty and limited service delivery.

Peri-urban areas are characterised by poor waste water management and poor water provision. Furthermore, improper water practices and inadequate sanitation are common among peri-urban residents (Sutherland and Lewis, 2012; Surinkul and Koottatep, 2009). Water and waste management is not only an issue of limited institutional capacity by local governments, but also residents have a crucial role to play in ensuring that they keep their areas in decent living conditions (Surinkul and Koottatep, 2009). However residents in peri-urban areas can only do very little as local municipalities need to lead the way by providing structures and means for local people to live in decent conditions. Surinkul and Koottatep (2009) argue that peri-urban residents' health is affected negatively due to insufficient waste water managements systems.

Water provision in areas beyond or on the urban edge requires massive capital investments because of the challenges provided by the terrains and other naturally induced obstacles (Sim *et al.*, 2014). This is one of the major challenges leading to slow water provision in peri-urban areas (Sutherland; Hordijk; Lewis; Meyer and Buthelezi, 2014). Murray (2008) further argues that peri-urban areas are overcrowded which leads to environmental degradation and poor provision of water and sanitation. The demand for water provision is too high and this has led

to backlogs which local municipalities will find very difficult to achieve water provision targets (Sutherland and Lewis, 2012).

Another critical issue that has resulted in the poor provision of water in poor peri-urban space is the fact that water is a commodity and the rights of providing this resource in most cases has been handed over to private companies (Allen, Dávila and Hofmann, 2006). It is argued that most developing countries have given the rights of providing water over to private institutions; this has been due to the fact that governments lack the financial muscle to run water services (Sutherland *et al.*, 2014; Sutherland and Lewis, 2012; Allen *et al.*, 2006). This often means areas of low income groups will not get first preference in water provision services as government focuses more on improving water provision in formal areas (Allen *et al.*, 2006). These are few of the many factors that contribute to lack of or poor provision of water in areas beyond the urban fringe. Allen *et al.* (2006) states that peri-urban water and sanitation need cannot be met through large scale private sector companies.

Sanitation and other waste disposal mechanisms in peri-urban areas are of poor standards and in some instances they are non-existent (Simon, 2008). Providing infrastructure for waste disposal is too costly to local governments hence this translates into poor living conditions in peri-urban spaces, which poses serious health hazards (Sutherland and Lewis, 2012; Simon, 2008; Allen, *et al.*, 2006). Governments have been implementing cheaper sanitation services in many developing countries; this has gone as far as on site waste disposal through the use of ventilated improved pit (VIP) toilets (Gounden, Pfaff, Macleod and Buckley, 2006). This seems to be the cheapest way of providing solutions to sanitation problems in most rural and peri-urban areas (Sim *et al.*, 2014; Sutherland and Lewis, 2012). Questions have been raised as to whether these initiatives can sustain peri-urban livelihoods over a long period and if they are environmentally sustainable (Gounden *et al.*, 2006). Akrofi and Whittal (2011) argue that provision of sanitation services is essential for residents in peri-urban areas to enjoy their lives.

3.4.9.2. Schools, Housing, Health Centres and Commercial Services

Schools, clinics, housing and commercial services are also poorly provided in peri-urban areas and the reasons attributed to this are the lack of accessibility and threshold (Akrofi and Whittal, 2011). More often than not municipalities often leave out peri-urban areas in their development plans therefore they tend to not budget for establishment of social services for peri-urban and rural communities (Kombe, 2005). Many peri-urban areas are faced with massive backlogs for housing and health facilities (Sutherland and Lewis, 2012). Even though the numbers are there

in terms of population the issue of structural services to maintain and run these services is often not there. For example the road infrastructure in peri-urban areas is generally poor this means that commercial services, clinics and schools are inaccessible. Peri-urban areas spatial location hinders other communities from utilizing these services, for example, the fact that these areas are located far out on the edge implies that only a limited number of people can be serviced by these social facilities. They often require tax revenue to run and this creates challenges in poor peri-urban areas as they often depend on social grants and therefore cannot contribute to the tax revenue of the municipality.

3.4.10. Environmental impacts of peri-urban densification

Areola *et al.* (2014) argue that issues surrounding sustainability need to be incorporated in planning frameworks to ensure environmentally sustainable development initiatives. In order to ensure sustainability, questions on what the environmental costs of rapid urban growth need to be explored and also one needs to look at who is affected by these costs (Areola *et al.*, 2014). The growing numbers of commercial and residential developments, the environmentally sensitive land with high biodiversity, scenic and archeological sites are under threat due to urbanization (Areola *et al.*, 2014; Maluleka, 2013). The process of urban growth is likely to bring deforestation and deterioration of the environment in peri-urban areas. For example, some of the environmental problems that are eminent include amenity losses to recreational and tourism opportunities, soil degradation from soil erosion due to construction on steep slopes, increased runoff due to deforestation and clearing of other vegetation for land development (Areola *et al.*, 2014, Torres, 2008). Lastly the loss of rich genetic diversity and hydrological buffering capacity and destruction of historical heritage sites are some of the other factors that contribute to environmental threats (Areola *et al.*, 2014; Starkl *et al.*, 2013; Torres, 2008).

The loss of vegetation is also inevitable through urban development and use of biomass for energy by low income families (Areola *et al.*, 2014). Soil and water pollution are some of the common environmental factors that peri-urban areas are faced with, due to littering and unmonitored waste disposal practices (Areola *et al.*, 2014; Torres, 2008). The low income groups are the most vulnerable to the consequences of environmentally unsustainable practices. This is made worse by the fact that there is no equal access to resources to help deal with the inevitable results. Often the poor are denied rights to access resources through market mechanisms that ensure that prices are too high for them.

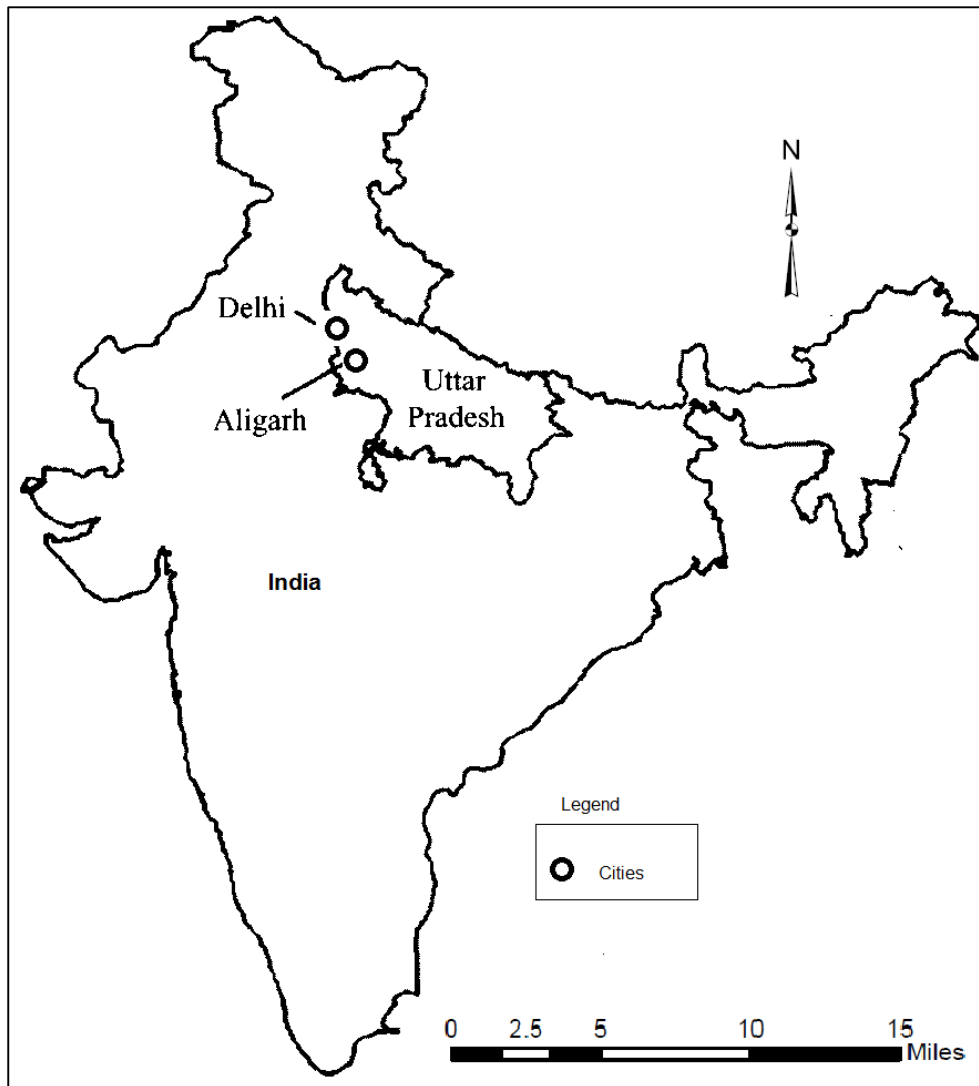
There are clear environmental, economic and social consequences that result because of urban expansion and it needs to be addressed through a combination of policy instruments, development controls and land conservation measures (Areola *et al.*, 2014; Starkl *et al.*, 2013; Zhao *et al.*, 2009). The answer to environmental vulnerability lies in the improvement of housing structures along with other basic services (UN Habitat, 2003). Governments are identified as key role players in ensuring that environmental vulnerability in peri-urban areas is controlled, through ensuring that key basic services and survival strategies are readily available (Eakin *et al.*, 2010).

3.5. Precedent Studies

3.5.1. Aligarh City in India

Aligarh city provides a solid base for this study; the city is expanding very rapidly or it is going through a phase known as sprawl just like many other cities in developing countries. The rapid sprawl of the city resulted in conflict due to different land uses competing for the same land. For example Banu and Fazal (2013) state that because of the productive agricultural nature of peri-urban areas close to the city, conflicts have risen as a result of urban encroachment. This has meant that agricultural land has to be converted to other forms of urban land uses (Banu and Fazal, 2013). But this has resulted in social conflict because peri-urban and other rural residents feel that their values have been undermined (Banu and Fazal, 2013; Parkinson and Tayler, 2003).

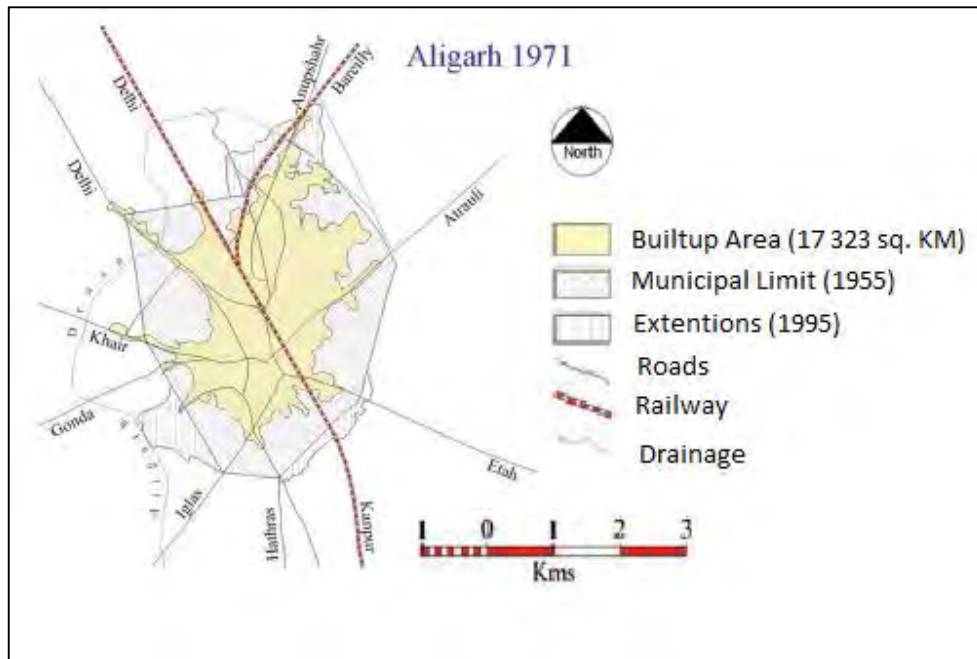
Figure 3.4: Aligarh City location Map



Adopted: Khan and Menka (2013)

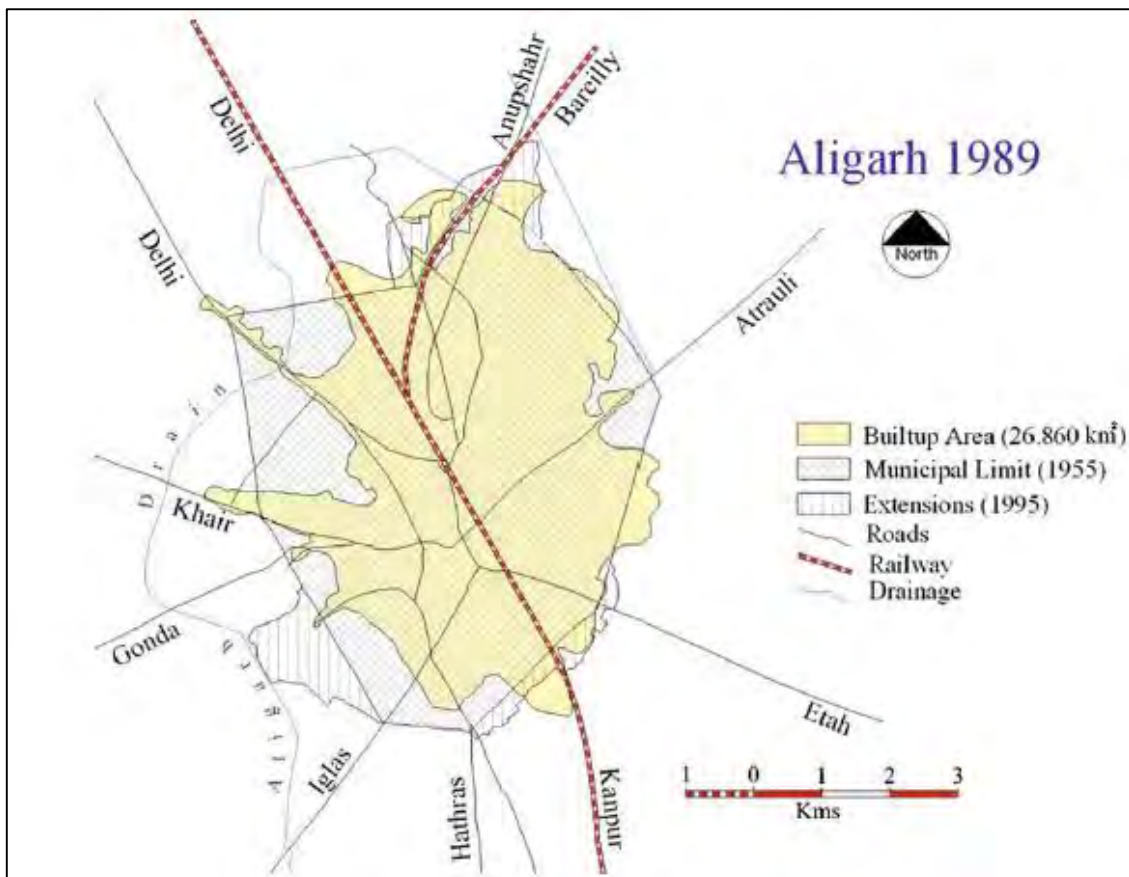
Sprawl and rapid urban expansion in the city is clearly indicated in the three diagrams provided. From 1971 the total built up area was 17 323 square kilometres as indicated in Figure 3.5a on page 40 and this rapidly rose to 26 860 square kilometres in 1989 (see Figure 3.5b on page 40) and in 1999 it had risen to 40 281 square kilometres as indicated in Figure 3.5c on page 41 (Farooq and Ahmad, 2008). This gives us a clear indication of the demand for land for residential purposes. Rapid growth in built up area in the city is heavily linked to the rapid rise in population numbers. Therefore the city has rapidly expanded towards the urban fringe or the peri-urban areas.

Figure 3.5a: Aligarh City's Built up Area in 1971



Source: Farooq and Ahmad (2008:80)

Figure 3.5b: Aligarh City's Built up area 1989



Source: Farooq and Ahmad (2008:82)

Figure 3.5c: Aligarh City's Built up Area in 1999



Source: Farooq and Ahmad (2008:82)

Expansion of the city has resulted in a number of land use changes especially in peri-urban and rural land. Pandey, Chandra and Devadas (2014) point out these key changes in land uses, and they argue that due to rapid urbanization the spatial character of peri-urban areas around Aligarh city have gradually changed their spatial character which was mainly agricultural in form to residential and other urban form land uses. Agricultural land has been significantly lost due to demand for housing and road construction. Table 3.1 on page 42 gives a full understanding of the changing character in land uses of the city between 1980 and 2010.

Table 3.1: Land use comparison, 1980 -2010

Land use	Area (ha)		Change in area (ha)	% change
	1980	2010		
Residential	994.5	3590	2595.5	260.9
Villages	111.5	293	11.5	162.78
Commercial	56.5	240.5	184	325.6
Education	28.5	113.5	85	298.2
Government offices	64	133	69	107.8
University area	351.5	351.5	0	0
Aligarh fort	17.1	17.1	0	0
Industrial	64	149	85	132.8
Recreational	42.5	101.5	59	138.8
Grave yards	27.5	32.5	5	18.1
Vacant land	441.5	2538.5	2097	474.9
Tree plantation	172	191.5	19.5	11.3
Agricultural land	13209	7761	-5448	-41.2
Brick kilns	14.5	17.5	3	20.6
Water bodies logged	45	109.5	64.5	143.3
Total built up	1601.5	4679	3077.5	192.2

Source: Pandey *et al.* (2014:399)

Some of the key issues identified in the case study include the lack of infrastructure such as roads, parks, community centres, hospitals, shopping and education facilities (Pandey *et al.*, 2014). The majority of the funds are allocated for the running of the energy sector for commuting as well as for other needs (Pandey *et al.*, 2014). The changing of land uses due to population pressures have resulted in a massive loss of agricultural land. This has resulted in environmental degradation in peri-urban and rural areas (Pandey *et al.*, 2014). There is also the

monopolizing of informal developers due to the lack of government schemes and this has resulted in the rich property owners buying agricultural land and converting it into residential apartments (Pandey *et al.*, 2014). Rich property owners then sell these apartments at a very high price leaving the poor even more poor.

