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The contribution of the minibus (taxi) industry in alleviating the problems associated with public transportation: the case of uMhlathuze Local Municipality

Submitted By:

Sikhosonke Nipha (210508764)

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Declaration

I **Sikhosonke Nipha** the author of the work presented in this dissertation hereby declare that the work submitted for the degree in Master of Town Planning in the College of Humanities, School of Built Environment and Development Studies, Howard College Campus, University of KwaZulu-Natal is my own unless stipulated otherwise in the text with necessary citations where indicated. This work has not been submitted to any other university or institution of higher learning for examination.

Signature:…….. Date:……

Supervisor: Professor Matthew A Dayomi

Signature:…….. Date:……

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This process has been eye opening, completing this dissertation was made possible by many contributing in their own way; from my family and friends constantly encouraging me to focus, to keep my eye on the prize. My supervisor, through the arguments at the start of the process, constantly bumping heads, guiding my ideas and keeping me focused. In addition, the people who participated in the study, who made time for interviews to help a student in need. I thank you all, this would not have been possible without you.

Abstract

There are peculiar historical issues surrounding public transportation in the South African context coupled with that the effects of apartheid spatial engineering echoing in the spatial landscape of country post-1994 having a negative impact on many people's lives. The South African government at the macro level and the uMhlathuze Local Municipality locally is facing a challenge of integrating a society socially and spatially, to ensure social cohesion in dealing with the social ills attributed to the country's political past. The spatial structure of the Municipality together with an inefficient public transport system has further exacerbated the exclusion of many from activities being economic or otherwise. Public transportation has been a problem in the Municipality and the planning fraternity has never properly taken into consideration the current and future needs of the population, growth in the economy, urbanisation and inward migration. Hence, this study aims to evaluate the possibility of an efficient and accessible public transport system, which will improve mobility and lead to addressing the social ills that are caused by the lack of or inefficient public transport. Intrinsically, access to and the provision of adequate and efficient public transport is the barrier that further divides already fragmented communities within the Municipality. Therefore, the concepts and theories need speak to these realities, unpacking the problems prevalent in the uMhlathuze linked to transportation and aid as possible solution. Thus, the following concepts; accessibility, mobility, social exclusion and Transport Orientated Development (TOD) and following theories; collaborative planning, the 'corridor city' concept and residential location theory were identified.

The study attempted to identify the minibus taxi industry's role in alleviating the problems associated with public transportation within the Municipality. Hence, a mixed research method was used to conduct the study, an integrated method comprising both qualitative and quantitative methods was employed. The findings reveal that minibus taxi operation in uMhlathuze is somewhat efficient, depending on the route which is being taken, the wait will vary. In addition, communities do not enjoy the same level of access to public transportation across the board. Overall, minibus taxis are performing below 50% of the potential operation, considering the distance and the time it takes to reach selected destinations and change is needed to improve the current situation.

Local municipalities such as uMhlathuze, need to find a way forward to address issues related to inefficient public transport by improving policy, plans and improving public transport efficiency across the board. If this can be achieved then a more integrated society will be established both socially and spatially, attaining social cohesion and spatial integration.

Key words: minibus (taxi), social exclusion, accessibility, mobility, socio-economic sustainability, efficiency and public transportation

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List of Acronyms

BRT	**Bus Rapid Transit**
CBD	**Central Business District**
CPTR	**Current Public Transport Record**
CRTB	**Central Road Transportation Board**
CITP	**Comprehensive Integrated Transport Plan**
COSATU	**Congress of South African Trade Unions**
DoT	**Department of Transport**
DFA	**Development Facilitation Act**
GAA	**Group Areas Act**
GEAR	**Growth Employment and Redistribution**
IDP	**Integrated Development Plan**
IRPTN	**Integrated Rapid Public Transport Networks**
ITP	**Integrated Transport Plan**
LAMATA	**Lagos Metropolitan Area Transport Authority**
LRT	**Light Rail Transit**
LRTB	**Local Road Transportation Board**
MP	**Members of Parliament**
MDG	**Millennium Development Goals**
NDP	**National Development Plan**
NLTTA	**National Land Transport Transition Act**
NTPF	**National Transport Policy Forum**
NTPS	**National Transport Policy Study**
RDP	**Reconstruction and Development Programme**
RSA	**Republic of South Africa**
SABOA	**South African Black Taxi Association**
SANTACO	**South African National Taxi Council**
SABTA	**Southern African Bus Operators Association**
SDF	**Spatial Development Framework**
TAAs	**Traditional Authority Areas**
TOD	**Transit Orientated Development**

Chapter 1: Introduction

1.1 Introduction

The constant struggle to improve an ineffective public transport system in the country should be seen within the context of the actions of the previous government, that laid the foundations for the inefficient public transport system experienced today (Schalekamp and Behrens, 2010). South African society is categorised as very unequal, this is experienced in many different sectors and facets and the problem is historical, public transportation and the level of access to it is no different. In addition, it was used as a tool to control mobility and restrict access. The decisions of yesteryear are causing problems for South African citizens today. The move to a more integrated transport system in the country is taking longer than initially planned post-1994. As a result the country is lagging behind prosperous economies of the world and the people of this country are suffering in the process (Pirie, 2013).

With the need for an efficient public transport system intensifying, especially in densely populated cities, there has been a move to the Bus Rapid Transport (BRT) system (Walters, 2013). This transport system tries to undo the injustices of the past by integrating a country previously segregated spatially. With all the benefits of this attractive transport system, it ultimately will not reach the people who need it the most. The vast majority will not get the opportunity to gain access to the BRT system on a daily basis, which could have an impact on their socio-economic livelihoods. Therefore, other measures will need to be effected to supplement the growing demand for reliable, efficient and accessible public transportation in the country. Understanding the link between improved public transportation and the social and economic benefits thereof, one can create policy and a series of plans that seek to see the sector grow and provide equal access for all. A more integrated society will transpire both socially and physically through improved public transportation especially looking at minibus taxis for the achievement of this objective. Access to efficient, safe and reliable public transportation is the key to bridging the gap established during the apartheid and colonial eras. Through improving access and efficiency of the taxi industry one can integrate a society that was once excluded spatially (Salazar Ferro et al., 2013; Schalekamp and Behrens, 2013; Walters, 2013; Woolf and Joubert, 2013; Delbosc and Currie, 2011a; Lucas, 2011; Schalekamp and Behrens, 2010).

1.2 Background

Segregated development was achieved with the implementation of the *Native Land Act of 1913* and policy that followed in a similar fashion has had a ripple effect on the spatial structure of the country and cities alike, particularly controlling the movement of black South Africans (Khosa, 1992). From as early as the 1930s the government made it a point to regulate the transport industry with the implementation of the *Motor Carrier Transportation Act of 1930*, trying to protect state subsided services from direct competition from other modes of public transportation (Khosa, 1998). The decisions made during the colonial and apartheid eras of South Africa are affecting the majority of the population post-1994 who are trying to access a reliable, efficient and safe means of public transportation, especially communities living on the periphery of the city and in rural communities (Lucas, 2011; Walters, 2008).

During the colonial, apartheid and post-apartheid eras, the taxi industry filled the gap in service delivery that the state failed to provide adequately to those located on the periphery of the city and in rural towns. Currently, South Africa's transport hopes and dreams are pinned on the introduction of the new Bus Rapid Transit (BRT) systems which will only be implemented in twelve major cities across the country (Geurs and Van Wee, 2004). There is a consensus that these major infrastructure projects are needed to bring high quality, modern and efficient mainstream public transport services to the inner cities to better service the growing need for an improved public transport system and, furthermore, to better regulate the public transport sector and to break the stranglehold that the taxi industry has in the transport sector (Venter, 2013; Walters, 2013; Lucas, 2012; Moodley et al., 2011).

However, in reality, the people who need access to improved transport services will not be reached by the BRT. Access to public transportation in the South African context is still the barrier that divides many. There is a need to introduce a transport system that addresses the needs of the poor, in order for the country to move in a positive direction. Local municipalities such as in uMhlathuze, need to find a way forward that would see more people making use of public transportation and by improving the taxi industry, making it more reliable than, and just as efficient as the BRT system, then the transport goals championed by the Department of Transport could be achieved. Consequently, a more integrated society will be established both socially and spatially through improved public transportation measures.