There has been constant migration of people from rural areas into the city for better education and economic opportunities. Other reasons contributing to migration from rural and peri-urban areas in Aligarh city include poor sanitation due to lack of sewer line connections, poor water quality and lack of electricity supply (Pandey *et al.*, 2014). However it has also been argued that 68 % of people in the city prefer to live in peri-urban areas than in the urban core because the city core is saturated and it has exceeded its carrying capacity (Pandey *et al.*, 2014). This situation is an indication of the growing importance of peri-urban areas in the city. Therefore city officials should look to invest more structural and social services out in peri-urban areas.

The case study of Aligarh city gives a clear indication of the significance of urban sprawl in driving infrastructure out into the fringe areas especially in this case. The scholars conclude by stating that the outward expansion of the city has helped with providing basic services into surrounding peri-urban areas through infrastructure development (Banu and Fazal, 2013). They argue that rapidly growing peri-urban areas of Aligarh city lack the institutional, administrative capacity and the resources to fulfil infrastructure development in these areas (Banu and Fazal, 2013). This is common among peri-urban areas in many developing countries (Sutherland *et al.*, 2014; Maluleka, 2013; Sutherland and Lewis, 2012; Kombe, 2005). However they suggest that peri-urban areas should be closely linked to their urban core in terms of development so as to allow for cheaper rolling out of services (Banu and Fazal, 2013). This will be possible because infrastructure development from the urban core can be rolled out into fringe areas at reduced costs through connecting to already existing service networks (Banu and Fazal, 2013).

3.5.1.1. Lessons from Aligarh City case study

Rapid population growth and urbanization has led to the rising importance of peri-urban areas for a number of reasons. These include providing relief to heavily populated and saturated urban centers. However in order for this to be achieved, government officials need to direct the urban form that spills over to rural and peri-urban areas. Some of these areas provide valuable agricultural opportunities as has been indicated in Aligarh city, therefore this needs to be preserved to ensure food security. Rapid urbanization significantly affect the nature of peri-

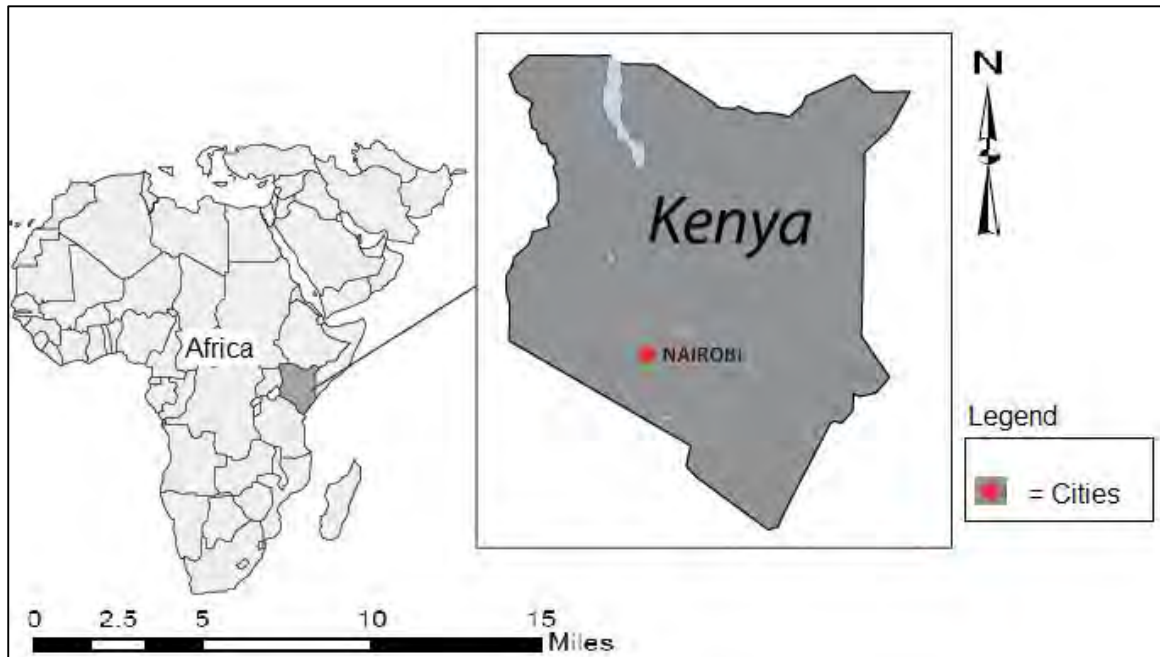
urban areas as more and more of these areas change form. Services such as schools, water, sanitation and commercial services also need to be prioritized in peri-urban areas to ensure sustainable livelihoods even in areas away from the urban core. Haphazard peri-urban settlements need to be controlled to ensure easy installation of structural services. There is population relief in the inner city due to redistribution of development out in the peri-urban areas. In the same process there is also a loss of agricultural land due to development.

3.5.2. Nairobi in Kenya

The main focus of this study is on the loss of agricultural land due to pressures for other urban land uses. Urban land uses are increasingly being adopted in peri-urban areas. Thuo (2013) argues that agriculture is being squeezed out in peri-urban areas of Nairobi due to the demand for urban land uses and the main contributing factor being population growth. This contributes to the growing demand for residential and commercial land uses. Peri-urban populations have to find means to sustain themselves hence the growing informal commercial activities (Thuo, 2013).

The conversion of agricultural land to urban land uses results in transformations in agricultural production, spatial structure, land ownership, land markets in peri-urban areas and most importantly results in the change in social structures (Thuo, 2013). Managing land use conversions due to urban growth is problematic in developing countries such as Kenya. This usually result in social and spatial conflict due to weak land management policies (Thuo, 2013). Poor peri-urban land management policies are typical of most African countries, for example in Ghana, South Africa, Botswana and Tanzania various scholars have pointed out this issue (Sutherland *et al.*, 2014; Banu and Fazal, 2013; Sutherland and Lewis, 2012; Akrofi and Whittal, 2011; Kombe, 2005). One finds that because of these issues peri-urban areas are poorly planned for by local governments. Development usually occurs in a haphazard manner and this sometimes leads to urban sprawl as was the case in Nairobi between 1976 and 2000 (Thuo, 2013).

Figure 3.6: Locality Map of Nairobi



Adopted: Bosco, Maina and Kariuki (2011:875)

Thuo (2013) argues that there were various factors at the macro scale that influenced the loss of agricultural land due to urban land uses, for example, governance and planning were singled out as major factors that resulted in the shift in land uses. Poor governance and planning resulted in inadequate public housing supply in parts of Nairobi due to high costs of land (Thuo, 2013). This resulted in higher demand for occupation of land on the fringe which is more affordable to low income groups (Thuo, 2013; Maluleka, 2013). Land on the fringe is cheaper than land that is closest to the urban core and the main reason being that peri-urban land in most cases is not serviced (Areola *et al.*, 2014; Sim *et al.*, 2014). Therefore agricultural land was slowly being converted to residential land.

Another critical factor for drawing people into the fringe in Nairobi was improved transport routes that pass through the fringe, this makes it easy for commuters to use public transport for travelling in and out of the urban core (Thuo, 2013). Transport plays a significant role in driving development in any country therefore accessibility will always have a great influence on where people choose to live (UNDP, 2004). The construction of transport networks and roads also lead to changing spatial character and land uses in peri-urban areas.

Ruiru, one of Nairobi's peri-urban towns which is along major transport facilities in the city and a major attraction for poor residents due to lower land prices is said to be in dire need to public health facilities (Bansal, Boyer, Cheng, Crispin, Daniels, Graeff, Helton, Langlois, Walsh and van Vliet, 2006). It is argued that social facilities such as health care is extremely scarce in this region of the city. For example, Bansal *et al.*, (2006) referred to the fact that in Ruiru there are two public health clinics but only one is available to the public due to the fact that the other is located in Prison College making it inaccessible to ordinary residents. The available health clinic serves more than 200 000 residents and has only three nurses and no doctors (Bansal *et al.*, 2006). Human waste generated from the clinic is largely dependent on two septic tanks and few pit latrines and there is an onsite incinerator for medical waste (Bansal *et al.*, 2006). Considering the size of the population served by the clinic it is safe to say that these waste disposal mechanisms are not sufficient. Private companies collect solid waste in middle to high income residential areas, but in Ruiru and other poor peri-urban residential areas waste collection is said to be 'non-existent' (Bansal *et al.*, 2006:40). This poses health hazards and unpleasant living conditions due to poor waste management and disposal.

This gives a clear picture as to how under-serviced some of Nairobi's peri-urban areas are and the conditions residents live under. Rapid peri-urbanization due to massive population growth is likely to exacerbate poor living conditions and the vulnerability of peri-urban residents to poverty and health risks. The pace of peri-urbanization and sprawl outstrips that of social service provision in rural and peri-urban areas (Bansal *et al.*, 2006 and Thuo, 2013).

The changing social character in peri-urban Nairobi also influences culture due to influences from immigrants. This has an effect on small holder farmers that rely on family labour for production. For example this creates intergeneration conflicts whereby some members refuse to take part in production (Thuo, 2013). This will obviously have a negative impact on household production. For example the cultural system of peri-urban dwellers is diluted leading to loss of non-paid farming labour (Akrofi and Whittal, 2011).

3.5.2.1. Lessons from Nairobi's case study

Land conversions in peri-urban areas from agriculture to other land uses do not only influence the physical structure of peri-urban areas but it also leads to social structures modification. This has resulted in peri-urban residents' cultural change as well as physical spatial change. This requires careful planning to ensure that the shift from farming to residential and other land uses does not compromise food security of the peri-urban poor. Social facilities such as public

clinics and sanitation services need to be carefully extended to densely populated peri-urban areas to ensure the well-being of peri-urban residents.

3.5.3. Kumasi in Ghana

The focus of this case study is to highlight the importance of formal water and sanitation in peri-urban areas. Rapid peri-urban growth has consequently affected land uses at a rapid pace in Kumasi (Ricci, 2011). This along with land speculation and lack of security of tenure have encouraged informal settlements which has resulted in lack of formal sanitation and water provision in peri-urban areas of Kumasi (Kitchen, 2005; Akrofi and Whittal, 2011).

Figure 3.7: Location of Kumasi in Ghana



Source: Web 3 http://easytrackghana.com/travel-information-ghana_maps.php (accessed 01/02/2015)

In Kumasi land ownership is customary due to this nature of land tenure provision of formal basic services to individual house-holds presents a lot of challenges (Akrofi and Whittal, 2011). These customary areas are not designated for infrastructure development by local authorities (Akrofi and Whittal, 2011). This often means that peri-urban areas in Kumasi such as Appeadu

lack basic service infrastructure because no planned water and sanitation resources are designated for them.

In Kumasi the government and other officials identified the private sector for the provision of water and sanitation (Akrofi and Whittal, 2011). Provision of these basic services in Kumasi is in the hands of both the private sector and government. Akrofi and Whittal (2011); Allen (2010) and Kombe (2005) argue that local government does not have the capacity to provide these services without any other institutional help. Decentralizing provision of water and sanitation in Kumasi is said to be a tool for effective poverty reduction (Akrofi and Whittal, 2011). In peri-urban Kumasi private individuals have taken the initiative to provide water for themselves and the community due to the inefficiency of formal suppliers (Akrofi and Whittal, 2011; Allen, 2010). Peri-urban Kumasi is a water scarce area therefore there was an urgent need for local residents to take the initiative by storing and pumping water from bore holes. Image 3.1 shows private individual initiatives that residents in Kumasi have taken in order to store water from boreholes and from water mains when available.

Image 3.1: Tanks for communal and private water supply in peri-urban Kumasi



Source: Akrofi and Whittal (2011:8)

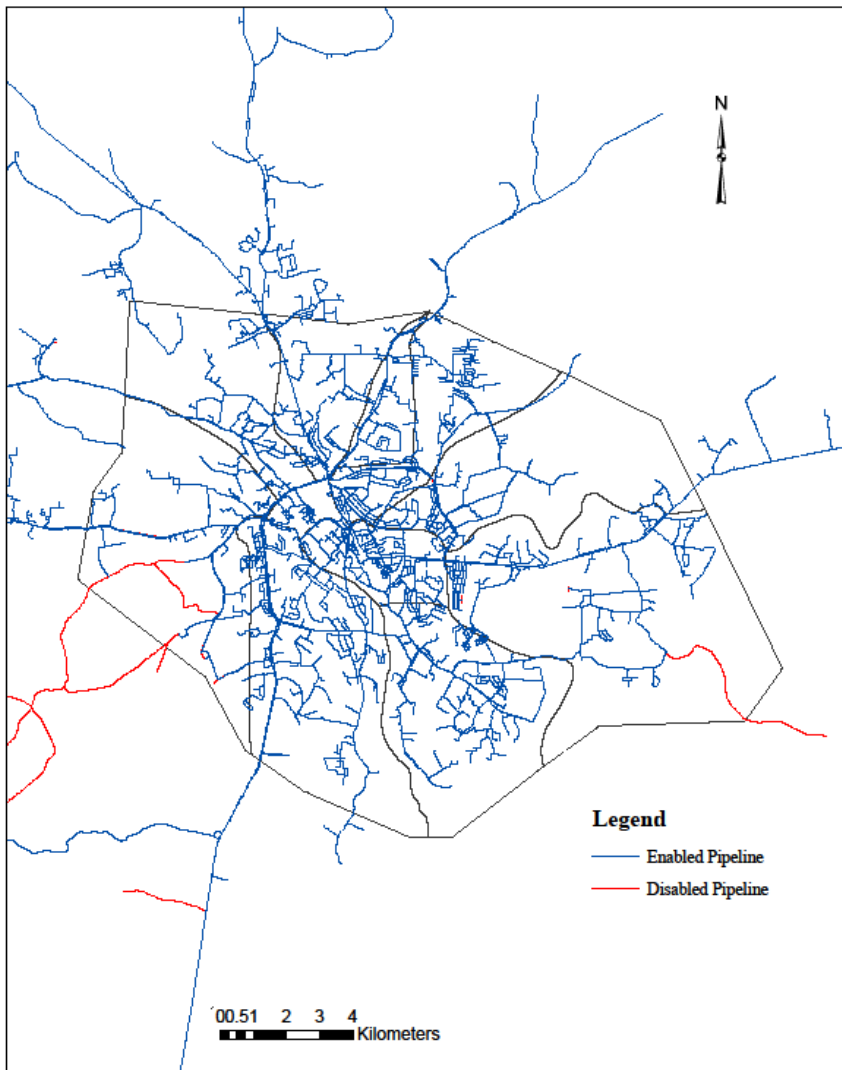
In one of Kumasi's peri-urban areas, Appeadu local chiefs and elders organized the community through a self-help process and with the Ghana Water Company Limited (GWCL) to extend piped water to the area (Akrofi and Whittal, 2011). This initiative was adopted after a number of government initiatives failed to sustainably provide clean water in the area and had resulted

in local people reverting to guinea worm infected water streams that exposed them to water borne diseases (Akrofi and Whittal, 2011). It also failed due to irregular water supply and poorly maintained water pipes by GWCL (Akrofi and Whittal, 2011).

After a while community leaders including the chief consulted GWCL to sink a borehole to one of the underground natural streams to provide water sustainably (Akrofi and Whittal, 2011, Allen, 2010). Land was made available for the purpose by the allodial owners and it was clearly delineated and handed over to the community (Akrofi and Whittal, 2011). This was to ensure that subsequent chiefs will not be able to unilaterally change the use of the land or dispose of it.

The chief and community members of Appeadu have acquired a power plant which pumps the water from the borehole to a reservoir in town about a kilometre away and they are able to draw water from this reservoir (Akrofi and Whittal, 2011). The reservoir area has also been declared a communal area. Individuals may connect water from the reservoir to their houses but have to pay a fixed monthly charge for this service (Akrofi and Whittal, 2011).

Figure 3.8: Community initiative and pipelines



Source: Akrofi and Whittal (2011:15)

Stern (2007) argues that improved service provision and planning could lead to more resilient peri-urban areas while also functional decentralization and infrastructure provision could lead to sustainable solutions.

3.5.3.1. Lessons from Kumasi case study

Public and government partnerships in tackling water provision in peri-urban areas are more sustainable in providing lasting solutions to water problems. For example, The Ghana Water and Sanitation Department (GWSD), on its own, could not supply the community with water continuously due to infrastructural problems (Akrofi and Whittal, 2011; Kitchen, 2005). However, partnership between the community and the GWSD resulted in a lasting solution. Good local leadership is very critical in ensuring peri-urban areas tackle service provision

problems and also community ownership of their resources ensures that service infrastructure is well looked after. Communal ownership of land does not always lead to challenges in providing services to peri-urban areas if the relationship between local government and traditional leaders is properly managed and the tasks of each individual are set out clearly.

3.6. Summary

This chapter started off by setting out an introduction to the chapter followed by the conceptual framework for the study and defining key concepts that form the basis for understanding the topic at hand. Key concepts were briefly defined to provide an understanding for the use of each of the concepts in the context of this study. The theoretical framework based on the urbanization and bid rent theories provided the bases for this study. The review of literature by various scholars gave insight on peri-urban areas and basic social service provision. This was supported by Aligarh City in India and Kumasi in Ghana and Nairobi in Kenya which together demonstrated challenges and initiatives expected in peri-urban areas.

CHAPTER FOUR: LITERATURE REVIEW ON SOUTH AFRICA

4.1. Introduction

This chapter discusses peri-urban densification in the context of South Africa. A brief historical background to current spatial patterns is presented. The discussion revolves around the institutional framework that governs spatial growth and development. This is followed by an overview of peri-urban development in eThekweni. The chapter ends with a summary.

4.2. Historical Background

The legacy of apartheid and colonialism has had a significant influence on present day spatial patterns in South Africa. Apartheid excluded a large number of the country's poor and confined them to the reserves with little service delivery and economic opportunities. The 1913 Native Land Act forced African people to settle on the outskirts on over-populated and unproductive land (Walker, 2004). Spatial exclusion, which negatively impacted the socio-economic status of those excluded, is still visible in the democratic South Africa and is a direct consequence of apartheid planning policies.

The fall of the apartheid regime resulted in mass migration to urban environments in search of improved opportunities. Cross, Mngadi and Mbhele (1998) argued that migration to urban spaces was the result of the need for improved services as much as it was for economic opportunities. The importance of basic service delivery in peri-urban and rural areas cannot be over-emphasized as it has significantly shaped the spatial character of many rural, peri-urban and urban areas. Migration was motivated by socio-economic policies such as the Growth, Employment and Redistribution (GEAR) strategy and the Reconstruction and Development Programme (RDP), which prioritised infrastructure delivery in previously disadvantaged communities (Cross *et al.*, 1998). These policies aimed to improve the socio-economic status of rural and peri-urban citizens and to redress the social, economic and spatial inequalities of the past. Debate continues on the success of these strategies, with some scholars arguing that the targets set have not been and will not be met and that the infrastructure provided is of a poor standard (Hassen, 2000 and Berrisford, 2011).

On the other hand, Gray (2006) argues that the RDP provided an important platform for development and improved social welfare for the previously oppressed. However, these programmes were abandoned in the mid-1990s due to dissatisfaction with the outcomes. Todes (2006) notes that government departments were unhappy with the products of the RDP and that

this led to the closure of its offices in 1996, symbolising the rejection of the programme as a tool for transformation.

4.2.1. Pre-apartheid and apartheid legislation

Colonialism created the conditions for racial as well as spatial discrimination and the colonial government laid the foundation for racially discriminative legislation. The apartheid government intensified such discrimination by introducing further legislation to restrict the free movement and settlement of black people in South Africa.

Native Land Act No. 27 of 1913 and Development Trust and Land Act No. 18 of 1936

The Native Land Act No. 27 was promulgated on 19 June 1913 and marked the commencement of legal measures to spatially exclude black South Africans (Government Gazette Extraordinary 380, 1913). This was achieved by demarcating land for black and white people. This distribution of land was unequal, with the white minority receiving the bulk of productive land while black people were assigned very little land that was also unproductive (Walker, 2004). The Act ensured that the majority of the land was owned by whites. The Development Trust and Land Act No. 18 of 1936 further entrenched white privilege. These two Acts resulted in 13% of land being reserved for blacks and 87% for whites. The 1936 Land Act provided for black people to be settled in reserves, where land was owned by the state but controlled by tribal authorities.

The Black Administration Act No. 38 of 1927 provided for the establishment of homelands or Bantustans that were regarded as separate states from the rest of South Africa (Berrisford, 2011). Black people were to be separated from whites through the administration and monitoring of these reserves. Proclamation R293 of 1962 made provision for various forms of ethnic townships and created limited forms of tenure by introducing title deeds and certificates of occupation (Berrisford, 2011). However, there was no clear form of ownership in townships and the land was controlled by the township manager (Government Gazette 373, 1962). The townships were normally built close to urban areas and were characterized by underdevelopment and poor services (Berrisford, 2011).

This slew of laws set the scene for discriminatory spatial planning for more than 120 years. Peri-urban developments, accompanied by poor service delivery have their origins in this legislation that made it legal to racially and spatially discriminate against black people who were confined to homelands and crowded into small spaces outside the urban areas.

Abolition of Racially Based Land Measures Act No. 108 of 1991

This Act was introduced to repeal the 1913 Native Land Act; its purpose was to abandon the use of racial measures to allocate land (Berrisford, 2011). However, considering the spatial planning of most towns and cities in South Africa, it could be argued that the Act came too late. Segregation and divisions are evident in most cities and the spatial planning of black townships has hardly changed. Services and other social amenities are still poor in black spaces such as peri-urban areas, rural areas and townships.

The Less Formal Township Establishment Act No. 113 of 1991 (LEFTEA)

The LEFTEA was one of the laws approved by the apartheid government in its final years as a late attempt to accelerate land delivery to blacks who were previously denied this opportunity. However, it provided for minimal public participation and gave officials wide discretion to approve the establishment of townships irrespective of plot size, service standards and environmental considerations. Nonetheless, the Act reduced the bureaucratic processes required to establish informal townships for residential purposes (Berrisford, 2011).

Chapter one of the Act, stated that the administrator could use state land for the establishment of a less formal township and that land could be allocated to individuals without any formal plan or title deed (Barry, 2003; Turok, 1994). The Act aimed to protect the rights of people occupying a vacant piece of land for residential purposes. According to the Act poor people had the right to invade open spaces and settle on them. Application for formal land ownership of that piece of land followed after occupation of the land and the state had no legal right to forcefully remove people once they had established themselves on a piece of land (Berrisford, 2011). This indirectly encouraged people or communities to invade vacant pieces of land.

The Act was administered by provincial government and not local municipalities and was exempted from certain laws; because of this, it has been deemed unconstitutional (Berrisford, 2011). The fact that decision making is shifted from municipalities to provincial governments creates the conditions for conflict in terms of local spatial planning (Turok, 1994).

4.2.2. Post-apartheid legislation

The democratic government formulated various laws to help speed up land transformation and to give South Africans equal rights to land.

The Development Facilitation Act 67 of 1995 (DFA)

The Development Facilitation Act No. 67 of 1995 aimed to integrate different aspects of land development policy and procedures to address the spatial patterns inherited from the apartheid regime (Barry, 2003). The Act fast tracked the formalization of land rights while allowing for a wide range of tenure rights, including communal, individual and tribal-based land systems (Budlender, Latsky and Roux, 1998). The Act was mainly introduced to help speed up land rights and ownership. It allowed for the speedy introduction and take-off of land reconstruction programs. Government departments could implement development initiatives in relation to spatial configuration at a much faster rate through the application of the DFA. The main objective of the Act was to “*provide for nationally uniform procedures for the subdivision and development of land in urban and rural areas so as to promote the speedy provision and development of land for residential, small-scale farming or other needs and uses; to promote security of tenure*” (Budlender *et al.*, 1998:40). The Act also granted ownership rights to people that had occupied land for a minimum of five years and further stated that individuals should be granted the right to register that piece of land (DFA, 1995).

The Act was repealed in 2012 because it was deemed unconstitutional as it transferred decision making from municipalities to provincial tribunals (Berrisford, 2011). Private investors abused the law to fast track their developments, as it required fewer processes to approve plans. However Chapter 1, Section 3 of the Act is still deemed valid as its general development planning principles are useful. This section states that policy, administrative practice and laws should guide the development of informal and formal settlements in urban and rural areas and should discourage illegal occupation of land (DFA, 1995).

Planning and Development Act No. 6 of 2008 (PDA)

This Act argues that spatial planning should be uniform throughout a municipality, regardless of whether it is for rural or urban residents. It requires that rural and peri-urban areas are treated the same as urban areas in terms of spatial planning. It was intended to promote spatial planning that takes diversity into consideration but also corrects historical oppressive planning systems (Berrisford, 2011). Most importantly, the PDA transferred decision making to local municipalities, which promotes public participation and bottom-up approaches to development. It also provides for the appointment of an independent conflict resolution tribunal.

National Environmental Management Act No. 107 of 1998 (NEMA)

Chapter 7 of this Act promotes protection of the environment (Berrisford, 2011). It further speaks to the need to comply with agreements to protect and preserve the environment. Government plays a leading role in ensuring compliance with environmental legislation and that it is properly monitored. This includes all areas within the jurisdiction of any municipality. The establishment of peri-urban areas can lead to environmental degradation especially those that are zoned for environmental protection. *“The State must respect, protect, promote and fulfil the social, economic and environmental rights of everyone and strive to meet the basic needs of previously disadvantaged communities”* (NEMA, 1998:1). The Act further emphasizes the role that government plays in ensuring that basic and social service rights are met through ensuring that everyone has equal access to the environment.

Spatial Land Use Management Act No. 16 of 2013

This Act aims to ensure that spatial planning legislation is in sync with South Africa’s constitution and that spatial planning is uniform and aligned with national planning objectives. The decision making role is handed to local municipalities but their spatial planning decisions have to be aligned with national policies such as legislation relating to the environment. Section 35 of the Act states that it seeks to promote social and economic inclusion through spatial planning and land use management. Section 40 touches on sustainable land use planning which is aligned with the NEMA of 1998. Furthermore, the Act requires all municipalities to prepare and compile Integrated Development Plans (IDPs) which should include a spatial development framework (SDF) and land use schemes.

4.3. Case Study: EThekwini Municipality

4.3.1. Background on eThekwini

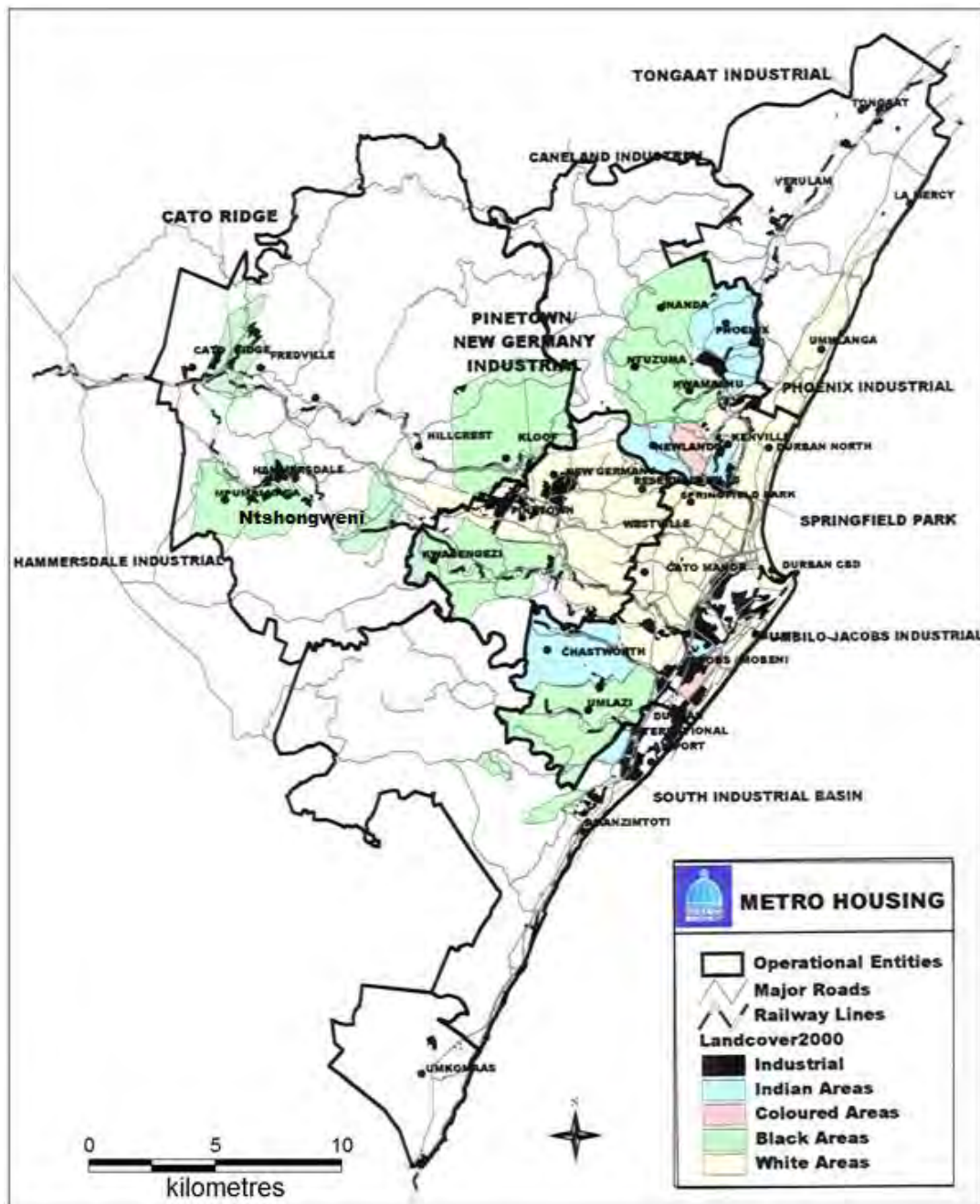
EThekwini municipality is located in the eastern part of South Africa, on the east coast of KwaZulu-Natal province. Its total area is approximately 2 300 square kilometres and it is composed of both rural and urban areas, with 22% of the land being used for agriculture, while 18% occupied by formal households, 5% rural households and 10% by peri-urban settlements (Stats SA, 2011). The municipality is divided into four functional regions, namely, the North, South, Outer West and the Central planning regions (eThekwini IDP, 2013/14). The total population is over 3.4 million and 34% of the inhabitants are located in the central district (urban core) where competition for space is fierce (eThekwini IDP, 2013/14). The population is expected to continue growing at a rate of 1.13% per annum which will contribute to increased

densification of peri-urban areas (Stats SA, 2011) as the urban core is saturated (Berrisford, 2011). This means that more services will be required in these growing areas.

Increased population growth in urban areas has contributed to rapid peri-urban growth. For example, more than 84% of the residents of eThekweni live in urban areas, 14% live on tribal or traditional land and only 0.5% lives on farms (Statistics SA, 2011). These figures indicate that competition is fierce for land in urban areas and overcrowding is a worrying factor. The situation will worsen if peri-urban spaces continue to be poorly serviced. Some people have decided to illegally invade land close to the urban core because of poor services further on the outskirts. This has created a major problem for municipalities. A good example is the illegal settlements in Lamontville on Gwala Street in the early months of 2013, when eThekweni's Land Invasion Unit was called in to forcefully remove illegal dwellings in the area (Maluleka, 2013).

The development of settlement patterns in eThekweni municipality is a direct result of apartheid. Figure 4.1 on page 58 shows some of the urban settlements in the municipality. It also shows that the majority of black people are located away from the urban core. Black communities were dispersed by the apartheid regime as a tool to keep them poor and inferior (Berrisford, 2011).

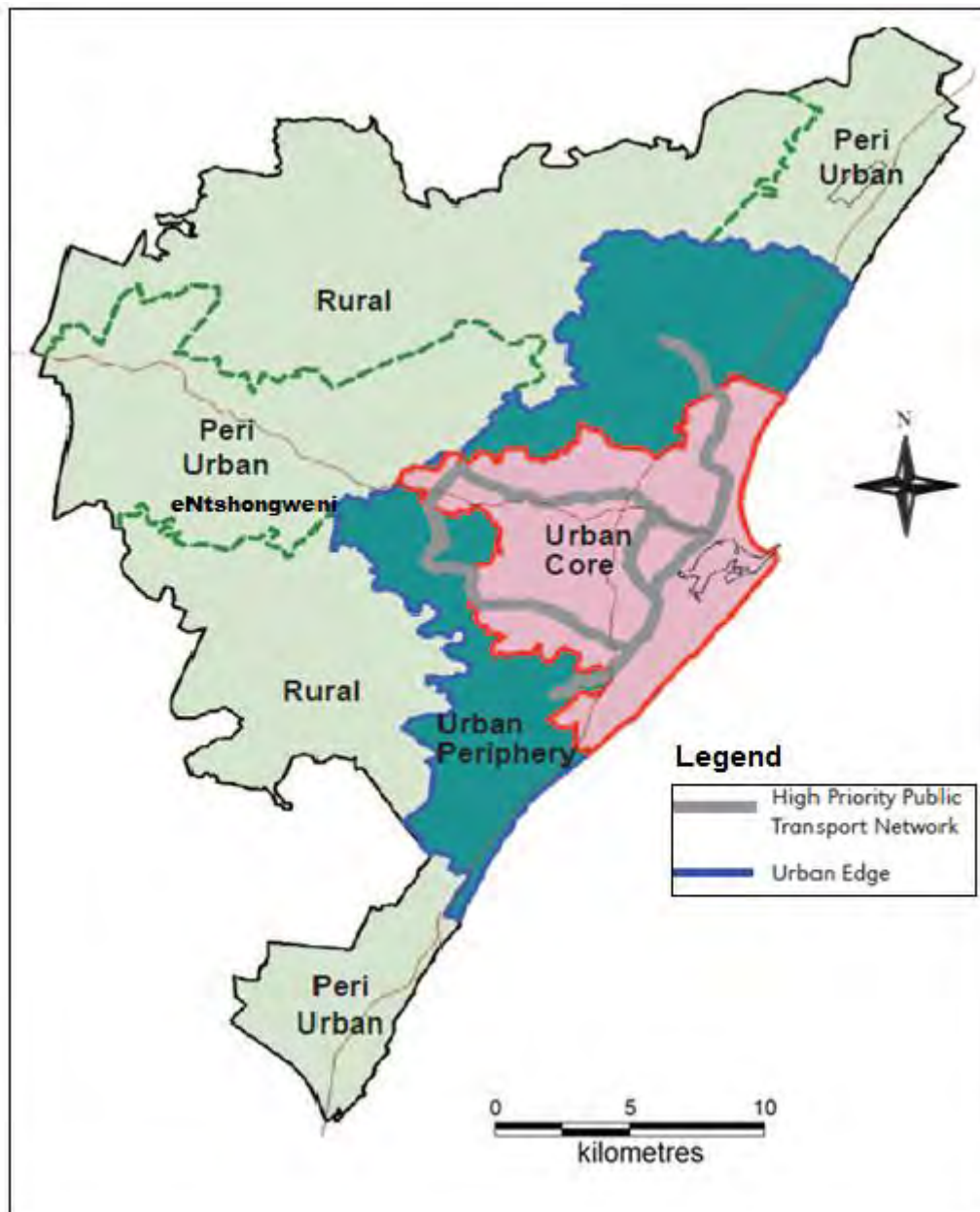
Figure 4.1: Historical development of eThekweni residential areas by race



Source: Marx and Charlton (2003:11)

The figure shows that the majority of black people were placed in peri-urban areas by the apartheid regime. These are the areas where social services and infrastructure are lacking (Berrisford, 2011). The core of the city was designed in such a way that the white minority would have easy access to services (Marx and Charlton, 2003).