1.3 Statement of the problem

As a result of over 150 years of oppression and segregated development, the spatial structure of South African cities is fragmented (Khosa, 1998). It is the author's view that uMhlathuze Local Municipality suffers from similar problems related to public transportation and spatial

and land-use planning. Public transportation has been a problem in the municipality as it has never been planned for properly, taking into consideration relevant issues like the future growth of the economy and the population, urbanisation, inward migration and the ripple effects caused by the lack of mobility or public transportation. The major problems arise due to lack of integration between land-use and transport planning. In addition, the spatial structure of the Municipality coupled with an inefficient public transport system has further exacerbated the exclusion of many from activities being economic or otherwise. By not addressing the current condition of the transport sector, the future transport needs of small municipalities will not be met and the public might not fulfil their full potential, as there is a ripple effect with different sectors and facets of South African society dependent on some form of transportation in order to function.

1.4 Research Aim and Objectives

This section of the paper identifies the aims and objectives, which guided and structured the framework of the intended research project. uMhlathuze is one of many municipalities that suffer from some of the transport-related issues. The aims and objectives stated here reflect the situation within the municipality, but share common threads with the problems people encounter when using public transportation across the country.

1.4.1 Research aim

To examine the extent to which the minibus (taxi) industry can improve efficiency and accessibility, leading to the promotion of social inclusion within the municipality and ensuring socio-economic sustainability.

1.4.2 Research objectives

1. To determine the extent apartheid planning has on the spatial structure of cities/towns and rural communities and how do these effects still contribute to social exclusion post-1994, with that the link to efficient public transportation or link thereof.
2. To examine the extent to which lack of or inefficient public transportation contributes to socio-economic unsustainability and to investigate whether or not it is linked to spatial and social conditions that the previously marginalised population experienced in the past.
3. To examine policy and evaluate what measures are in place to improve accessibility to public transportation.
4. To assess the level of efficiency of the taxi industry within the municipality, and determine alternatives to improving the situation if need be.

1.5 Research questions

The research question is broken down into broad question and the sub-questions. The sub-questions reflect some of the issues highlighted in the broad research question linked to the problem that public transportation is faced with, within the uMhlathuze municipality. In order to test the strength of the hypothesis and the legitimacy of the study the following question were posed.

1.5.1 Main question

To what extent can the taxi industry be improved so that efficiency is ensured, in order to address the past social injustices by promoting social inclusion, and improving socio-economic sustainability?

1.5.2 Sub-questions

1. How efficient is the taxi industry within the municipality and how can the industry be improved?
2. What policy initiatives are in place to improve access to public transportation?
3. What planning approaches are used to achieve better access to public transportation for all?
4. How are the socio-economic conditions negatively affected by the lack of efficient public transportation?
5. What are the social and economic benefits of improved transport systems and access to them?
6. What were the effects of apartheid planning on the spatial structure of cities/towns and rural communities and how do these effects still contribute to social exclusion?

Table 1: This table illustrates the link between the sub-objectives and the sub-questions stated above

Theme	Objective	Research Questions
Efficiency	❖ To assess the level of efficiency of the taxi industry within the municipality, and to determine alternatives to improve the situation if need be.	❖ How efficient is the taxi industry within the municipality and how can the industry be improved?
Accessibility/mobility	❖ To examine policy and to evaluate what measures are in place to improve accessibility to public transportation.	❖ What policy initiatives are in place to improve access to public transportation? ❖ What planning approaches are used to achieve better access to public transportation for all?
Socio-economic sustainability	❖ To examine the extent to which the lack of or inefficient public transportation contributes to socio-economic unsustainability and to investigate whether or not this is linked to spatial and social conditions that the previously marginalised population experienced in the past.	❖ How are the socio-economic conditions negatively affected by the lack of or inefficient public transportation? ❖ What are the social and economic benefits of improved transport systems?
Social exclusion	❖ To determine the extent apartheid planning has on the spatial structure of cities/towns and rural communities and how do these effects still contribute to social exclusion post-1994, with that the link to efficient public transportation or lack thereof.	❖ What are the effects of apartheid planning on the spatial structure of cities/towns and rural communities and how do these effects still contribute to social exclusion?

Source: Author, 2014

1.6 Motivation/Significance of the Research

There is a need for proper transportation planning that not only affects the lives of individuals but the economy of the city or town (Woolf and Joubert, 2013; Verster, 2003). Improving public transport may present opportunities for future investment in small towns, thus creating new job opportunities, and, at the same time increasing access for the ordinary citizen and addressing social ills that are associated with the lack of efficient public transportation. As it stands, there is a separation where land-use and transport planning is concerned.

Improving public transportation and, in the case of the research, the minibus taxi industry, presents a number of opportunities if it can be achieved. It would be cost-effective, since the majority of the infrastructure is already in place and the operation of the industry is what mainly needs to be revised. Access is one of the many ways in which government can fight poverty in the country; by doing this, people stand a greater chance of advancing in life (Woolf and Joubert, 2013; Preston and Rajé, 2007; Levinson, 1998). Access to efficient and reliable public transportation could improve the quality of life because individuals could be exposed to goods and services not within immediate reach. Through improving access and the efficiency of the minibus taxi industry, one can integrate a society that was once excluded socially and spatially.

From my own observation, communicating with the public, keeping up with current affairs and literature and issues surrounding public transportation in the country arise. The aim of the research is to investigate the impact of improved public transport mechanisms on people living within the uMhlathuze Municipality. It is evident that the group affected the most by inefficient public transportation is the low-income group of the population, not saying the middle to upper-income groups do not also require access to efficient public transportation. As has already been pointed out, the inability to access efficient public transportation affects the low-income group more. They depend on public transport to make the majority of their trips to and from work and to access other amenities and services across the municipality. The distances travelled every day are considerable and this is the result of apartheid spatial engineering.

The project will look at what impact policy initiatives have made on increasing people's access to public transportation and whether or not changes are needed to improve the overall efficiency of the industry in general. This study will try to establish a way forward for the Municipality, linking all who were and remain excluded due to the lack of public transportation, the currently inefficient public transportation or due to their geographical

location. The transport sector in South Africa faces major challenges and through working with all stakeholders involved in the process meaningful change can hopefully be achieved.

With the growing need for efficient public transportation, the minibus (taxi) could alleviate the transport problems of small municipalities. The government is focusing on addressing transport-related problems that are found in major cities in the country, neglecting to highlight how small municipalities could benefit from the future transport plans put forward by the Department of Transport. The intended research will assess whether the minibus (taxi) is the solution to the transport-related problem confronted by small municipalities and how it could be improved to ensure overall efficiency, accessibility and improved mobility going forward.

1.7 Working hypothesis

Public transportation has been a problem in this country and it could be argued that it was never planned properly, taking into consideration the future growth of the economy, urbanisation and inward migration and the associated problems of restricted access to public transportation. The transport plans that the government is currently implementing for major cities in the country do not cater to the needs of small or rural municipalities and, by not doing something now, the future transport needs of small municipalities will not change and people will still be affected by inefficient public transportation or lack thereof.

1.8 Methodology

A mixed research method was used to conduct the study. An integrated method comprising both qualitative and quantitative methods was employed in this research. A mixed method research design approach is a procedure for collecting, analysing, and mixing both quantitative and qualitative research methods in a single study (Kumar, 2011; Plowright, 2011). This method is beneficial in attaining a well-rounded research output. This method was used to conduct the research, to better understand the difficulties facing the area of study. ‘‘Qualitative research is vital to understanding the complexity of transportation behaviour, which rests upon the subjective beliefs and behaviours of the individual person’’ (Kriel cited in Woolf and Joubert, 2013:285). In the case of the quantitative research method, it is vital to understanding the complexities of how transport systems function, particularly focusing on the efficiency of the system (Morse et al., 2011).

1.8.1 Secondary data

Secondary data enabled the researcher to gather readily-available material, published or unpublished, to highlight and understand the issues central to the research project. Hence the material focused on social exclusion, mobility, accessibility, transport efficiency, integrated transportation, land-use and transport planning and South Africa's political past including how these issues sway socio-economic sustainability and the minibus taxi's influence in aiding the ills present in society.

The researcher's secondary data made use of both quantitative and qualitative research methods, which allowed better comparison with past and present issues relating to the study. In addition, the secondary data consisted of national, provincial and municipal government publications, (plans, reports etc.) articles in academic journals, books, census data, reports, maps and websites. The secondary data will inform the literature review, conceptual and theoretical framework and study area chapter and aid in analysing the primary data. The secondary data of the dissertation consisted of readily available material as mentioned previously. The secondary data will inform the literature review and was also used to analyse the data obtained through interviews and observations.

1.8.2 Primary data

Qualitative and quantitative research methods were used to investigate the role that the taxi industry could play in revolutionising the transport industry and making it more efficient. Key informants were interviewed and their responses to the questions posed were analysed. Semi-structured interviews and group discussions were used to gather the necessary information; information that is richer due to the nature of the discussion that was taking place (Plowright, 2011; Harrell and Bradley, 2009). Interviewing key informants and engaging in group discussions to better understand the situation that the public transport system is faced with was important, in order to make an informed analysis of the situation. Observation was also used to understand the overall operation of the taxi industry from a social and physical perspective. The observation was conducted in two parts, firstly to establish the level of efficiency of the minibus taxi industry through a monitoring operation, which were analysed using tables and graphs to present the data and identify inconsistencies. Secondly, to understand the operation from a social perspective, hence identifying the type of relationship the driver and passenger have and the comfort experienced while travelling. Furthermore, to identify whether there were any safety concerns and whether passengers were satisfied with the service they received. In providing a visual perspective to the study,

photographs of public transport infrastructure (minibus taxi rank) were also incorporated into the study.

Table 2: List of Key informants

Key informant	Location of interview	Area of expertise	Motivation	Type of interview conducted
Respondent 1: Richards Bay Taxi association - chairperson, treasurer, secretary and general members	Their offices at the taxi rank	Operation of the taxi industry in uMhlathuze	Give insight into the difficulties faced by the industry and how they operate	Semi-structured group discussions with taxi association
Respondent 2: uMhlathuze Local Municipality: City Development Department - Public transport facilities and operations coordination manager	His office	Provision and control of public transport in uMhlathuze (particularly taxis)	Works closely with taxi association regarding permits and other legal documents	Semi-structured one-on-one interviews
Respondent 3: uMhlathuze Local Municipality: Infrastructure and Technical Services - Transport infrastructure planning manager	His office	Public transport infrastructure: facilities, routes and public transport plans of the municipality	Difficulties facing the municipality and the plans for the future	Semi-structured one-on-one interview
Respondent 4: Private practice - Town planning consultant/ academic	Coffee shop	Spatial planning, land-use planning	Academic perspective on the subject matter	Semi-structured one-on-one interview

Source: Author, 2015

1.8.3 Type of sampling

It is stated that purposive sampling is a method used where the researcher clearly selects key informants, either based on their knowledge of a problem or area of study, in order to gain rich information (Plowright, 2011). The reason for purposive selection as a sampling method "lies in selecting information-rich cases for study in depth. Information-rich cases are those

from which one can learn a great deal about issues of central importance to the purpose of the research" (Patton, 1990 cited in Coyne, 1997:624). Purposive sampling allows the researcher the opportunity to gain more from the individuals who take part in the research project. The people who formed part of the study area were municipal officials, professionals in transportation, academics, with a vast knowledge of transportation and spatial planning, as well as taxi association members.

Snowball sampling was the other sampling method used, in the event that a respondent who was identified referred to other individuals who could add value to the research as possible people to interview for the project.

1.8.4 Data collection and tools used

Primary data was obtained through semi-structured interviews, group discussions and observation (taking notes and monitoring) the operation of the taxis at the taxi ranks and along selected routes over a period of time. This source of data provides information not available in the secondary data reviews. The interviews were used to explore the role the taxi industry played in revolutionising the transport sector and possibly making it more efficient. Key informants were interviewed and their responses to the questions posed were interpreted and analysed. The semi-structured interview, as stated by Bhattacherjee (2012) is a research tool used to gather the necessary information that is rich due to the nature of the discussion that takes place, and the same can be said for group discussions. Consequently, interviewing key informants and conducting group discussions was a method utilised to comprehend the situation that the public transport system is faced with, in order to make an informed analysis of the situation.

Observation was used to understand the overall operation of the taxi industry from a social perspective and to evaluate the efficiency of minibus taxi performance, through making necessary notes. Direct observation in particular, sees the researcher not taking part fully in the activities, but merely observing how the people interact with one another and the surroundings (Plowright, 2011). Observation was carried out in a naturalistic setting and the participants were aware that they were being observed, but the researcher was merely observing the way in which the participants engaged with one another and he conducted informal interviews when the need arose. The researcher identified five different routes *(imigudu)*: one between the employment centres (Richards Bay Plaza to Empangeni), the second and third between the employment centre and the former 'township', (Richards Bay Plaza to eSikhaleni and eNseleni) and lastly, fourth and fifth a short trip within Richards Bay to suburbs and the latter to the peri-urban township (Richards Bay Plaza to

Aquadene/Brackenham and Madlanzini). The data was collected using a grading system; the situation observed was graded from (A-C) and, depending on what information the researcher needed, it would be graded to determine significance of the information relative to the specific question. In addition, the symbols used represent the following: (A) being poor, (B) intermediate (neither good nor bad) and (C) being good. Consequently, the aim is to observe how the operator and the commuter interact with one another and to conduct informal interviews to gain a broader understanding, in an attempt to provide suggestions to improve the operational problems, if any.

Observation was also used to monitor the level of efficiency of the taxi industry and to identify the shortcomings experienced by the taxi industry's performance in measuring the turn-around times on trips on specific routes. Close attention was paid to the number of taxis that moved in and out the taxi rank within 30-minute intervals for two hours during peak and off-peak times over three days of the week (Monday, Wednesday and Friday). In addition, this took place on two separate weeks, mid-month and at the end of the month. This established the ideal number of minibus taxis that will move in and out of the taxi rank, that run on local routes and also how quickly they could reach public transport stops along the routes on which they operate, excluding the long-distance routes. Richards Bay Plaza is the ideal place to evaluate the efficiency of public transportation in this area. The minibus taxis here travel to the majority of the former location areas, except Vulindlela.

Table 3: This table illustrates how each objective will be met using the appropriate data collection tool

Theme	Objective	Data Collection tool
Efficiency	To assess the level of efficiency of the taxi industry within the municipality, measured in terms of turn-around times for trips on specific routes, and to determine alternatives to improve the situation if need be.	Secondary data, observation and Interviews
Accessibility/mobility	To examine policy and evaluate what measures are in place to improve accessibility to public transportation.	Secondary data, interviews and observation
Socio-economic sustainability	To examine the extent to which the lack of or inefficient public transportation contributes to socio-economic sustainability not being achieved, and to investigate whether or not this is linked to spatial and social conditions that the previously marginalised communities experienced in the past and which they still experience currently.	Secondary data and interviews
Social exclusion	To determine the extent to which social exclusion is attributable to inefficient or lack of public transportation and to identify the factors that lead to this situation.	Secondary data and interviews

Source: Author, 2015

1.8.5 Data analysis tool

The data collected through interviews and observations was firstly transcribed, thereafter it was interpreted and analysed using a deductive approach. The approach groups data using the research question, to identify the similarities and differences of necessary data needed to explain the current situation. Therefore, identifying appropriate themes to structure the data collected, at the same time using the information gathered through secondary data to set a benchmark for responses (Kerrigan, 2014; Kumar, 2011). Mapping is another tool used to present and analyse data, to present the situation on the ground concerning transport Infrastructure within uMhlathuse in the areas identified.

The quantitative data gathered through observation was analysed using graphs and tables to illustrate taxi operation on selected routes in the municipality. This tool was used to evaluate the overall efficiency (turnaround time in operation) of the taxi industry within the municipality, and to propose necessary measures to improve the way in which the taxi industry functions. The intention was to establish the ideal number of minibus taxis that run on selected local routes that could move in and out of the taxi rank within a stipulated period of time. On the bases of their overall performance (number of trips made) on respective days a percentage indicating performance and average time wasted overall was derived. Furthermore, through dividing the number of trips made for respective distances on selected days by the ideal number of trips during stipulated time period. The average operation time wasted (missed opportunities in operation) on the other hand is the difference of the overall performance. The outcome could influence the manner in which taxis operate and this has the potential to increase the number of people who make use of public transportation.

$$\frac{\text{Number of trips made}}{\text{ideal number of trips during stipulated time in 30 minute interval}} \times 100 = \text{average time in operation}$$

1.9 Limitation of the study

Logistical – The intended research required a lot of travelling in order to gather the necessary information from the people identified in the study. To counter the problem that has been stated, firstly, consent from all the participants was achieved ahead of time, thus allowing alternative arrangements to be made if necessary. Regarding the taxi industry's buy-in to the idea, an insider was used to gain a better perspective on how best to approach the situation, but also to gain the trust of those who participated in the study. Since there are a number of routes throughout the municipality, each could not, in practice, be studied individually. Hence a number of routes were selected, and, based on the results from the selected routes,

assumptions were made regarding the perception of minibus taxi operation across the municipality.