Figure 4.2: Map depicting peri-urban areas in eThekweni Municipality

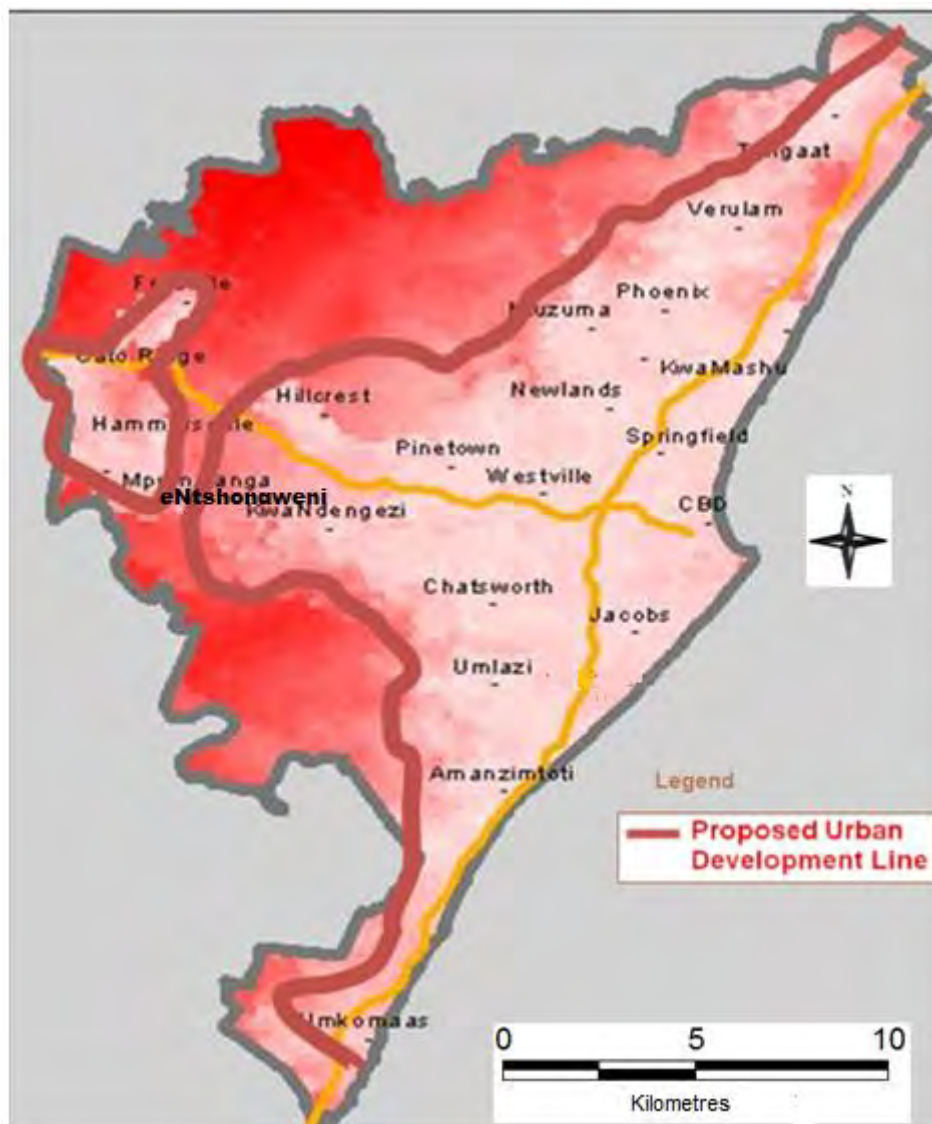


Source: eThekweni Municipality IDP (2002-2006:11)

From Figure 4.2 above it is clear that peri-urban areas fall outside the urban edge and are also located far from the urban core. The urban edge has played a significant role in determining where services are provided within the municipality. Sim *et al.* (2014) note, that, the urban edge gives a rough guide as to where the municipality intends to promote development. This implies that there is a need to re-think the provision of services in peri-urban areas. Based on the concept of the urban edge, municipal officials in the water and sanitation department developed the UDL concept to guide spatial growth and urban sprawl but also to ensure that development occurs in spaces that are desirable (eThekweni IDP, 2013/2014). The UDL

implies that there is a periphery hinterland with different service needs that has different servicing constraints from urban areas and therefore requires a different level of services (Sim *et al.*, 2014 and eThekweni IDP, 2013/2014). The cost of providing services rises as one moves away from the urban core; this is shown in Figure 4.3 below (Sim *et al.*, 2014). The concentrated red areas indicate the high costs of service delivery.

Figure 4.3: Cost of Services and the Urban Development Line



Source: eThekweni IDP (2013/14: 93)

4.3.2. Service delivery in eThekweni

The municipality has implemented a number of service delivery strategies in rural and peri-urban areas that lack water, sanitation and general social services. A water and sanitation programme was implemented in peri-urban areas (Lutchminarayan, 2007). This aimed to ensure adequate provision of water and sanitation in peri-urban areas identified as lacking these

crucial services (Lutchminarayan, 2007). A total of 200 litres per household per day of free water is supplied in areas where the poor cannot afford to pay for piped water (Sutherland and Lewis, 2012). Urine diversion (UD) toilets were rolled out in 2002 in peri-urban and rural areas where there was no water borne sewerage (eThekwini IDP, 2013/2014). The major reason for these initiatives was the cholera outbreak in the year 2000 (Roma, Holzwarth and Buckley, 2011). The state of health of peri-urban and rural residents was severely at risk due to cholera and the municipality was compelled to provide quick, alternative sanitation and water initiatives (Roma *et al.*, 2011). UD toilets seem to have provided a solution to sanitation problems that negatively affected the well-being of peri-urban dwellers in the municipality. However, despite the rollout of these initiatives throughout the municipality, eThekwini is still faced with massive basic service backlogs (eThekwini IDP, 2013/2014). Table 4.1 below illustrates these backlogs and the time it is likely to take to address each backlog.

Table 4.1: Service backlogs

Basic Service	Existing Backlog (consumer units) as at 30 June 2012	Delivery ranges per annum	Timeframe to address based on current funding levels *
Water	73460	2000-2500	29-37 years
Sanitation	226557	8000-10000	23-28 years
Electricity	301448	8000-13000	23-37 years
Refuse removal	0	1500-2000	0 years ²
Roads	1 456kms	10-15kms	97-145 years

* - The timeframes indicated depend on the rollout of funding / subsidies.

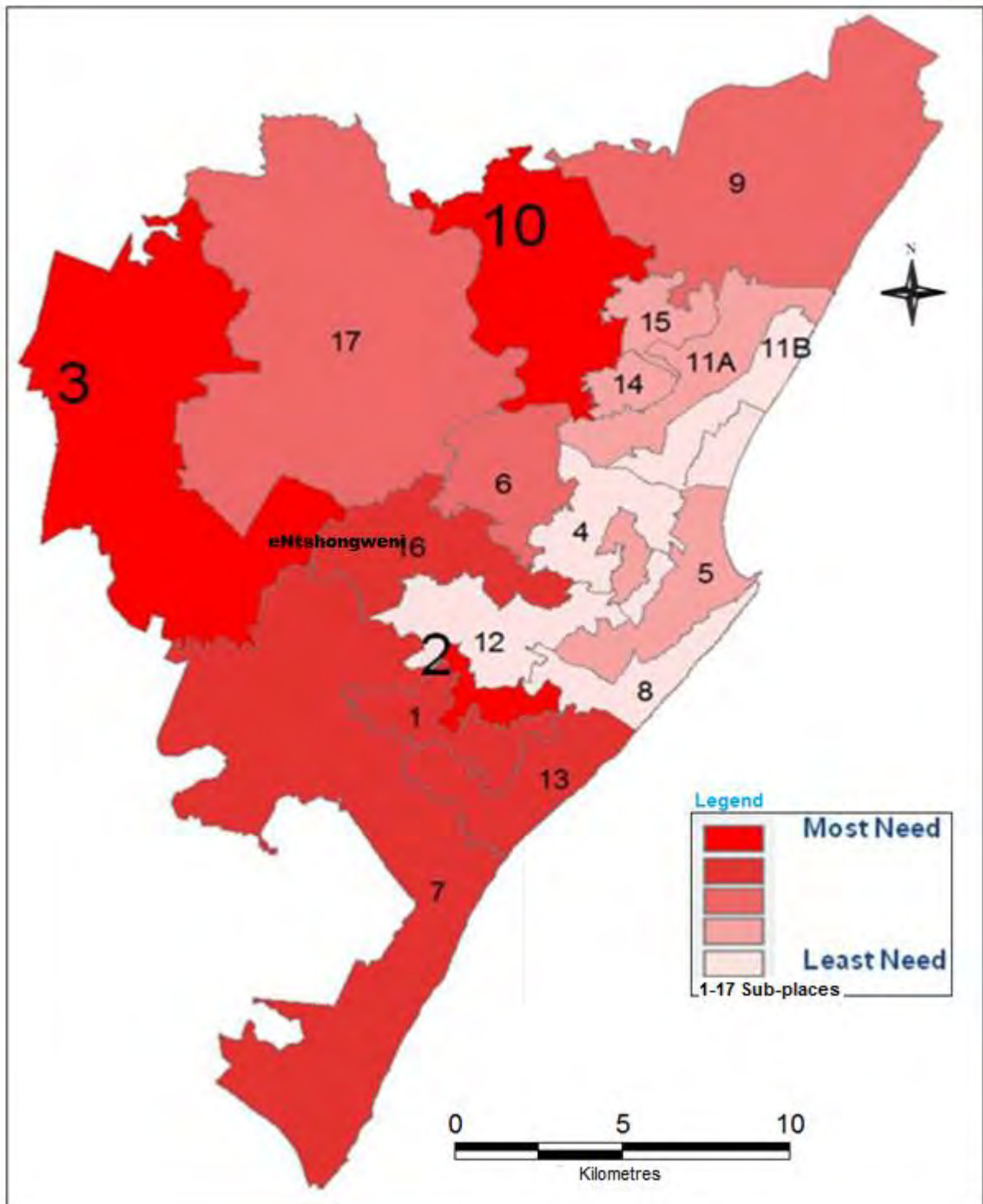
Source: eThekwini IDP (2013/14:46)

For example it will take about 23 to 37 years to address water, sanitation and electricity backlogs in the municipality. Most of the areas that are greatly in need of these services are in peri-urban and rural areas (eThekwini IDP, 2013/2014). Based on the municipality's current financial resources, it will take 97 to 145 years to meet the backlog in roads, which are critical for access to other services such as schools, clinics and commercial services (eThekwini IDP, 2013/2014).

Figure 4.4 on page 63 shows that the areas that are most in need of services are located in rural and peri-urban areas, which are beyond the urban edge. Areas that are close to the urban core are in less need of basic services due to the fact that they have already been provided. The densification of peri-urban areas in eThekwini has increased the need for social services. The socio-economic status of these areas makes it extremely challenging for the municipality to

provide services, because most residents rely on social grants and cannot afford to pay for services. Furthermore, most peri-urban dwellers do not pay municipal rates since their properties are valued at less than the threshold of R185 000 (eThekweni IDP, 2013/2014). This implies that the level of services provided will be of a lower standard. The municipality also educates people on maintaining UD toilets and hires local labour to promote economic and social development in peri-urban areas (Lutchminarayan, 2007).

Figure 4.4: Level of Need for Basic Services

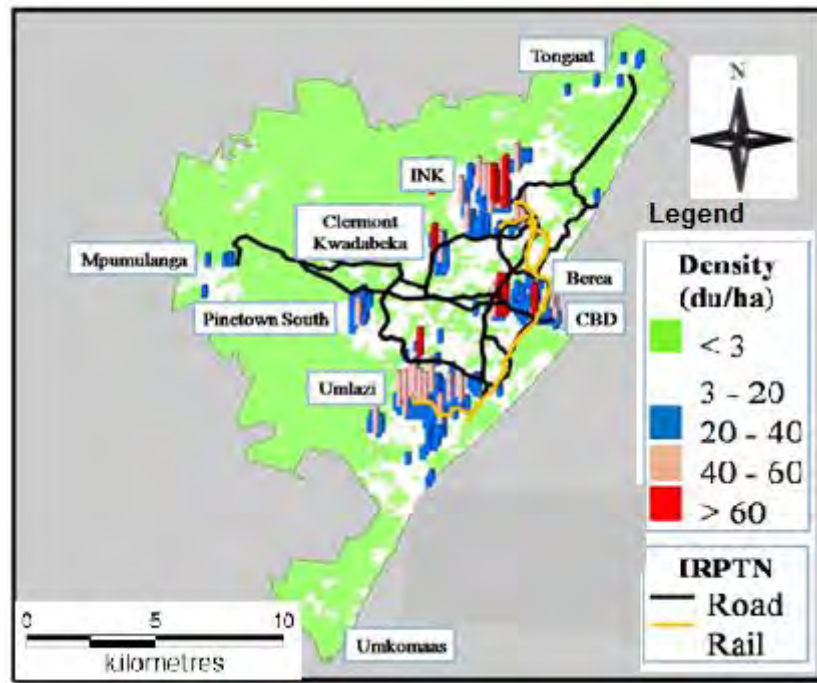


Source: eThekweni IDP (2013/14:47)

Population densities at the periphery have been growing over the years after the municipality implemented the infill and densification policy set out in the 1998 SDF. The municipality identified land that could be used for dense settlements within and beyond the urban edge to increase the threshold for services and for diversification of land uses (eThekweni SDF, 1998).

The infill and densification policy strategy also aimed to link and integrate peri-urban areas earmarked for development (eThekweni SDF, 1998). This was responsible for the current densification trends in the municipality.

Figure 4.5: Residential densities in eThekweni



Source: eThekweni SDF (2013/14:79)

Figure 4.5 above shows some high residential densities in the periphery near Mpumalanga (Hammersdale) and south of Pinetown (eThekweni SDF, 2013/14). Most peri-urban areas have an average 20 dwelling units per hectare; in some instances this reaches 60 dwellings per hectare (eThekweni SDF, 2013/14). These areas are located just outside the UDL. This could be an indication of the persistent trend of population growth in the urban core resulting in a spill over of residential dwellings into peri-urban areas. Provisional social services such as roads, water, sanitation, schools and health facilities are provided depending on the density of settlements (eThekweni SDF, 2013/14). These services may be upgraded if the municipality deems necessary (eThekweni SDF, 2013/14).

The municipality uses the access model to determine the provision of social services within its boundaries. Table 4.2 (page 65) and Figure 4.6 (page 65) give an indication of the level of service coverage based on the 2006 population figures (eThekweni SDF, 2013/14). Based on the model, security, education, fire protection and recreational facilities have been identified as under-provided services throughout the municipality but most importantly in rural and peri-

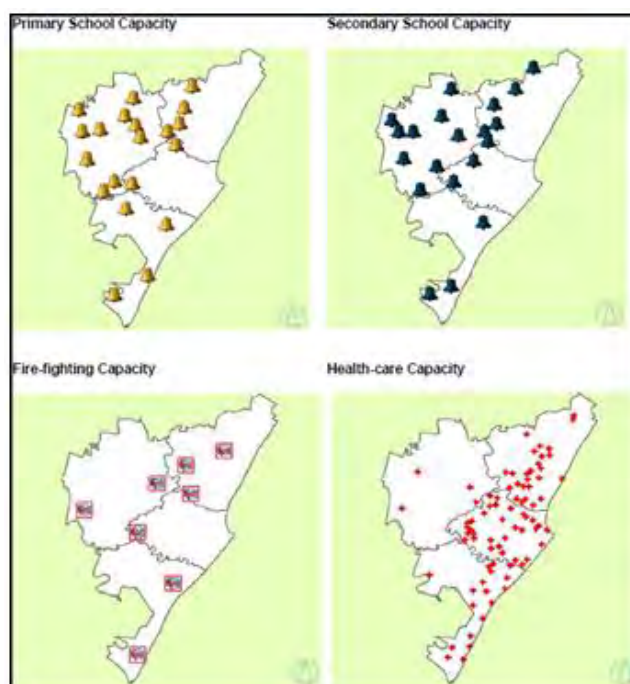
urban areas (eThekweni SDF, 2013/14). Therefore the municipality proposed to extend a number of essential services to these areas.