Theoretical – the theoretical base for the research took examples from various sources and studies. Due to the limited theoretical references that look specifically at minibus taxis and their operation, highlighting transport efficiency, the use of theories from a number of fields was utilised that used the closest approximations to the nature of the study to supplement the lack of data regarding the topic.

1.10 Structure of the dissertation

1.10.1 Chapter 1: Introduction

The first chapter introduced the study area, stating the problem and the background of the topic. Furthermore, the chapter outlined the research question and the objectives of the study, the hypothesis, and lastly, motivated the need for the research. This chapter outlined the research method that were used to fulfil the research objectives and the answering of the research questions. The tools used to collect data were outlined as well as the tools that were used to present and analyse the data collected.

1.10.2 Chapter 2: Conceptual and Theoretical Framework

This chapter provides the theoretical and conceptual reference underpinning this study. In this chapter, all the concepts and theories which will be used in the study are clearly outlined. Therefore, concepts and theories such as accessibility, mobility integrated transportation, socio-economic sustainability, social exclusion, transport-orientated development, collaborative planning, residential location and the 'corridor city' concept will be key to understanding the basis on which the study will be conducted.

1.10.3 Chapter 3: Literature Review

This chapter provides an overview of the international and South African literature regarding the research topic. This chapter highlights the relevant issues put forward by leading academics in the area of study, linking their views to the theories and concepts stated in chapter 2 with reference to the research problem and international precedent cases, how past and present planning measures affect the country, in terms of the physical landscape and public transportation.

1.10.4 Chapter 4: Case Study

This chapter gives an insight into the current conditions of public transportation and the infrastructure it makes use of through the municipality. It identifies the problems and policy directives regarding transportation issues. Looking at the strategies the municipality employed regarding public transportation in the region, an assessment will be made as to whether or not these strategies speak to the current transport problems experienced by citizens of the municipality as a whole.

1.10.5 Chapter 5: Data Analysis

This chapter provides an analysis of the data collected through interviews, observation and secondary data. This chapter presents the findings and the relevance of the theoretical framework of the study and applies the tools to analyse the data in question.

1.10.6 Chapter 6: Conclusion and Recommendation

The final chapter provides an overview of the key findings made in the dissertation with concluding statements of the dissertation as a whole. It also provides recommendations, based on the information collected in the previous chapter, concerning what could be done to improve the situation the municipality is confronted with.

1.11 Summary of chapter

As is highlighted in the background, motivation/significance and problem statement, public transportation is a problem that affects many in South Africa, and uMhlathuze Local Municipality is no exception. The poorest members of society are affected the most by the shortcomings presented by public transportation and a change is needed to improve the lives of the people most affected by inefficient, inaccessible public transportation. The intention of this chapter was to express the issues affecting public transportation national and particular with in the study areas. Hence, the objectives, background, problem statement and motivation indicate issues that have led to the problem in pre-and post-apartheid planning.

The methodology, literature review, theoretical and conceptual frame work of the study indicated a critical evaluation of issues affecting the masses and is used to prove the statement in the hypothesis right or wrong. Hence, improving public transport accessibility and efficiency, while achieving wider-spread mobility could aid in addressing the social ills present in society and the idea of the minibus taxi industry being presented as a potential solution to the problem affecting small town and rural areas.

Chapter 2: Conceptual and Theoretical Framework

2.1 Introduction

What constitutes development has different meanings in many societies and understanding the many ways in which similar outcomes can be achieved using alternative methods is of the outmost importance. The most efficient method of securing development should be used depending on the desired outcome needed. As the structure of the city becomes complex and is constantly changing, the use of models/theories are needed to analyse what occurs spatially, to better understand social phenomena and structural/economic development. In addition, the selected method should be used as a tool to better structure what occurs spatially and to facilitate growth, economically and otherwise (Capello, 2009; Dawkins, 2003; Davies, 1981; Ingram, 1977). With the expansion of the city and the growth in the economy, unpacking the shortfalls of public transportation presents an opportunity to influence change. Bringing about transport planning that reflects the needs of the majority in South African society is desirable in order to improve on the existing situation.

The purpose of this section is to present a theoretical and conceptual framework, thus identifying the boundaries within which the research will be conducted. In this section, the relevant concepts and theories to the study are clearly outlined. The concepts that are going to be used are accessibility, mobility, social exclusion and Transport Orientated Development (TOD) and how they relate to transportation. The same goes for the theories, which are collaborative planning, the 'corridor city' concept and residential location theory. These concepts and theories are core to unpacking the problems prevalent in the municipality, linked to transportation. Furthermore, possible tools for changing the outlook of the municipality are discussed and the study offers a take on the public transportation situation not offered in many studies.

2.1.1 Definition of key concepts

This section provides a brief explanation of key concepts that form an integral part of the research and this provides a perspective on how the author interprets these concepts.

Accessibility

The ability to access public transport in relatively close proximity to where one lives, which in turn leads to a consideration of "the ease with which any land-use activity can be reached from a location using a particular transport system" (Dalvi and Martin, 1976 cited in Geurs

and Van Wee, 2004:128). The ability to access improved transport systems has a direct impact on the individual's well-being.

Mobility

The ability to move from point A to B with relative ease, is significant in sustaining the long-term development of an area (Kenyon et al., 2002). Mobility plays a crucial role for individuals and groups in accessing economic opportunities, communities, other land-users and social facilities at crucial nodal points, which in turn, helps sustains social networks and their livelihood.

Transport efficiency

Transport efficiency refers to the ability to move from one location to other with relative ease within a certain timeframe, also taking into consideration the operational factors that make up the overall performance of the transport system that undertakes to reach set destinations (Li et al., 2013; Sami et al., 2013). As stated by Costa et al., (1997) "similar to any social service, efficiency and performance measures in public transport are necessary to monitor progress toward a result or goal" (cited in Abreha, 2007:11).

Social exclusion

"Social exclusion is a constraints-based process which causes individuals or groups not to participate in the normal activities of the society in which they are residents and has important spatial manifestations" (Preston and Rajé, 2007:151). The exclusion could be due to physical barriers, geographical isolation or to exclusion from accessing centralised activity and economic institutions.

Social capital

This is the formal and informal network of associations, where networks are treated as assets and also as a means to mobilise other assets in the community (Mathie and Cunningham, 2003). By breaking down the barriers that hinder interaction, people have the opportunity to exchange ideas and foster change, building the social fabric of society by identifying common ground.

Socio-economic sustainability

This is the ability to sustain a livelihood, which is directly, either positively or negatively impacted by one's ability to take part in economic activity in some fashion. "A self-sustaining

economy is one which is able to provide the population with adequate quality of life on a long-term basis without requiring substantial transfers from more prosperous regions" (Copus and Crabtree, 1996:41). Without proper public transportation the economic growth of an area is hindered, and the social fabric of society is affected negatively.

People-centred development

A people-centred approach to development looks at development that is geared for the people, to serve the interests of the people (Woolf and Joubert, 2013). The process is embedded in the person's social and cultural context and therefore it is reflective of, and responsive to, their personal, social and cultural circumstances (Murray, 2009).

2.2 Conceptual framework

Public transportation in South Africa is complex, mainly due to the spatial distribution of people in space across the country. Public transportation in this country has a huge impact on many people's lives on a daily basis. It currently services the majority of the transport needs of the poorer members of society, where middle to high income members mainly make use of their private cars. Hence, the manner in which public transport is viewed in the country is different to that of many developed cities around the world. Mobility, accessibility, exclusion and lack of efficiency is exacerbated by the shortfalls that result from the geographical distribution of people and how land-use and transport planning is approached.

The legacy of apartheid has caused segregated development, which is still the case post- 1994 in the urban landscape of South African cities. An efficient public transport system has far-reaching implications not only for poorer members of society, but it could create a culture of people utilising public transport more. In addition, this is in line with the green movement experienced the world over and the vision of the Department of Transport, but ultimately, with the vision of improving the lives of many due to the ripple effects that are likely to occur. The one way in which the country could be integrated spatially and socially is through public transportation, by investing in a proper transportation infrastructure, which is a step in the right direction for the country as a whole. The concepts presented in this section speak not only to this problem, but also to the ultimate solution.