Table 4.2: Service Coverage

Facility	Current service coverage as % of the 2006 population.
Police	No figures at present
Clinics	56%
Cemeteries	Not measured as %
Primary schools	83%
Secondary schools	77%
Libraries	70%
Fire Stations	72%
Sports fields	91%
Parks - local	Under Review
Indoor Sports Halls	71%
Sports Stadia	80%
Swimming Pools	70%
Parks - regional	Under Review
Community Halls	79%

Source: eThekweni SDF (2013/14:92/95)

Figure 4.6: Current service coverage and proposed service delivery areas



Maps not drawn to scale

Source: eThekweni SDF (2013/14:92/95)

It is no surprise that most of the proposed service areas are located far from the urban core in peri-urban and rural areas. The UDL and apartheid spatial planning initially excluded areas beyond the urban edge. Therefore, future investment in service delivery will focus on previously disadvantaged areas (eThekweni SDF, 2013/14). It is against this background that the case study of eNtshongweni should be understood.

4.4. Summary

This chapter examined the historical development and shaping of peri-urban areas in South Africa. Various policies and laws were adopted by both the apartheid and democratic governments to create the conditions for spatial transformation. The apartheid government used legislation such as the Native Land Act No. 27 of 1913 to discriminate against, confine and exclude black people from productive land. The majority of black people were confined to the reserves on overcrowded and unproductive land. The democratic government has sought to rectify these spatial injustices by introducing legislation like the DFA to help speed up development and protect previously disadvantaged people from being evicted from their land. The case of eThekweni was discussed extensively in terms of peri-urban service delivery challenges. These challenges are common in peri-urban areas throughout the country. The densification of areas beyond the urban core means that more services will be required. Service backlogs persist and some will take decades to eradicate.

CHAPTER FIVE: DATA PRESENTATION AND ANALYSIS

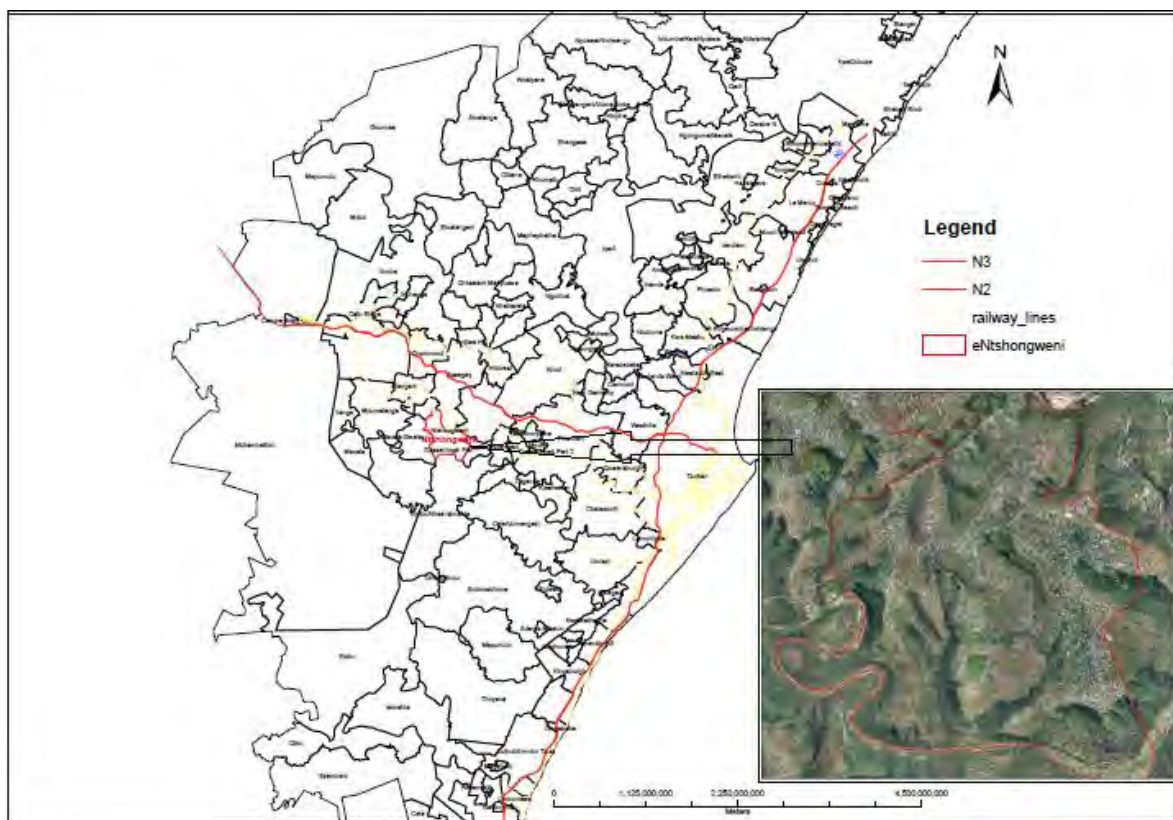
5.1. Introduction

This chapter presents and analyses the data collected. The purpose of this study was to investigate the impact of rapid peri-urban densification on basic social service delivery in eNtshongweni. Peri-urban areas tend to grow without any defined spatial pattern, posing challenges to the roll out of social services. In order to investigate the impacts of densification on social service delivery in eNtshongweni, a number of key stakeholders were interviewed. Structured and semi-structured interview questions were utilized to meet the study's objectives. Both qualitative and quantitative research methods were used.

5.2. Study area: ENtshongweni

Ntshongweni is located on the outer west of eThekweni municipality; it is surrounded by rural (Zwelibomvu) and township (Mpumalanga) communities. This small peri-urban community is administered by both traditional and municipal authorities. Figure 5.1 below shows the location of the study area within eThekweni municipality.

Figure 5.1: ENtshongweni Location Map



Source: Researcher (2015)

eNtshongweni is characterized as semi-urban and formal in nature. Most of the land is owned by tribal authorities but some is privately owned. Due to the political violence in the late 1980s people were reluctant to settle in the area. However, after a peace pact was signed, eNtshongweni attracted more residents.

eNtshongweni falls outside the UDL and this has had implications for the level of service delivery in the area. According to one of the community leaders, eNtshongweni was named after the steep-sided, cone-shaped hill in the uMlazi River valley. The population of eNtshongweni started rising rapidly in the mid-1990s as political violence slowly came to an end. Approximately 70% of the people that live in eNtshongweni were born in the area and others were attracted due to its location and cheap land prices. EThekwini municipality and the tribal authorities are the main administrative bodies in the area.

5.2.1. Section A: Socio-Economic status

Half of the surveyed population classified their residential area as rural and another half classified it as informal. No household classified the area as formal. The municipality and residents classify this area as being informal and rural in nature.

Table 5.1: Level of Education of respondents

Level of Education	No. Respondents	Percentage
None	6	12%
Primary	13	26%
Secondary/Matric	22	44%
Post Matric Certificate	6	12%
Diploma/Degree	3	6%
Postgraduate	0	0%
Total	50	100%

Source: Researcher (2015)

Table 5.1 above illustrates the level of education among the surveyed population in eNtshongweni. It shows that 44% of the respondents had reached secondary education but only 6% had a degree or diploma. A significant percentage (38%) of residents had no schooling or had primary school education.

Sixty per cent of the respondents were female and 40% were male. All 50 participants were African.

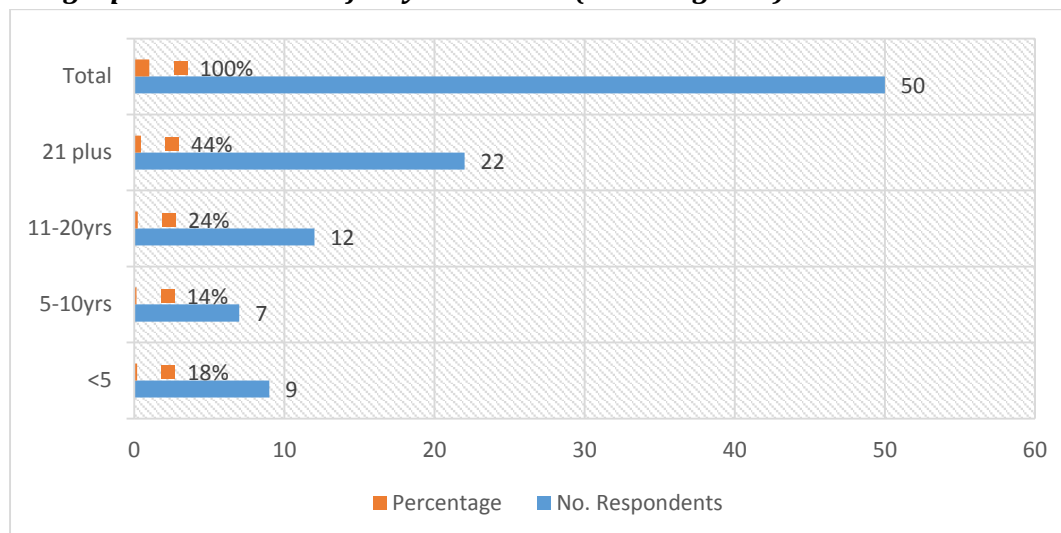
Table 5.2: Age grouping of the sample

Age Group	No. Respondents	Percentage
18-25	14	28%
26-35	9	18%
36-45	9	18%
46 plus	18	36%
Total	50	100%

Source: Researcher (2015)

Table 5.2 shows the percentage of respondents according to age groupings. Twenty-eight per cent of the sample fell into the 18 to 25 age group, while 18% were between the ages of 26 and 35 and 36 and 45, respectively. Thirty-six per cent of the respondents were 46 and older.

The survey results show that 96% of the respondents were permanent residents of eNtshongweni, with 4% not being permanent residents. Moreover, Bar graph 5.1 shows that most of the respondents had lived in the area for some time.

Bar graph 5.1: Duration of stay in the area (eNtshongweni)

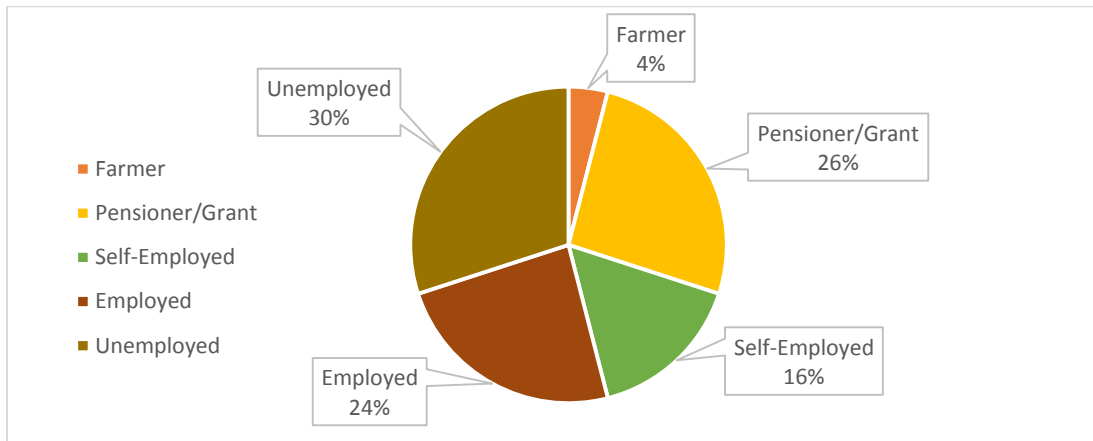
Source: Researcher (2015)

Only 18% of the respondents had lived in eNtshongweni for less than five years and 14% had stayed there for five to ten years. Twenty-four per cent had lived in the area for a period of 11 to 20 years and a significant number (44%) of the participants has lived in the area for over 20 years.

Family sizes in the study area are relatively large. Only 8% of the households surveyed had less than three members, while 34% had more than six occupants and the majority of households (58%) were home to between four and six people.

As shown in Pie chart 5.1 below, the majority of the respondents were not formally employed.

Pie Chart 5.1: Main Livelihood activity



Source: Researcher (2015)

The Pie chart shows that 4% of respondents sustained themselves through small scale farming, as illustrated in Image 5.1, 26% survived on government grants or pensions, 16% were self-employed, 24% were formally employed and 30% were unemployed.

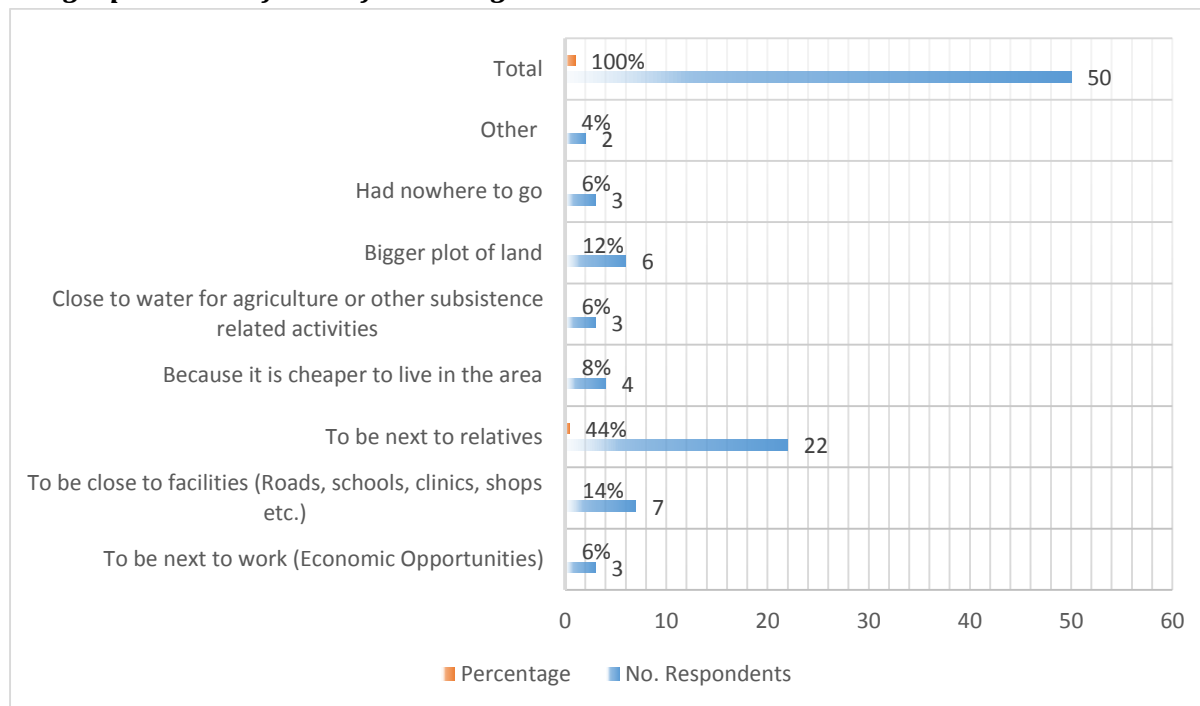
Image 5.1: Small scale farming in eNtshongweni



Source: Researcher (2015)

Despite the lack of employment opportunities, other factors attract people to this area; these are summarized in Bar graph 5.2.

Bar graph 5.2: Pull factors for settling in the area



Source: Researcher (2015)

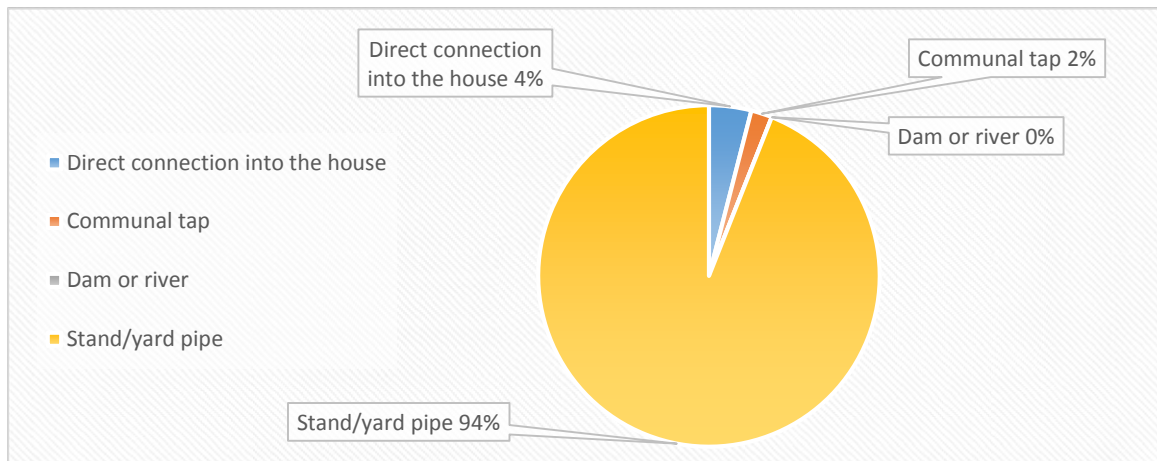
The main pull factors were identified as follows: 6% of the respondents were attracted by possible economic opportunities and 14% by the availability of social services such as roads, schools, clinics and so on. In addition, 44% chose to move to the area to be closer to relatives or their family, 8% moved because of cheaper land prices and 6% were attracted by the availability of water for agriculture and other subsistence activities. Others were attracted by bigger plots (12%) while some had nowhere else to go.

5.2.2. Section B: Access to services

This section discusses the eNtshongweni community's level of access to basic services. Clean water, sanitation and electricity are discussed in order to establish the efficiency of the services that are provided.

Ninety per cent of the survey respondents stated that had access to clean water and only 10% claimed that they lacked such access.