2.2.1 Accessibility, Mobility and Social Exclusion: the links to transportation

Mobility, accessibility and social exclusion are key areas of focus considering the role of public transportation under apartheid rule and what it means for those living in South Africa post-1994. The legacy of apartheid is still visible across the country and more so in small towns

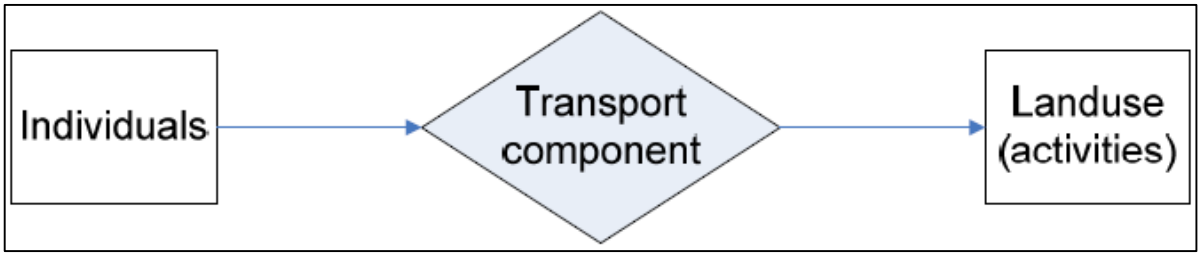
and rural areas. Whether individuals living in South African society would be able to reach their full potential is dependent on how we deal with the wrongs of the past to build a better tomorrow. These issues are not unique to South African society, but manifest themselves in different communities/cities the world over, due to the complex spatial structure and inefficient/inadequate public transportation.

2.2.1.1 Accessibility

Understanding the effects that poor accessibility has on the majority of the population who need to access public transportation to get to work, school and to access various economic opportunities, resources, social services; communities and other land-users should demand that this issue be dealt with as a matter of urgency. As stated previously, apartheid spatial engineering is responsible for the many of the setbacks experienced spatially. Hence, many communities lack integration (socially and physically) and do not engage with one another which further exacerbates social exclusion due to the fragmented spatial landscape which causes the breakdown in social capital. Accessibility, as stated by Behrens and Wilkinson, (2003) is a crucial area of study that has not been explored in the South African context in order to deal with the past and present development patterns (cited in Bickford, 2014).

Accessibility has long been part of planning dialogue looking at the contribution by scholars such as Lucas (2011); Stanley et al. (2011); Geurs and Van Wee (2004); Garrett and Taylor (1999); Miller (1999); Handy and Niemeier (1997); Pirie (1979); Wachs and Kumagai (1973) and many others, past and present, contributing to the discussion surrounding accessibility and other issues associated with it, particularly the link to inadequate land-use and transport planning and inefficient public transportation that fuels the problems and contributes to wider societal problems experienced spatially. The ability to access an array of social services, activities, amenities, resources and economic opportunities has far-reaching consequences for individuals and society as a whole in the long-term.

Figure 1: Accessibility model



Source: (Abreha, 2007)

There is a problem in many South African 'townships', particularly spaces designed for the poor in pre- and post-apartheid, with a disconnect between land-use and transport planning,

hence a problem arises in fulfilling the model illustrated in (figure 1) with great efficiency. 'Black townships' have not seen much change since 1994, they are still located distances away from centres of employment and commuters spend a major portion of their time and money travelling to and from work. Many towns which are rural or semi-urban have been poorly serviced with public transportation in the country due to their geographical location, thus the new accessibility measures, once in place, will allow for changes to occur in the current conditions in the transport sector.

> The principle of accessibility simply promotes the highest level of accessibility to resources, services, opportunities and other communities. This is intrinsically linked to transportation planning and should consider localised needs for the transportation of people and goods by various modes of transport as guided by the scale and function of a region *(uMhlathuze Local Municipality: (Draft) Spatial Devlopment Framework Review 2013/2014, 2014:16).*

Through the ability to access efficient public transportation, individuals or groups of people have the opportunity to participate in activities in different locations. This has a direct impact on the socio-economic character of the town or city. The ability to access improved transport systems has a direct impact on individual well-being (Geurs and Van Wee, 2004).

2.2.1.2 Mobility

The availability of affordable public transportation allows for greater access to commercial activity, social facilities or services and access to employment opportunities. As argued by Stanley et al., (2010) an efficient public transport system/network increases mobility which improves social engagement, socio-economic sustainability and overall wellbeing (cited in Kamruzzaman et al., 2014). The mobility of the poor is constrained by the lack of access to affordable, accessible and efficient public transportation. Hence, it is argued that the manner in which land-use and transport is planned needs to be revisited (Sami et al., 2013).

As the following scholars: Milbourne and Kitchen (2014); Kolodinsky et al. (2013); Demissie et al. (2013); Venter and Cross (2011); Stanley et al. (2011); Stroud and Mpendukana (2009); (de Vasconcellos, 2005); and Kenyon et al. (2002) note, the ability to be mobile is key to overcoming the many setbacks faced on a day-to-day basis due to the limitations experienced spatially. Moreover, removing or improving deficiencies that hinder the exchange of ideas or the ability to access resources, employment or other activities leads to improvement in the lifestyle of the population. Without substantial change, many will remain excluded socially, physically and economically, without any means of attaining the things they need to ensure that society functions at the highest level possible. Considering the effects of apartheid

spatial engineering on South African society, lack of adequate mobility hinders progress post-1994.

> Given the understanding that dispersed settlement patterns cannot be adequately served by public transport perhaps highlights on the one hand the poor mobility levels experienced by peripheral, public transport dependent communities. Whilst on the other hand provides insight into the need to heavily subsidize the limited public transport services which are provided to these areas. Important to note is that all transport provided to black areas during apartheid was designed to control and restrict access. Overhauling the traditional manner in which this transport functioned in a post-apartheid era has proved difficult (Bickford, 2014:4).

The ability to move from point A to B is significant in sustaining the development of an area long term (Kenyon et al., 2002). Mobility plays a crucial role in allowing individuals to access economic activity which, in turn, helps sustains their livelihood, increasing the likelihood of sustainable development. In South African society, the working class and poorer members of society depend on some form of public transportation to move from one point to the next, hence they are impacted greatly by the lack of mobility which leads to a ripple effect involving other societal ills. The lack of adequate mobility has far-reaching consequences for the public, considering the political past of the country. Furthermore, it affects one's potentially ability, to be a contributing member of society economically, but also causes the breakdown in social capital and the social networks that would have been established, diminishing the social fabric of society.

2.2.1.3 Social exclusion

According to Stanley and Lucas (2008) social exclusion is an important area of study, linking transport or lack thereof to the rate of progress individuals and, to a large extent, societies encounter. The ability to be mobile and have access to areas of intense social, cultural and economic activity allows for social integration due to interaction, increasing social capital and the overall well-being of individuals (Stanley et al., 2011). The international community highlights the need for integration, identifying the growing need for improved public transport infrastructure that addresses the needs of the people at large, over those who use their private cars.

Social exclusion is a complex, multi-dimensional construct and is rarely measured empirically (Delbosc and Currie, 2011b; Stanley et al., 2011). Due to the spatial structure of the cities across South Africa, without proper transport systems in place, people are excluded from many forms of activity (Lucas, 2011). The origin of the term stems from work by Lenoir and

Lefebvre (French social scientists) who drew their ideas from Marxist notions of socio-spatial exclusion, explaining the necessary conditions for capitalism, how space is used as a form of dominance over others, hence restricting access and allowing a select group/s in (Preston and Rajé, 2007). "Social exclusion is a constraints-based process which causes individuals or groups not to participate in the normal activities of the society in which they are residents and has important spatial manifestations" (Preston and Rajé, 2007:151).

Social exclusion is viewed in four dimensions, any one of the four could be applied to determine the extent of the exclusion:

- Physical exclusion: the physical nature of the transport system may create physical and psychological barriers to access by people with impaired mobility, hearing or sight.
- Geographical isolation: dispersed locations may limit the ability to carry out activities in the immediate area.
- Exclusion from facilities: the growing popularity of centralised shopping and services may result in areas with few facilities.
- Economic exclusion: problems with physical access and travel cost can limit the ability to find gainful employment
  (Delbosc and Currie, 2011a:556).