Pie chart 5.2: Means of accessing clean water



Source: Researcher (2015)

It was also established that 94% of the surveyed population had an onsite water connection, 4% had a direct connection into the house and only 2% used a communal tap to access clean water. Since communal taps are poorly maintained, as shown in Image 5.2, residents prefer onsite connections. Fifty-two per cent of the respondents paid for water and 48% received the service free of charge. Those that paid for water stated that the 200 litre free basic water was not sufficient to meet their everyday needs.

Image 5.2: Communal Tap



Source: Researcher (2015)

The overwhelming majority of the respondents (96%) had an electricity connection and only 4% did not have electricity. In addition 24% of the sampled houses had in-house sanitation systems and 76% had no sewer installations in their settlements. The latter said that they used UD systems and self-built pit latrines.

Image 5.3: Urine Diversion toilet



Source: Researcher (2015)

Only 26% of the sampled population felt their human waste disposal system was effective. The remainder (74%) were unhappy with their system and cited bad odours, safety issues, clearing of faeces once the system had filled up and the time frame for clearing waste. Table 5.3 on page 74 also shows that solid waste disposal in the area was not efficient.

Table 5.3: Solid waste disposal

Waste Dump site	No. Respondents	Percentage
Community dump point for pick up	25	50%
Back Yard	20	40%
Anywhere	5	10%
Total	50	100%

Source: Researcher (2015)

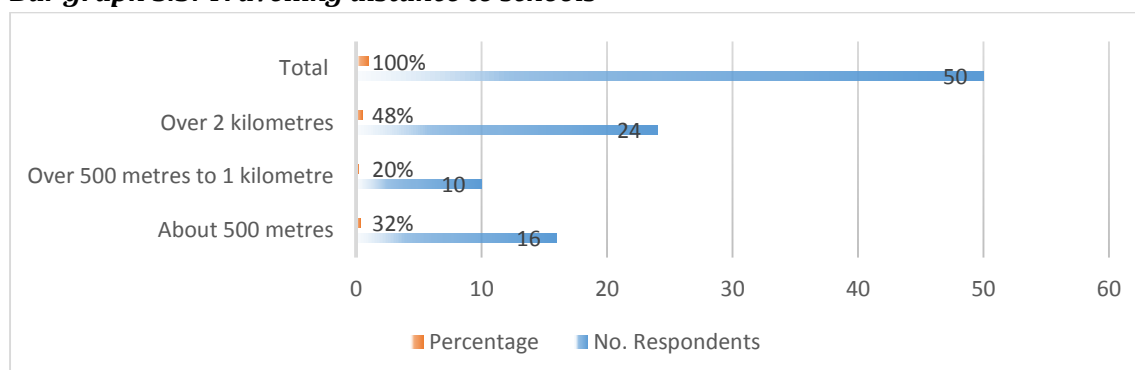
Half (50%) of the respondents stated that they dumped their waste in areas designated for dumping while 40% dumped it in their back yard and 10% disposed of it anywhere they could. This could be due to the fact that 68% of the respondents stated that they did not receive municipal plastic bags for disposing of solid waste, while 32% said that they did receive these bags.

Table 5.4: Means for children to get to schools

Means to get to Schools	No. Respondents	Percentage
Walk	40	80%
Driven to school	6	12%
Public transport	4	8%
Total	50	100%

Source: Researcher (2015)

The survey indicates that 80% of the respondents stated that their children walked to school, 12% were driven to school in private vehicles and 8% used public transport.

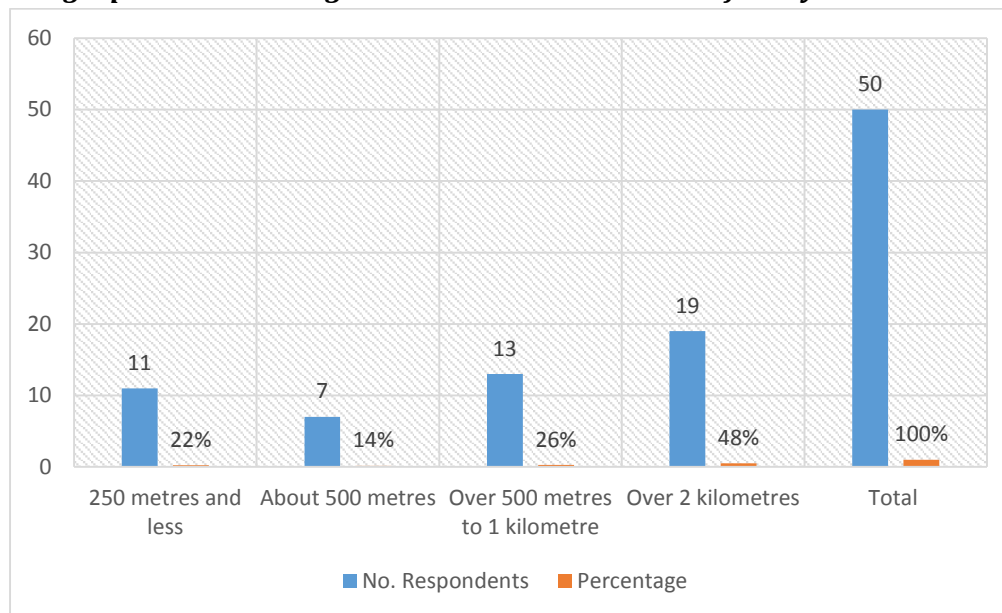
Bar graph 5.3: Travelling distance to schools

Source: Researcher (2015)

Bar graph 5.3 (Page 74) shows that 32% of the respondents children travelled about 500 metres to school, 20% travelled 500 metres to one kilometre and 48% travelled more than two kilometres to school.

A similar situation prevailed with regard to health facilities; 88% of the respondents confirmed that they had access to health facilities with only 12% lacking such access. Those without access received assistance from a mobile clinic that visits the area every Thursdays. The distance to a clinic or health facility is shown in Bar graph 5.4.

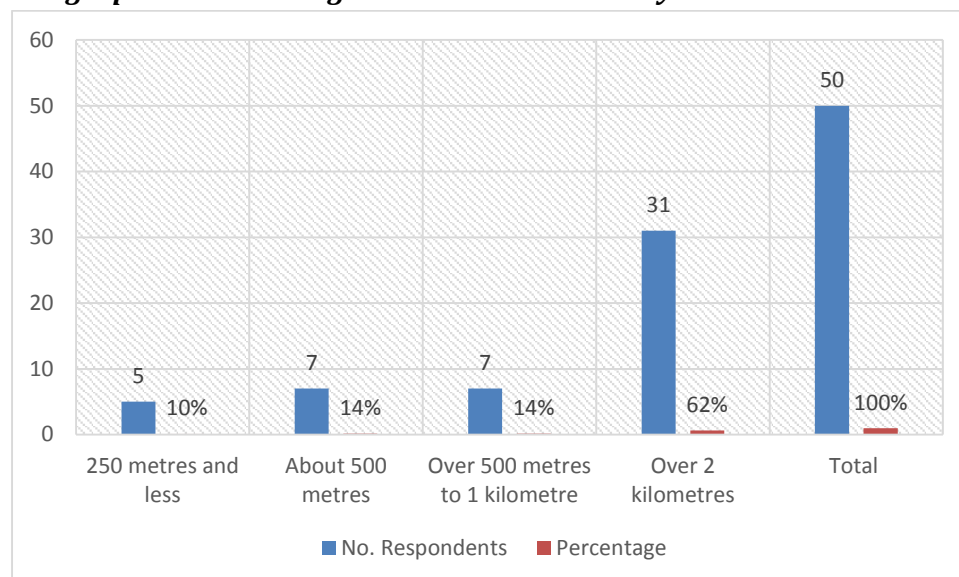
Bar graph 5.4: Travelling distance to a clinic or health facility



Source: Researcher (2015)

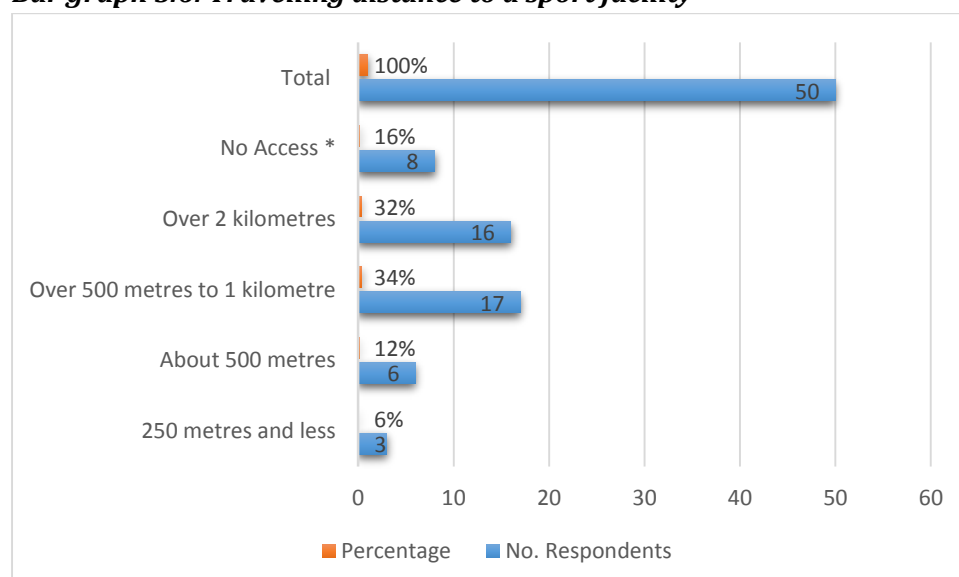
Of those that stated that they did not have access to health facilities and therefore relied on a mobile clinic, 22% travelled 250 metres or less to access health assistance, while 14% of the respondents travelled about 500 metres, 26% travelled 500 metres to a kilometre and 48% travelled more than two kilometres for health assistance.

Only 12% of the respondents stated that they had access to a police station; however these respondents emphasised that they live closer to Mpumalanga where there is a police presence. The remaining 88% did not have access to a police station. All 50 respondents confirmed that they had access to a community hall. Bar graph 5.5 (page 76) indicates the travelling distance to a community hall.

Bar graph 5.5: Travelling distance to a community hall

Source: Researcher (2015)

The graph shows that 10% of respondents travelled 250 metres or less to reach a community hall, while 14% travelled about 500 metres and between 500 metres and a kilometre, respectively, and 62% travelled more than two kilometres to access a community hall. The survey also established that 84% of participants had access to a sport facility and only 16% lacked access to this service. Bar graph 5.6 shows the travelling distance to a sport facility.

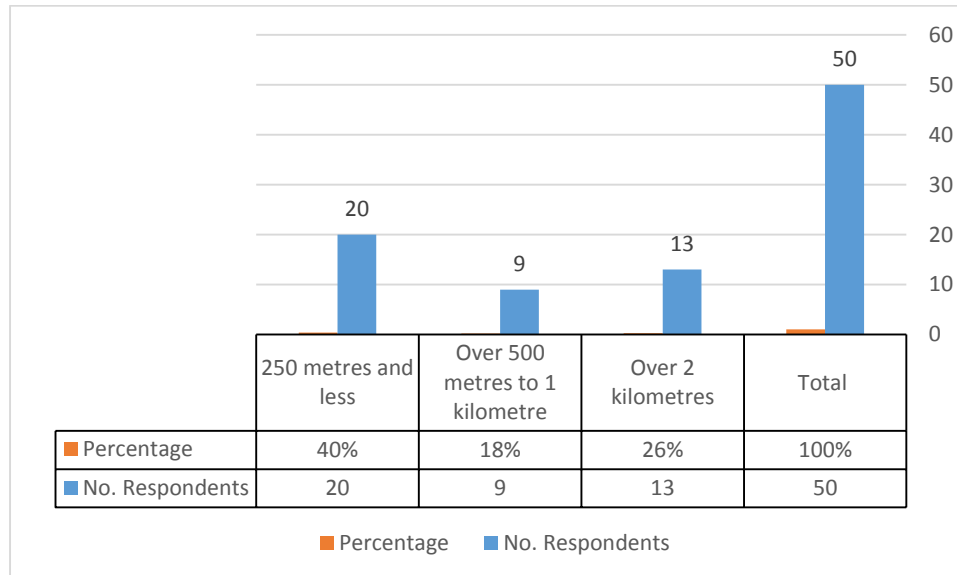
Bar graph 5.6: Travelling distance to a sport facility

Source: Researcher (2015)

The 16% of the respondents that indicated that they did not have access to a sport facility were not asked about travelling distance to access such a facility and are thus excluded from the results reported in Bar graph 5.6. It was found that 6% of those with access to a sport facility

travelled a distance of 250 metres or less to access such a facility, while 12% travelled about 500 metres, 34% between 500 metres and a kilometre and 32% more than two kilometres to access a sport facility.

Bar graph 5.7: Travelling distance to a shopping facility



Source: Researcher (2015)

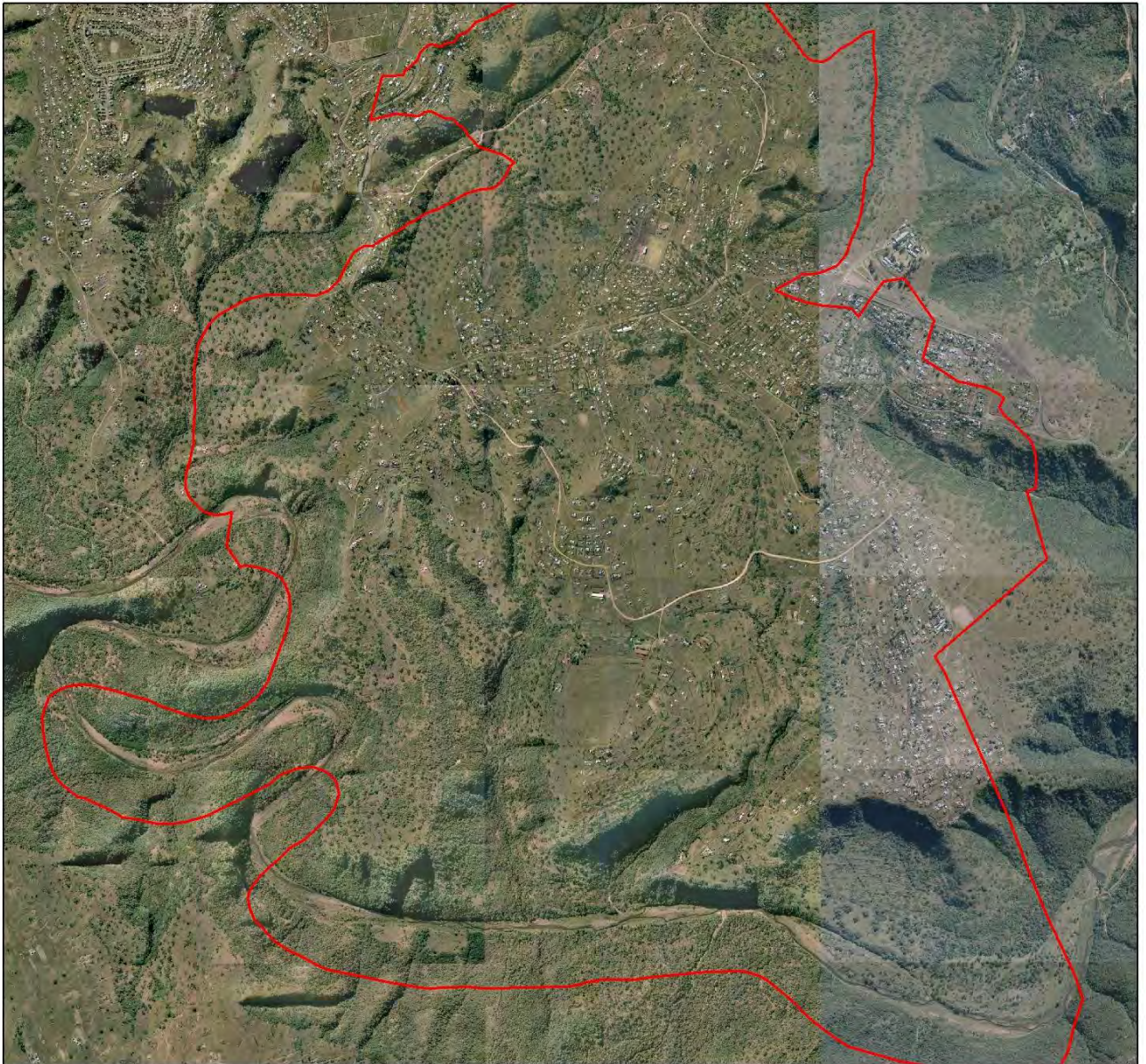
The survey found that 40% of the respondents travelled less than 250 metres to reach a shopping facility while 16% travel about 500 metres, 18% between half a kilometre and a kilometre and 26% more than two kilometres to access shopping facilities.

5.2.3. Section C: Impact of population growth (Densification)

This section focuses on the impact of population growth which has resulted in densification in eNtshongweni. The main focus is on the challenges or opportunities brought about by densification. The surveys indicated that 70% of the participants had been affected by the rapid growth in population while 30% stated that they had not been affected.

Aerial photographs showing the increase in densification in eNtshongweni between 2003 and 2010 (see Image 5.4 and Image 5.5 on pages 78 and 79, respectively) indicate how rapid this process has been.

Image 5.4: eNtshongweni Aerial photo in 2003



Source: Researcher (2015)

Image 5.5: eNtshongweni Aerial photo in 2010



Source: Researcher (2015)

The 2003 aerial image shows scattered dwellings with no visible formal roads. In 2010, there are more clustered dwellings which are an indication of population growth and densification. Formal roads are also visible which indicate the impact of densification on the area. It is clear that rapid densification took place over this seven year period.

Table 5.5: How has population growth affected your chances of accessing basic services?