Apartheid spatial planning makes South African cities a special case, as all four dimensions of social exclusion apply in many communities. Depending on where you fall in the social pecking order, there are certain activities or services that are not within your immediate reach. The effects of apartheid planning/engineering are felt years after the turn of power and the adoption of democracy and for real change to manifest, a long time will be needed for this to be realised.

2.2.2 Transport Orientated Development (TOD)

Transport Orientated Development (TOD) is a concept that developed in America around the late 1970s and early 80s due to its association with smart growth and new urbanism, which encourages diverse land-use patterns linked with a highly integrated public transport infrastructure (Wilkinson, 2006; Kamruzzaman et al., 2014; Bickford, 2014; Grey and Behrens, 2013). The key principles that define TOD are, amongst others, walkability, "the availability and connectivity (intermodal) of public transport services; land use mix (diversity); residential density; land use intensity for employment; and pedestrian connectivity", promoting a more compact urban development at both neighbourhood and city scale (Kamruzzaman et al., 2014:148). TOD is the direction many of the world's leading cities are heading in, especially for cities in the developing world; in South America, Curitiba and Bogota are prime examples. South Africa is not far behind in testing the effectiveness of these measures, implementing

them in cities like Cape Town and Johannesburg with plans to implement such systems in many more cities across the country.

> The vision of the Department of Transport in their *Public Transport Strategy* (2007) is to phase in a lasting legacy of *Integrated Rapid Transport Service Networks* in metropolitan cities, smaller cities and rural districts that will ensure sustainable, equitable and uncongested mobility in liveable cities and districts *(StatsSA, 2013:1)*.

This is an important function considering the country's past of segregated spatial engineering that excluded the majority, by placing them distances way from economic opportunities, public facilities and resources. This has created endless problems for the government post-1994. Finding new ways to deal with existing problems while being progressive in the approach that improves social sustainability is a major challenge. Social sustainability according to Vallance et al., (2011) is viewed in three dimensions, these being:

- Developmental - addressing basic needs, the creation of social capital and social justice;
- Bridging - concerning changes in behaviour so as to achieve bio-physical environmental goals;
- Maintenance - aspects that need to be preserved/sustained e.g. socio-cultural characteristics in the face of change

(cited in Kamruzzaman et al., 2014:144).

The concept of TOD is based on providing public transport facilities within walking distances, not limited to motorised forms of transportation to ensure social, environmental and economic sustainability. As the need increases to integrate land-use and transport planning, TOD is viewed as an holistic approach to urban and transport planning, not forgetting urban design that encompasses the ideologies of inclusion, accessibility and integration.

2.3 Theoretical Framework

In the history of planning as a discipline, which only rose to prominence in the twentieth century, regional development/planning came to be understood as the relationship between geography and the economy. For that reason, many of the theories and models focus on transport linkages/relationships in connecting the various centres or nodes in space. From the medieval cities where von Thunen's location theory was applied, one can take note how they tried to explain the distribution of agricultural goods in relation to the centre. From that relationship, more complex models and theories came to be formulated to explain a number of circumstances spatially. Hence, today one finds various categories of spatial theories namely, classical, neo-classical and structuralist theories that, like the initial theory, explain

and act as measures that could be applied to achieve a certain level of development in a region (Capello, 2009; Sotarauta, 2009; Ingram, 1977).

Segregation/social exclusion of some sort, whether due to physical boundaries or lack of efficient/effective public transport to supplement the movement of people to and from employment centres, calls for attention. In addition, the effective use of transport corridors to promote movement needs to be addressed, to improve circulation that will lead to better transport choices. Change does not occur in a vacuum, a collaborative effort is needed to bridge the gap established by one's physical space. Thus, access to goods and services should not be determined by where one is located. Development needs to impact the lives of all and not a select few. The key theories that will form the basis of the study are collaborative planning, residential location theory and corridor cities.

2.3.1 Collaborative planning, its evolution and change in planning practice

From the earlier works of Habermas' (communicative rationality/communicative action) to Forester's (communicative planning/argumentative planning), Healy's (inclusionary discourse /collaborative planning) in the 1990s and many other contributors, collaborative planning as a theory, as well as a tool in planning practice, has evolved over the years. It is safe to say that collaborative planning has become very popular during this timeframe, as more inclusionary/participatory methods are sought-after in planning practice (Harris, 2002; Tewdwr-Jones and Allmendinger, 2002; Yiftachel and Huxley, 2000). With the ability to address conflict between two or more parties, this planning approach is crucial in upholding the ideals of democracy and in integrating different worldviews, finding a resolution that will satisfy all and not overlook the views of the minority. In addition, this is of outmost importance considering South Africa's political past of segregation, discrimination and belittling the views of the marginalised groups.

The main components of a communicative rational approach to planning have been summarised by Healey (1992) under the following conditions:

- Planning is an interactive and interpretative process.
- Planning is undertaken among diverse and fluid discourse communities.
- The methods require respectful interpersonal and intercultural discussion.
- Focus rests on the 'arenas of struggle' where public discussion occurs and where problems, strategies, tactics, and values are identified, discussed, evaluated, and where conflicts are mediated.
- There are multifarious claims for different forms and types of policy development.
- A reflective capacity is developed that enables participants to evaluate and re-evaluate.

- Strategic discourses are opened up to include all interested parties which, in turn, generates new planning discourses.
- Participants in the discourse gain knowledge of other participants in addition to learning new relations, values, and understandings.
- Participants are able to collaborate to change the existing conditions.
- Participants are encouraged to find ways of practically achieving their planning desires, not simply to agree and list their objectives

(cited in Tewdwr-Jones and Allmendinger, 1998:1976)

Collaborative planning is a theory which identifies the need for stakeholder engagement in order to influence the physical environment in a positive manner (Healey, 1998). The idea with this approach to planning, as theory and tools in planning practice, is that, through dialogue, all stakeholders can satisfy an array of issues confronting two or more groups, to achieve an outcome that will satisfy all parties involved (Healey, 2003; Booher and Innes, 2002). Hence, in the ideals of Habermas, language should not be a barrier in communication, it is used to achieve consensus and spearhead action. "In his 'ideal speech situation', communication will no longer be distorted by the effects of power, self-interest or ignorance" (Tewdwr-Jones and Allmendinger, 1998:1976). This holds significance in reference to the apartheid era in South Africa, as language was used as a tool to oppress the masses. The ideals of collaborative planning or communicative rationality identify with the struggles facing South African society at present, considering the number of official languages there are and with that creating a space where everyone's voice is heard regardless which language is spoken. In addition, the country's democracy is still young, there is still a long way to go to correct the wrongs of the past, given that fact where marginalised groups find themselves spatially and the opportunities and resources at their disposal.

The communicative approach to planning is grounded strongly in a belief that dialogue can transform conflicts between interest groups into solutions, where both come to a mutual understanding, and that this is possible by means of decentralised and broad planning processes that facilitate a mutual understanding and agreement (Mathur et al., 2008; Head, 2007; Booher and Innes, 2002; Tewdwr-Jones and Allmendinger, 2002).

> Collaborative planning as an approach in a multi-stakeholder society is thus justified because it is more efficient (reducing regulatory transaction costs in the longer term), because it is more politically legitimate and because it 'adds value' to the on-going flow of place-making actions, through building shared knowledge and understanding, generating opportunities for creative synergy, and developing the capacity among stakeholders to work together locally to solve common problems (Healey, 1998:18).

The postmodern challenge has led planning theorists to re-examine many of the key assumptions of modernist planning, hence, through collaborative planning there is a greater possibility to right the wrongs of the past related to top-down planning methods which has created a situation where the mass population still tend to suffer at the hand of those in power. With collaborative planning used as a tool in planning practice small groups are heard and decisions are not made on their behalf, but through engaging with stakeholders and reaching an understanding that benefit all parties concerned (Healey, 2003; Oranje, 2002).

With the inability to comprehend social issues today, the masses still suffer at the hand of those in power. Planning practice is not just value-free and based on scientific reasoning, but is rather political. As Healey (1997) notes, "the communicative and collaborative turn in planning is not simply a theory but a 'world view' based on a participatory perspective of democracy and either a suspicion of or a more balanced attempt to situate free-market economies: Its context [is] planning as a democratic enterprise aimed at promoting social justice and environmental sustainability" (cited in Tewdwr-Jones and Allmendinger, 2002:214).