Effect of Population Growth on Basic Services	No. Respondents	Percentage
Has increased my chances of accessing basic services	17	34%
Has decreased my chances of accessing basic services	10	20%
Has not affected my chances of accessing basic services	17	34%
I do not know	6	12%
Total	50	100%

Source: Researcher (2015)

The results show that 34% of the respondents felt that population growth and densification had increased their chances of accessing services while 20% felt that it decreased their chances and another 34% felt that densification had not affected their chances of accessing services. Twelve per cent of the respondents said that they did not know whether or not it had affected their chances of access to services. The 34% of the respondents that stated that their chances of accessing basic services had increased due to population growth cited a number of reasons, including that densification provides an adequate threshold to support structural and social services, social services provision had improved and the demand for services had increased significantly. For example, more schools, water and clinics were provided due to adequate demand for these services.

The 20% of the respondents that indicated that rapid population growth had a negative impact on their chances of accessing basic services also cited a number of reasons, including inadequate structural and social services to support rapid population growth, and increased criminal activity which led to vandalism of public property such as community taps and theft of electric cables. They also noted the long delay between application for services and delivery due to the increased population and the municipality's capacity to deliver. Some respondents felt that development initiatives were biased due to political influence.

Thirty-four per cent of the respondents felt that rapid densification had no effect on their chances of accessing services. They pointed out that densification had not brought about development in their areas and that services were still inadequate. Some households were still without essential services such as water and electricity.

Respondents were asked if they were aware of any environmental problems due to peri-urban densification. Thirty-four per cent stated that they had noticed environmental impacts. Examples included air and soil pollution which led to lower crop yields, soil erosion due to overgrazing and the loss of green spaces due to development initiatives. The 66% of the respondents that responded in the negative were not asked to cite examples. Table 5.6 indicates how the spatial nature of the area has changed due to densification.

Table 5.6: Change in the spatial character of eNtshongweni

Nature of Change in Spatial Character	No. Respondents	Percentage
Has become more farming based	10	20%
Has become more commercial	26	52%
Has not changed	11	22%
Other	3	6%
Total	50	100%

Source: Researcher (2015)

The table shows that 20% of the respondents stated that the spatial character of the area had become more farming-based while 52% felt it had become more commercial due to more private shops being built in the area. Twenty-two per cent of the respondents said that the spatial character of the area had not changed and 6% noted other changes.

Participants indicated that they can assist government stakeholders and community leaders in ensuring sustainable development in eNtshongweni through increased participation in community initiatives by attending weekly meetings and raising issues of concern to the community. In ensuring sustainability, the respondents indicated that as a community they can dispose of waste material more responsibly, avoid burning it in their back yards and also look after their environment. Burning waste is a clear indication of poor solid waste management in the area. It is also up to government officials to ensure that solid waste is managed and disposed of properly to improve the lives of the people in the area as well as to protect the environment.

Twenty-two per cent of the participants stated that, in their view, government officials were doing enough to improve the standard of living in their area, while 78% stated the opposite. The former gave the following reasons for their response: there was evidence of development

initiatives, structural and social services were provided and were accessible and there was some degree of maintenance of facilities.

The 78% of the respondents that felt that government officials were not doing enough to improve the standard of living in eNtshongweni cited persistent poor living conditions, a lack of essential structural services such as roads with street lights and sidewalks, the lack of social initiatives for youth empowerment, few economic opportunities, and inconsistent provision of both structural and social services. They added that the area is stagnant in terms of overall growth.

Table 5.7 shows the services that the respondents felt were most needed in the area. Eighty-two per cent of the respondents indicated that housing was the most essential service, followed by schools, clinics, sanitation services, road infrastructure, water and farming.

Table 5.7: Services most needed in eNtshongweni?

Services	Frequency	Total	Percentage
Housing	41	50	82%
Social services (schools, clinics etc.)	27	50	54%
Sanitation services (Sewage, solid waste disposal)	27	50	54%
Road Infrastructure	26	50	52%
Water provision	17	50	34%
Farming	14	50	28%

Source: Researcher (2015)

Image 5.6 on page 83 provides an idea of the nature of housing in eNtshongweni. This explains the reasons for respondents rating this service as being highly needed in the area. Image 5.7 (also on page 83) also illustrates the poor condition of some of the roads in the area. This means that access is restricted to sections with better road infrastructure, leaving a large portion of the area inaccessible.

Image 5.6: Condition of some of the houses



Source: Researcher (2015)

Image 5.7: Condition of some of the Roads



Source: Researcher (2015)

Forty per cent of the respondents stated that they were satisfied with overall living conditions in the area, while 60% stated that they were not entirely happy with the conditions. Those that were satisfied cited reasons such as improved living conditions as well as a sense of security, the fact that the area is peaceful, they enjoy living there, there are some affordable basic social services and land is available for subsistence farming and residential occupation.

On the other hand, respondents that were not satisfied with overall living conditions mentioned issues such as small parcels of land alongside the lack of structural services in most areas, the poor standard of limited social services, poor governance and little government support, slow socio-economic growth and stagnant development, and inconsistent service provision.

5.3. Key stakeholder Interview Themes

This section presents the data obtained through semi-structured interviews with key stakeholders. Municipal officials from various departments were interviewed as well as community leaders. The information is organized in themes.

EThekwini peri-urban areas

Municipal official A defined peri-urban areas as places that fall outside the municipal development boundary and are often characterized by poor services provision. They also fall outside the UDL set as the development boundary by the municipality (Municipal officials A and B). Other features include informal housing and illegal occupation of land immediately outside the urban core. Random settlements were identified as contributing to poor spatial planning in peri-urban areas and to illegal land occupation. The peri-urban areas in the municipality have no defined spatial pattern. In most cases they are administered by traditional leaders and municipal authorities. They pose challenges in terms of controlling population growth and promoting development.

Planning policies

EThekwini municipality has adopted a number of spatial planning policies to control development. The UDL has played a significant role in the level of services provided in eNtshongweni as the area falls outside the line. The UDL is used to limit development to urban areas and to control densification (Municipal official C). The municipality also uses the urban services boundary to determine the extent to which services will be provided away from the core. This has excluded peri-urban areas such as eNtshongweni from development plans in terms of service provision. The service boundary is a guide to determine the cut-off point for

provision of services such as water and waterborne sewerage (Municipal official B). This means that the city has no plans to provide water borne sewerage due to the high cost of doing so but also due to the fact that there is no policy to address how sanitation and other services should be provided in eNtshongweni.

On the other hand, the municipality's rural development framework acknowledges that there is a rural hinterland beyond the urban environment that has different service needs and spatial characteristics from nearby urban areas (Municipal official C). Thus, peri-urban communities cannot be given the same level of services. The policy provides for free basic services to be provided in areas like eNtshongweni. It also led to establishment of rural service nodes which are strategic areas that are used to provide services to surrounding areas. These nodes offer social facilities, commercial opportunities and infrastructure to support peri-urban and rural areas (Municipal official C and Outer West Spatial Development Plan, 2010/11).

EThekweni's IDP recognises that planning needs to be guided by a spatial framework (Municipal official A). This entails aligning developments goals throughout the municipality. Linking actions, resources and expenditure across the metropolitan area was identified as means to achieve sustainable growth in the metropolitan area (Outer West Spatial Development Plan, 2010/11). Other spatial development policies such as the SDF, the spatial development plan (SDP), LUMS, local area plans (LAP) and precinct plans have all been critical in shaping service delivery and economic growth in eNtshongweni (Municipal official A).

Impact of densification

Growth in areas outside the UDL has been poorly managed which has led to services provision challenges. Rapid population growth is a problem due to the limited services that can be provided in these areas. For example, population growth has increased service backlogs. It has also led to a decrease in farming land and natural vegetation has been cleared to accommodate more people, negatively impacting the environment.

In 2007, the ward councillor for eNtshongweni initiated a water and sanitation programme with the municipality based on a baseline survey to improve residents' social status (Community leader B). However this project was not successful due to uncontrollable population growth that resulted in random settlements being established in undesignated areas. The tribal authorities are responsible for random settlements as they allocate plots. Neither the municipality nor the local authorities have mechanisms in place to manage population growth.

The municipality also made the mistake of not planning for bulk infrastructure before building the few social houses available due to the high demand for housing. For example, some households have individual connections installed by the municipality but there is no water. The reservoir that was constructed was intended to cater for a limited number of households; population densification has put a strain on water availability.

More people chose to settle in eNtshongweni because it is a peaceful place that offers a refuge from crowded urban areas. Others came from rural areas to live closer to the city. In the past political violence was endemic but it has now subsided which is one of the reasons for rapid densification (Community leader A).

The impact of socio-economic status on service provision

A major challenge in providing services in eNtshongweni is the fact that a significant number of community members rely on social grants and cannot afford to pay for a higher level of services. 'The municipality cannot afford to extend services to the area as they do not contribute to the rates base of the municipality' (Municipal official A).

The fact that many residents of peri-urban areas like eNtshongweni are of low socio-economic status means that some areas within the municipality will always receive a lower level of services. This leads to a vicious cycle of poverty and these communities are vulnerable to natural disasters and diseases.

Furthermore, basic social and structural services are essential in order for communities and households to function (Municipal official B). However, institutional and spatial constraints hinder provision of a higher level of basic services. For example, only about 38% of residents in the municipality pay rates. This makes it difficult for the municipality to offer the same level of service throughout the municipal area. The municipality does not have the capacity to deliver services to all areas due to financial constraints. For example, 60% of municipal capital comes from grants from National Treasury (Municipal official B).

In eNtshongweni there are physical or spatial limitations to the provision of a higher level of basic services. For example, water needs to be pumped as the area is situated on a hill. This makes it more expensive to supply water and sewerage systems. Moreover, it is almost impossible for the municipality to supply bulk infrastructure as there are no financial returns due to the low socio-economic status of the area.

Moving to the kind of services that could be provided and the limitations on provision of these services in eNtshongweni, the interviewees mentioned services like schools, piped water, UD toilets and social housing. Social services such as schools and clinics were said to be dependent on population size; therefore rapidly densifying eNtshongweni had been provided with a few schools and a clinic. Municipal officials recommended UD toilets for eNtshongweni as these systems are cost effective. However, in most communities there is a low level of maintenance and emptying of these systems. Stigma is also attached to the systems; some community members argue that it is humiliating to have to regularly empty them. The majority of peri-urban residents aspire to have flush toilets and water borne sewerage. In eNtshongweni, this would be expensive due to the hilly terrain that requires water to be pumped.

The poor road network in the area also makes it difficult to provide structural services. Roads are not provided in most of the area and where there are roads, they lack street lights. This has exacerbated social problems such as crime and poor access to some sections. With regard to other basic social services, community members feel that schools, clinics and sport facilities are too far from their place of residence.

Governance

The role of traditional leaders is to cater for the needs of the community they serve and to act as the custodians of culture (Shabangu and Khalo, 2008). It is envisaged that traditional leadership will work hand in hand with democratically elected structures such as municipalities to bring about development in traditional areas (Municipal official C). However, it is often difficult for a municipality to facilitate development on tribal land due to the communal tenure system. The fact that the municipality has limited authority over such areas means that traditional leaders can randomly allocate land that is not suitable for habitation. Thus, a close working relationship is required between traditional authorities and municipal authorities.

Due to the fact that most of the land in eNtshongweni falls under the Ingonyama Trust the municipality has no authority in the area. This makes it difficult for the municipality to regulate growth and to align development with the city's objectives. There have been debates amongst municipal officials as to whether the UDL should be extended to incorporate areas like eNtshongweni. The municipality might be in a better position to limit densification in areas falling outside the services boundary if it had control over Ingonyama Trust land.

5.4. Data analysis

This section analyses the data presented in the previous sections. Key issues are organized under various themes. Salient issues are discussed first, followed by peri-urban livelihoods, the lack of resources, the level and type of services provided in eNtshongweni, conflict and the role of the UDL as a planning tool.

5.4.1. Salient Issues

Some of the salient issues identified during field work include the lack of communication between community leaders. There is also a gap when it comes to decision making between traditional leaders and the municipal authorities. This has led to conflicting housing allocations; for example, the traditional authority has placed some households in areas that the municipality regards as unsuitable for development. The majority of community members felt that service delivery in their area is very slow. The level of community participation such as voting and attending community development meetings is low. This suggests that community members are not providing sufficient feedback on service delivery and other issues; therefore, the development approach is likely to be top-down rather than bottom-up.

Development in the area is still shaped by political affiliation. Some members of the community felt that those that are not affiliated to the ruling party are not prioritized for services. While this may be the case, it could also be due to a lack of community participation. Finally, municipal officials acknowledged that the UDL is a discriminatory tool to guide development in that it has led to slow and in some cases no service delivery in areas like eNtshongweni.

5.4.2. Peri-urban Livelihoods

Based on the field data collected for this study, eNtshongweni's socio-economic status is typical of most peri-urban areas around the world. For example Pie chart 5.1 (page 70) shows that 60% of the sampled residents did not have a formal means of consistent income, and 30% were unemployed of which 4% relied on farming and 26% on government grants. The bid rent theory that states that land away from the urban core is cheaper best explains the socio-economic situation in eNtshongweni (Trussell, 2010). People of low socio-economic status are dominant in eNtshongweni because the land is cheap and they can afford to sustain their livelihoods. However, low income groups that cannot afford to buy land in the urban core invade spaces in the peri-urban area (Murray, 2008; Areola *et al.*, 2014). The majority of residents in eNtshongweni are unemployed and dependent on social grants. Service delivery is

significantly affected by the economic status of peri-urban areas. Municipal official A also stated that eNtshongweni is likely to have low socio-economic status due to illegal land invasions and uncontrolled population growth.

Living conditions in eNtshongweni are typical of other peri-urban areas around the country. For example, 34% of the households that participated in the surveys had six or more occupants. This raises serious concerns because eNtshongweni is characterised by informal houses that are small. Living conditions are not suitable for large households. This situation is also due to the high unemployment rate in the area. Peri-urbanization will continue to influence household size in eNtshongweni as more people desire to be located closer to the urban core (Webster and Muller, 2002). The urbanization process has contributed to a growing number of households in the area.

5.4.3. Lack of resources

The allocation of funds for peri-urban development in poor countries is a challenge. In most cases, peri-urban communities are poorly provided with services due to lack of funds to provide services that are of the same standard as in urban areas (Sim *et al.*, 2014). Municipal official A stated that eThekwini municipality does not have the capacity to fund the same standard of service provision in the area as in nearby urban areas. Hence, poor service delivery is likely to prevail. The eThekwini 2013/14 IDP indicated that, due to a lack of funds, service backlogs in the municipality may take from 23 to 37 years to address. It identified peri-urban and rural areas as being most in need. Municipal official B pointed out that only 38% of residents in the municipality pay rates due to high levels of unemployment. This means that the majority of residents do not contribute to the economic sustainability of the municipality and most of them live in peri-urban areas. Kombe (2005) and Sutherland and Lewis (2012) observed that local governments in developing countries lack the institutional and financial capacity and backing from national government to sustain and provide funds for peri-urban development.

A lack of funds consequently challenges the provision of basic social services. Based on the municipal data presented, there is a shortage of social (e.g., schools, police stations and schools) and structural (e.g., roads, water and electricity connections) services in the peri-urban areas of eThekwini. In eNtshongweni the local municipality has made an effort to provide a number of social services, including water and electricity. Only 10% of the surveyed population lacked access to clean water and 4% had no electricity. Due to urbanization and urban sprawl more of these basic services will be needed in peri-urban spaces as the population steadily increases. In

peri-urban Kumasi in Ghana, a community-based initiative to provide water contributed to the wider provision of water. Therefore, the provision of water and electricity is achievable even in poor developing countries.

However, providing other structural services such as roads and houses becomes a major challenge as these require more financial investment. For example, based on current funding levels, it will take eThekweni municipality 97 to 145 years to meet the roads backlog (eThekweni IDP, 2013/14; Sutherland and Lewis, 2012). Table 5.7 on page 82 shows, that 82% of residents in eNtshongweni felt that the most needed service was housing. A lack of housing is a typical problem in most peri-urban areas because of rapid population growth as a result of urbanization and cheap land prices which lead to densification. This results in more spontaneous informal settlements. Akrofi and Whittal (2011) state that housing; schools and clinics are poorly provided in peri-urban areas. Kombe (2005) notes that municipal officials in developing countries do not cater for peri-urban areas in their budget allocations; this was the case in Tanzania. Therefore, services that require a higher financial investment will obviously be poorly provided.

Eighty-eight per cent of the respondents stated that they had no access to a police station. This makes it very difficult to address serious social problems such as domestic violence, crime and substance abuse in the area. It could also explain the rapid formation of illegal and uncontrollable settlements, as there is no visible justice structure in the area. Illegal land invasions are a common phenomenon in peri-urban areas around the world (Maluleka, 2013). Urbanization also has led to migration from rural areas to peri-urban areas as competition for land in the urban core results in high land prices within the core (Turok and McGranahan, 2013).

As peri-urban populations grow, there are economic opportunities for small businesses. Bar graph 5.2 on page 71 shows, that 16% of the respondents were self-employed. Bar graph 5.7 on page 77 also indicates that 40% of the respondents travelled 250 meters or less to reach the nearest shopping facility. Urbanization and urban spatial characteristics spill over onto peri-urban areas and in this case they have afforded some residents opportunities for economic growth.

5.4.4. Level and type of service provided

Municipal officials A and B stated that provision of a higher order of services such as flush toilets and full pressured water services is financially unsustainable. This has resulted in

eThekwini municipality providing social services which are of a lower order or free basic services. These services include RDP houses, UD toilets and 9 kilolitres of free water per month per household. Municipal officials have identified these services as financially sustainable for both local municipalities and peri-urban residents. As urbanization of peri-urban areas such as eNtshongweni spreads more services are required in the outskirts, but due to the fact that the socio-economic status of those living in peri-urban areas is lower than in the core, the level of services provided is likely to be lower.