2.3.1.1 Collaborative planning and the importance in transport planning in South Africa

Collaborative planning is key to enhancing engagement between the state and with the minibus (taxi) industry, bridging the gap between the two parties and breaking down the wall of power over the other. Through stakeholder engagement, change can occur and improve the public transportation in the country. In addition, coming together to exchange ideas, to facilitate the growth of the minibus taxi industry and to improve overall operation is a necessary goal. This would help the two parties to attempt to develop a mutual understanding that addresses issues relating to how the taxi industry functions and what steps need to be in place to improve efficiency and accessibility. The success of the taxi industry has wide-spread implications for the many municipalities for whom the BRT would not be feasible. Thus, working together will not only improve the industry, but will be of benefit to ordinary people using taxis as their mode of transportation. Therefore, change is needed that will not only change the government's outlook on the industry, but also the overall engagement and the manner in which public transport is viewed in the country.

2.3.2 Residential Location theory: its emergence, criticisms and transportation

This theoretical narrative takes its roots from the von Thunen location theory, which is macroeconomic theory designed to comprehend the spatial distribution of goods (during its inception it involved agricultural produce) in relation to the economic core of the city/town. Residential location theory differs slightly; the simplest explanation of this macroeconomic

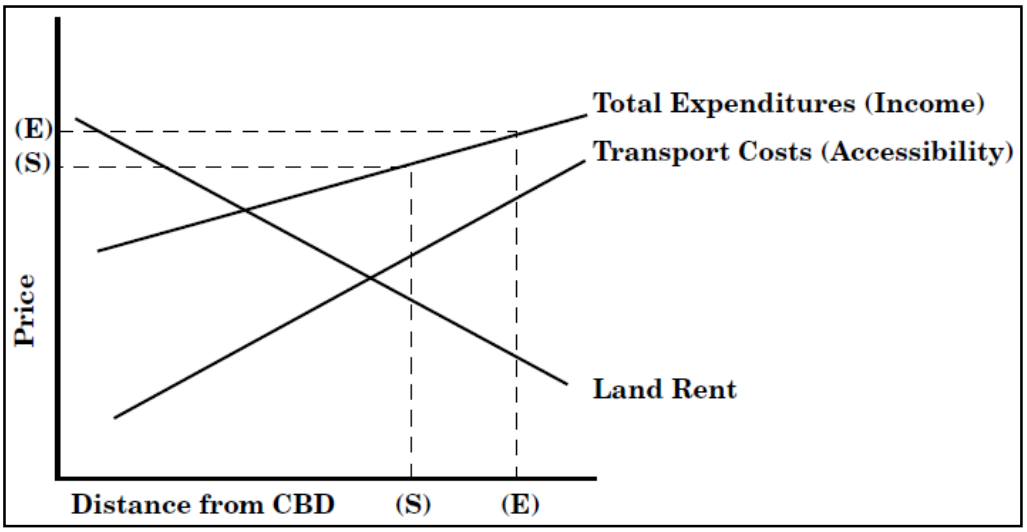
theory is that it studies housing markets and the cost of commuting, its spatial distribution in urban areas and other land-uses in relation to the economic core or place of employment in the town/city.

Household choices of location and consumption bundle are described by a static utility maximisation model. Households maximize utility *V*(z,q,u), where u denotes distance from the household's residence to the city centre, q is the amount of land, and z is the composite good (numeraire below). The utility function is assumed increasing, continuous, twice differential, strictly quasi-concave and decreasing in u, with marginal utility function represents distance for commuting. The Household's transportation expenditure to the centre, *T*(u), increase with distance, while the price of land, *r*(u), is a decreasing function of distance (Straszheim, 1987:718):

$$\frac{\partial r}{\partial u} < 0, \quad \frac{\partial T}{\partial u} > 0.$$

Therefore, a person in society makes a conscious decision as to where s/he lives, taking into consideration a number of factors. This explains spatial distribution in land prices and the travel cost incurred depending on where you reside, determining the decision to locate nearer to or farther away from the centre. The theory became prominent in the 1960s through Alonso's (1964) land market model, Mill (1967) and Muth's (1969) housing model, looking at 'housing' as a commodity rather than land being the sole determining factors. Later, a similar model by Beckmann (1974) and Henderson (1985) adapted Alonso's land-mark model to demonstrate leisure time and its spatial distribution (Zax, 2003; Nelson and Sanchez, 1997; Straszheim, 1987; Ingram, 1977; McCarthy, 1977; Arnott, 1979).

Figure 2: How distance from the CBD influences residential location



Source: (Nelson and Sanchez, 1997)

Figure 2 indicates that the closer you are to the CBD/ economic centres, the less time is spent and less cost incurred through travelling between workplace and home, hence the greater the access, the higher the cost of land/rental with a greater number of facilities/amenities to access. The farther from the CBD/economic centres, the cheaper the cost of land is, but with less access and higher transport costs. The traditional residential location theory concerns itself with location, space, transport, how these variables affect the lives of a number of individuals in society due to the geographical landscape. Furthermore, one can note how land-use planning is a major factor in relation to where economic activity is located. In addition, access and mobility is hindered depending on where you are located, leading to social exclusion and the inability to partake in the economy, affecting socio-economic sustainability, social capital and the breakdown in social networks (Boustan et al., 2009; Zax, 2003; Waddell, 2000; Nelson and Sanchez, 1997).

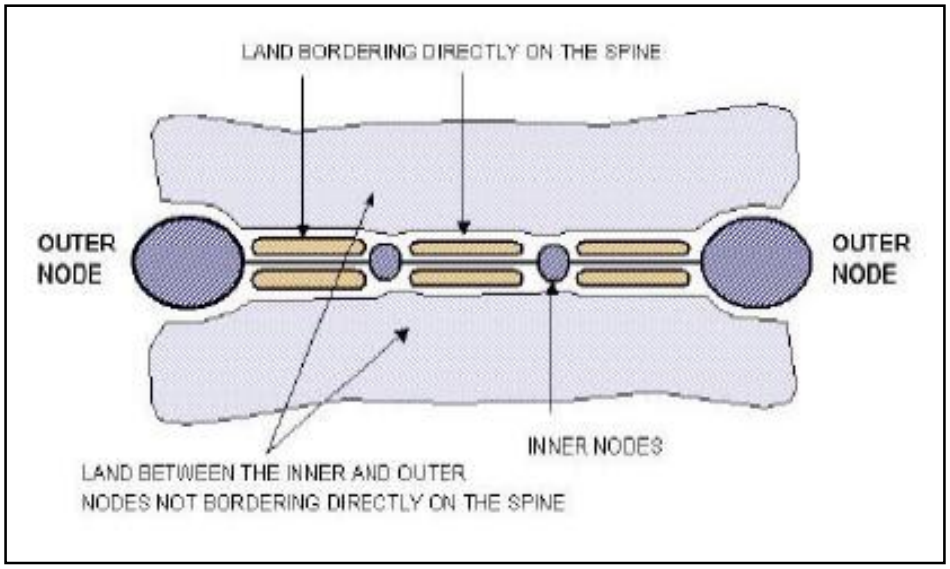
Since the inception of the residential location theory, the city/town has evolved. The size of one's plot and where it is located in relation the economic hub of a set area does not apply across the board. There are a number of factors that play a part in the final decision. The characteristics of the structure and access to public transport, social facilities, many other amenities and land-uses play an important role. Likewise, it is not simply the location and the size of the plot which are determining factors for individuals participating in the housing market. The shortfall of the residential location theory is that it does not consider circumstances where employment hubs, economic and other activities are no longer concentred in a focal point/central business district of a city/town. Hence, in those instances, the different nodes are categorised to determine their leverage spatially in drawing people to and from their starting points. Furthermore, driving change in the modern town/city influences a number of developments spatially.

2.3.3 'Corridor city'

'Corridor city', is a theory that identifies development of a city along major corridor/s (Vanderschuren and Galaria, 2003). A corridor, as stated by Whebell (1969) refers to a linear network linking major towns that are highly developed, through transport planning and effective land-use planning along two or multiple nodal points. They comprise a "primary historical-spatial system of innovation diffusion, the progress of which leads, to differentials in the mix of material, organizational, and philosophical innovations from place to place" (Whebell, 1969:4). This is particularly crucial due to the effects of apartheid spatial engineering, which is responsible for the inefficiency and inequality presented by the current spatial landscape. Hence the scattered nodal points should be linked by an adequate transport infrastructure that will foster the potential of future growth and provide ample

opportunity, as well as much needed mobility and improved accessibility (Bickford, 2014). Figure 3, below, shows nodes and everything in between, linked to efficient public transport and effective infrastructure providing the linkage.