Providing a higher level of services in eNtshongweni and other peri-urban areas may be extremely difficult, especially since no revenue is generated in these areas to pay for services. The rural development policy also recognises that such areas cannot support higher levels of services such as waterborne sewerage and full pressure piped water. Due to urbanization the peripheral areas start taking on an urban form. Davis (1955) notes, that, traits of the urban form trickle into areas on the periphery due to urbanization. There is thus demand for urban-like services in the periphery. However, provision is a challenge due to the socio-economic status of newly-formed peri-urban areas in developing countries. Parkinson and Tayler (2003) argue that peri-urban areas change their spatial character due to the influence of nearby areas rather than the socio-economic status of peri-urban dwellers.

Community leaders A and B stated that provision of services in eNtshongweni is a challenge due to financial constraints but also because of uncontrollable population growth. This explains why 60% of the respondents stated that they were not satisfied with overall living conditions. Community leader A said that most people are not happy with the level and consistency of the services provided. Eakin *et al.* (2010) stated that peri-urban areas pose institutional challenges because they are characterised by complex processes, such as the coexistence of urban and rural land uses. This is the case in eNtshongweni and hence the majority of residents are unhappy with the provision of social services and general planning in the area.

5.4.5. Conflict

Municipal officials and community leaders raised concerns about the challenges that arise due to traditional and formal forms of land administration in eNtshongweni. There is a conflict of interests in land allocations and service provision. Municipal officials A and C, and Community leaders A and B stated that the coexistence of traditional leaders and formal authorities in eNtshongweni was one of the major factors contributing to poor service provision. Local traditional leaders argued that, in most instances, development initiatives undermine their

authority, while municipal officials argued that traditional leaders allocate land for housing in undesignated areas. Therefore providing services becomes a challenge because of the rapid growth of unregistered new settlements. It was stated that, that existence of two forms of authority results in more administrative work before development initiatives can be implemented. Development plans that designate the area a rural service node with the potential to draw private investors are still under consideration (Municipal official A). Municipal officials feel that they need to be given full control of tribal land in eNtshongweni to help speed up service provision and to control population growth in the area. On the other hand, tribal authorities feel that it is their responsibility to serve the poor that cannot afford to buy land at high prices and to ensure that they have land to live on with their families without having to wait for municipal approval that takes a long time.

In the Kumasi case study discussed in the literature review, Akofi and Whittal (2011) were cited as arguing that tribal land was initially not designated for service provision by local government officials. This is the trend in most peri-urban areas in the developing world and eNtshongweni is in a similar situation. Multiple land tenure systems lead to conflict and slow down the level of service provision. In peri-urban areas, formal and informal tenure systems are necessary to serve the needs of the poor. In an age of rapid urbanization, the existence of both tribal and formal authorities cannot be avoided as they serve different needs at different levels.

5.4.6. The Urban Development Line as planning tool

EThekweni municipality uses the UDL to determine the extent of services in areas outside the urban core (Sim *et al.*, 2014). This has resulted in areas such as eNtshongweni being excluded from improved service provision and development. Municipal official C stated that, due to its spatial location in relation to where the UDL ends, the area will have poor service delivery. The reasons include the fact that provision of services to areas outside the UDL is too expensive and that little revenue is generated by these areas. Therefore, using the UDL as a tool to guide development will always leave the areas outside it with poor services and limited economic opportunities.

Municipal official B stated that the municipality is considering extending the UDL to incorporate areas such as eNtshongweni that are experiencing rapid densification. This could improve the level and efficiency of the services provided in peri-urban areas. One could argue that the UDL has been effective in improving service provision in areas that fall within its

boundaries. However it has also ensured slow and stagnant provision of services in areas outside its boundaries.

Municipal official B noted that other local area development policies have also shaped service delivery in eNtshongweni, including the Outer West Spatial Development Plan. It identified areas falling outside the urban core as key strategic nodes that have a significant role to play in ensuring that development prospers in peri-urban and rural areas. These areas are to be serviced according to their specific needs as they are also experiencing rapid densification.

Due to cheaper land prices and urbanization, densification will continue in peri-urban areas like eNtshongweni at a rate that outstrips service delivery. The surveys found that 70% of the respondents felt that their chances of being provided with services had been affected by population growth, while 34% stated that they had been provided with services due to population growth in eNtshongweni which is a direct result of urbanization.

The surveys also showed that 20% of the respondents felt that densification and population growth had resulted in poor provision of services in their area. The reason could be that, with increased demand for services, some areas are left behind and the municipality is faced with increasing service delivery backlogs. Therefore, urbanization of peri-urban areas does not necessarily mean that services will be readily available to everyone in these areas, especially in multiple tenure communities.

5.5. Summary

This chapter commenced by presenting secondary data which include background information on eThekweni municipality, as the study area is located in the outer west of eThekweni. Information was presented on the historical development of the municipality and the services that are provided in core and periphery areas. Current service delivery and service backlogs in the municipality were also discussed. The case study of eNtshongweni was introduced along with a map showing the location of the study area. Primary data in the form of surveys was presented. Data was presented under three broad themes or sections. Section A (socio-economic status) presented data on demographics and livelihoods. Section B provided data on access to services such as water, electricity, schools and so on. It also looked at the distance residents had to travel to access these services. The last section examined the impact of densification or population growth on the accessibility of social and structural services. Data from the interviews with key stakeholders was also presented under various themes. This

included information on the provision of services and the role that the municipality plays in ensuring that service provision in eNtshongweni is improved.

The final section of this chapter presented the data analysis. The data from the surveys and interviews was presented in six themes. Peri-urban livelihoods were discussed based on the data on living conditions in eNtshongweni but also with reference to peri-urban areas in other parts of the world. The lack of resources such as funds and basic social services was discussed. The level and type of services provided in eNtshongweni were also discussed. The theme on conflict provided an analysis of some of the challenges that arise due to the coexistence of traditional leaders and municipal authorities. This is said to have added to the factors that have led to slow and stagnant service provision in eNtshongweni as the traditional leaders and municipal authorities often struggle to find common ground. The final theme was the UDL as a planning tool. It was concluded that areas falling outside the UDL will always lag behind in terms of service provision. This has sparked debate on whether the UDL should be extended to include areas that are experiencing rapid densification as the periphery continues to adopt the urban form due to urbanization.

CHAPTER SIX: CONCLUSION AND RECOMMENDATIONS

6.1. Introduction

This chapter presents a conclusion and recommendations arising from the study's findings. It begins by providing a summary of the main findings which address the objectives set for this study, followed by its recommendations and a conclusion.

6.2. Summary of the main findings

6.2.1. Peri-urban livelihoods

The literature review and the data collected for this study clearly show that eNtshongweni has similar attributes to peri-urban areas in other countries, especially developing countries. The lack of services has had a significant impact on the well-being of the eNtshongweni community. For example, there has been very slow economic and social growth and this has impacted negatively on residents' livelihoods in a rapidly growing community. Sixty per cent of the residents surveyed had no formal income to support their families; they rely on government grants and other forms of social support such as social housing and free basic water to sustain them.

6.2.2. Lack of resources

Due to the lack of resources such as funding to provide basic services, eNtshongweni has been poorly serviced and the rapid increase in population has placed a further financial burden on eThekweni municipality. The lack of funds is exacerbated by the lack of revenue generated by this community; for example no households pay rates. This makes it difficult for the municipality to extend services to such areas as schools; roads, houses and water require major financial investment. The rural development policy identified this area as a rural node which could play a significant role in ensuring that nearby rural areas will be closer to social services. However in order for this to materialize, eNtshongweni needs to be properly serviced.

6.2.3. Conflict

Conflict between various stakeholders plays a significant role in shaping the provision of services in eNtshongweni. Conflict between the traditional and municipal authorities has resulted in slow and inconsistent service delivery. While the traditional leaders' role in service delivery is not clearly defined, it seems to be limited to providing land to new residents. On the other hand, the municipality is the main provider of basic services as it receives grants from the national government to facilitate development. It is important that traditional and municipal

officials work together to ensure that the community of eNtshongweni is better serviced. Conflict and miscommunication between these two key role players has had detrimental effects on development in the area. For example, in some cases chiefs have allocated land to people that has been designated for other uses by municipal officials and planners.

6.2.4. The urban development line as a planning tool

The use of the UDL as a tool to guide service delivery has led to areas such as eNtshongweni being left behind in service delivery. Areas that fall outside the boundary will not be serviced by the municipality and development will be limited to areas within designated urban environments. This explains the slow development and poor social service delivery in eNtshongweni. The UDL is based on the premise that it is costly to provide services such as piped water and water borne sewerage to areas located far from the urban boundary. ENtshongweni falls outside of the boundary and little service is provided due to this policy.

6.3. Recommendations

6.3.1. Community-based approach to development

Development initiatives implemented by the local municipality in eNtshongweni need to be community-based. Community members should be consulted and they need to drive development. This can only be achieved through active community participation. It is clear that the local municipality cannot provide a higher level of services to the area due to residents' socio-economic status and financial constraints. Therefore, it is critical to ensure that alternative services that are provided are community specific and meet the needs of the community with a minimal impact on both their livelihoods and their environment.

6.3.2. Service delivery in densifying peri-urban areas

The basic social services provided in eNtshongweni must be of an acceptable standard; in other words, they should be effective and contribute to the community's wellbeing. The local municipality must set realistic time frames for delivering basic social services. Rapid densification must be controlled to ensure that the local authority can meet and control growing service demands. While the area has been identified as a rural node in the municipal SDF, this will fail to serve its purpose of providing local areas with services due to a lack investment and funds. The level of services provided in these rural nodes needs to be able to sustain the rapidly densifying areas; this will require further financial investment.

There is also a lack of funds for social programs such as housing, water, electricity and sanitation in the area. The majority of residents in eNtshongweni rely on government grants. In order to provide more social services, the area needs to densify to create a threshold and alternative structural services such as UD systems seem to be the solution for the time being since they are cost effective.

6.3.3. Traditional and formal authorities

Traditional and formal authorities need to find common ground in administering eNtshongweni. Both have a significant role to play in ensuring growth in eNtshongweni. Chiefs must be informed of the local municipality's development intentions. Their role should not be restricted to conforming to development initiatives proposed by the municipal authorities; they should be fully involved in this process. This will help avoid the allocation of land for housing in areas that are not designated for residential land use. While the municipal authorities need more freedom to initiate development on tribal land, this should be done in consultation with the traditional council. The local councillor also has a vital role to play in linking municipal authorities with the traditional authorities in eNtshongweni. This will ensure a higher level of understanding between these bodies at all times that will benefit the community at large.

Residents need to form community-based structures that include traditional authorities to work with the ward committee to drive community-based planning. This would enable the community to state their problems which would be channelled to higher municipal structures. Planners and other policy makers need to be involved in the provision of basic services and in formulating short- and long-term development goals for eNtshongweni.

In order to improve administration and promote development, municipal geographic areas should be controlled by local municipal authorities. Technically sound responses are required to address service delivery problems and political influence should be avoided.

6.3.4. Urban development line

The UDL needs rethinking in order to curb further spatial discrimination. This is important because peri-urban eNtshongweni struggles with services due to the fact that it falls outside the UDL. Consideration should thus be given to extending the UDL to incorporate areas that are experiencing rapid densification. This will allow for controlled densification of areas such as eNtshongweni as development will be guided by the IDP and SDF instead of relegating such areas to zones of no development as it was initially intended by the UDL.

6.4. Conclusion

The study's findings confirm that rapid densification in eNtshongweni has had an impact on service delivery. Some parts of the area lack services due to the fact that the local municipality cannot meet the service demands of new, rapidly growing settlements. However, densification has improved the threshold required for most social services, thereby improving the situation.

The UDL as a planning tool has had a significant impact on the provision of basic services in areas falling outside it. The poor service delivery in eNtshongweni can also be attributed to the fact that it falls outside the UDL. The UDL is used to determine the extent to which services can be stretched from the urban core based on cost effectiveness. In some instances this model has led to spatial inequality and a lack of services in areas on the periphery. This means that some areas will remain poor as social services are necessary for socio-economic growth.

The level and nature of the services provided in eNtshongweni confirm that social growth and economic empowerment will have to take on a different shape as some areas still lack access to roads. The social package provided in the area has resulted in most community members being dissatisfied with the local government's efforts to drive development in the area. Sanitation is a major problem due to the fact that UD systems are deemed ineffective. However, it is financially impossible to provide the same level of services throughout the municipality. Hence peri-urban areas like eNtshongweni will have to settle for alternative services that are cheaper and easy to maintain.

The presence of traditional and government authorities make it harder for the municipality to fully control activities in eNtshongweni. This has resulted in a number of illegal land allocations in spaces designated for other uses. However, traditional authorities play an important role in allocating land to poor people that cannot afford to go through formal processes.

It is in eThekwini municipality's interests for areas such as eNtshongweni to be liveable because population pressure in the urban core is reaching unsustainable levels. Therefore, peri-urban areas play a major role in ensuring that urban areas have sustainable population densities.

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Appendices

Appendix 1:

1. Interview Questions for Community Leaders

1.1.Can you define the nature of settlement patterns in your area (division of different Sections)?

1.2.What is the impact of peri-urban densification on social service provision?

1.3.Are social services such as schools, clinics, water, sanitation etc. adequately provided in all the different sections?

If yes, explain how you have managed to ensure equal services
If not, explain why this has not been the case?

1.4.Who is responsible for provision of basic service provision such as water and sanitation in your area?

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.....

1.5.What social challenges is your community faced with due to population growth?

.....
.....

1.6.What role can you play to ensure that your community is prioritized in terms of service provision by the municipality?

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.....

1.7.Are there any development plans by the central municipality for the Ntshongweni area that you are aware of?

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.....

1.8.What environmental risks do you feel exposed to as a community as a direct result of poor service provision?

.....
.....

1.9. Is the central municipality doing enough to reduce possible environmental hazards?
.....
.....

1.10. How is the community sustaining itself or what are people doing to ensure socio-economic growth?

1.11. What led to people living in such a remote area?

1.12. How has the spatial character of the Ntshongweni area changed over the years as a result of densification or population growth?
.....
.....

1.13. How much of influence do you have in residential locations?
.....
.....

1.14. What role is played by iZinduna or traditional council in your area in terms of controlling densification and provision of services?

1.15. What challenges and opportunities are brought about by having both traditional and formal land authorities?
.....
.....

1.16. What message would you send to authorities (urban planners and other professionals) with regards to the planning of this community?
.....
.....

1.17. What are the short term and long term targets for meeting the demand for social service provision in the area?
.....
.....

Any comments?

Appendix 2

Interview Questions for Municipal official A

1. What are the limits to providing social (Basic) services to peri-urban areas (Nsthongweni)?
 - Institutional capacity of the municipality
 - Spatial
2. What are the costs to providing bulk infrastructure to peri-urban areas and can these be sustained
3. What level of influence does the Urban Development Line play in determining the level and delivery of services to peri-urban and Traditional Council settlements?
4. Do you think that service provision should be equalized throughout the metropolitan area or are there some areas that will always have a lesser level of delivery? Please explain your response?
5. How significant is the urban development line in shaping basic services in municipalities?
6. Does Traditional Council and land falling under the administration of the Ingonyama Trust Board bring specific challenges in terms of service provision due to irregular land allocation?
7. Does Traditional Council and municipal land ownership lead to conflict in terms of servicing tribal land?
8. Any other comments?

Appendix 3

Interview questions for Municipal official B

9. How is the water and sanitation department affected by rapid peri-urban densification?
10. What are the challenges and limits to providing social (Basic) services to peri-urban areas (Nsthongweni)?
 - Institutional capacity of the municipality
 - Spatial constrains
11. Can the eThekwini municipality be able to provide sustainable sanitation services, water and other basic infrastructures to the people of eNtshongweni?
12. What processes are put in place to ensure that peri-urban areas have an acceptable level of service provision (Water and Sanitation)?
13. What is the impact of a lack of social service delivery in peri-urban densification?
14. Do you think that service provision should be equalized throughout the metropolitan area or are there some areas that will always have a lesser level of delivery? Please explain your response.
 - Can the same level of water and sanitation services be provided in peri-urban areas as in urban areas?
 -
15. As a planner how important do you think an Urban Development Line is?
16. What influence has it had in provision of water and sanitation?
17. Does Traditional Council and land falling under the administration of the Ingonyama Trust Board bring specific challenges in terms of service provision due to irregular land allocation?

Any comments

Appendix 4

Interview Questions Municipal official C

1. How would you define a peri-urban area and what criteria would you base this on?
2. What services can be provided in peri-urban and Traditional Council land?
3. What are the limits to providing social services to peri-urban areas?
4. What level of influence does the Urban Development Line play in determining the level and delivery of services to peri-urban and Traditional Council settlements?
5. As a planner how important do you think an Urban Development Line is?
6. Do you think that service provision should be equalized throughout the metropolitan area or are there some areas that will always have a lesser level of delivery? Please explain your response.
7. What is the impact of a lack of social service delivery in peri-urban densification?
8. Is there a pro-active approach from the eThekweni Municipality to control peri-urban densification in such areas?
9. Has peri-urban densification in outlying areas attained its development objectives in accordance with broader development plans of the municipality?
10. Does Traditional Council and municipal land ownership lead to conflict in terms of servicing tribal land?
11. Does Traditional Council and land falling under the administration of the Ingonyama Trust Board bring specific challenges in terms of service provision due to irregular land allocation?
12. Any other comments?

Appendix 5

Survey Questionnaire