Figure 3: Illustration of an effective corridor between nodal points



Source: (Marrian, 2001)

With a corridor city, growth arises from a central business district and people are connected through an efficient transport infrastructure. It is characterised by linear growth in corridors that stem from the centre between connecting nodes (Borrego et al., 2006; Priemus and Zonneveld, 2003). In the case of South Africa, the spatial form of the city is characterised by separate development due to apartheid planning. This theory allows the government to integrate a society excluded socially and physically through the implementation of a transport system. Furthermore, it will hopefully address the social problems associated with inadequate public transportation, land-use and transport planning. The minibuses (taxis) can assist in bridging the gap created by one's geographical location, making use of a transport corridor to link nodal points through the city/town, hence land-use planning in future should be guide by these very corridors to ensure easy access and efficient movement of goods and people through the city/town.

The economic, physical and transport conditions for a successful corridor are as follow:

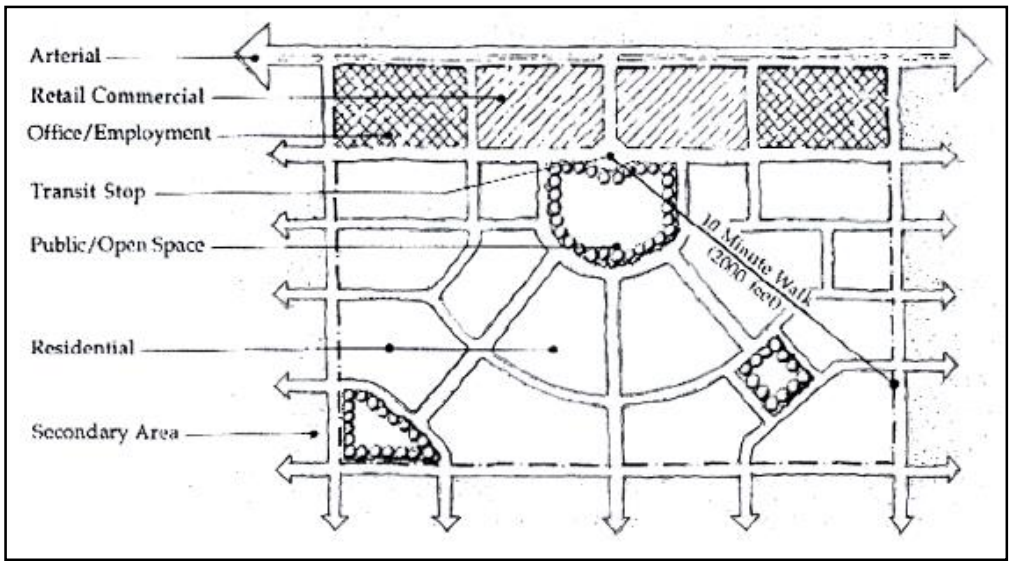
- Pre-existence of economic viability;
- Economic sense;
- Critical [competitive] economic mass;
  (Marrian, 2001:7)
- Connectivity between nodes in the corridor;
- Existence of, or possibilities for, multi-modal transportation;
- An efficient feeder system;

- Regional/metropolitan focus and accessibility; and
- Land for low cost housing.

(Marrian, 2001:8)

Implementing a strategy like transport-orientated development (TOD) will satisfy the public transportation needs confronted by a city/town wanting to improve the efficiency of public transportation and to reduce the reliance on private car ownership and usage in towns and cities. This goes beyond just linking economic centres, but rather perceives public transportation as rightfully being at the centre of how neighbourhoods, towns and cities are structured.

Figure 4: Transport orientated development and the implementation in neighbourhoods



Source: (Katz, 1994 cited in Bickford, 2014)

2.4 Summary of chapter

Spatial planning currently needs to address the issues confronted by post-apartheid society, focusing on addressing the problems of the past through inclusion/participatory measures. The regional development theories (classical, neo-classical and structuralist) of yesteryear are important, but emphasis should be placed on how they are used to achieve growth that is both equal and sustainable. Change does not occur in a vacuum, having different ideas provides endless possibilities. Therefore, the manner in which transport planning is approached should reflect this ethos. Hence, 'corridor city' and Transport-Orientated Development (TOD) are seen as appropriate tools to improve accessibility and mobility, and, as a means to start forging a way to break down the barriers created during the apartheid era and the colonial era before that. Social exclusion needs to be addressed, and the provision of affordable, accessible and efficient public transportation should aid in addressing the social problems attributed to apartheid spatial engineering post-1994.

Chapter 3: Literature Review - Spatial and Transport Planning

3.1 Introduction

Investing in transportation, particularly public transportation, is key to the success of any city and the country at large due to the fact that the rate of development and the level of efficiency of any transport system are linked (Delbosc and Currie, 2011b). Public transportation is at the heart of any city and, neglecting to revisit and improve the system, is setting the city up for failure. Furthermore, it is holding the city back from future investment by various means. This results in the city and the country lagging behind the prosperous economies of the world due a lack of productivity (Buehler and Pucher, 2011). With the inability to service the growing urban population and the neglected rural communities of the country, apartheid structures are proving to be a hindrance to the rate at which the state can deliver services that were historically not provided to marginalised groups.

The minibus (taxi) industry has, for many years, transported the majority of public transport users to and from various locations across the country (Khosa, 1992). The taxi industry has taken the role where the state has fallen short in providing the people of the country with an essential service on a daily basis (Khosa, 1998). The legacy of apartheid in the South African context has left the country in a very problematic situation. Apartheid style spatial planning has caused a rift in society as seen in the fragmented communities depicted across the country (Mabin and Smit, 1997). The problems associated with public transport are historical and they are prohibiting meaningful change from occurring in the current state (Pirie, 2013). The public of South Africa are faced with many problems, which were exacerbated by the country's political past (Christopher, 2001). With the implementation of the apartheid policy and legislation, many communities became disadvantaged, in that some were, and are, to this day, still excluded from centres of activity and amenities that are prominent in affluent neighbourhoods and in successful cities/towns.

As was pointed out earlier, access to efficient, safe and reliable public transportation is the key to bridging the gap established during apartheid and colonialism prior to this. This section will identify current debates surrounding public transportation in South Africa and abroad, reviewing what leading scholars are saying about public transportation in different contexts, identifying the issues that are directly impacted by public transportation, or the lack thereof.

3.2 The South African planning context

South African cities are some of the most inefficient cities in the world as a result of spatial planning and engineering which was adopted by the apartheid regime and colonial powers (Swilling et al., 1991). In understanding the fragmented spatial form of South Africa's urban and rural areas, one needs to revisit the country's political past. The towns, cities and rural areas in the country reflect the varying scales at which apartheid spatial engineering was enforced/adopted and still exists, twenty years into democracy (Schensul, 2009). Additionally, not only due to the unequal distribution of services, the level of access to amenities, economy, social services and basic infrastructure, but also to the distance between the areas where the well-off and the impoverished members of society live, relative to the economic centres and socio-cultural activities, the level of inequality and division in South African society is reinforced (Makhanye, 2013; Berrisford, 2011).

The current government is failing to do away with the elements of apartheid planning still present twenty years into democracy. Therefore, one could argue that the apartheid spatial engineering/planning still exists and echos in the physical landscape and administrative structures in the country, looming in the background. Hence social exclusion, the inability to access basic amenities and economic opportunities characterises South African society years after the institution of democratic rule (Newton and Schuermans, 2013; Mini, 2012; Berrisford, 2011; McCUSKER and Ramudzuli, 2007; Maylam, 1995; Christopher, 1990; Christopher, 1987).

3.2.1 Historical perspective and the effects on the physical space

With the country moving from segregation enforced by colonialism into apartheid, the physical form of the city changed even further (Swilling et al., 1991). The National Party, after winning the elections in 1948, undertook one of the biggest spatial reconstruction strategies, in an effort to segregate the different racial groupings in the country to maintain European/white supremacy and minority control in all spheres of South African society (Christopher, 1997). Apartheid which means 'separateness' in Afrikaans, was first aimed directly at neglecting the majority of the population in order to solidify the white/European control in all sectors of South African society (Freund and Padayachee, 2002). The actions of the National Party moved the majority of the population onto the periphery of the cities or to Homelands/Bantustans, therefore, unequal development was planned out and enforced through legislation and policy. Furthermore, this resulted in forced removals, depriving 'black' people of citizenship and ultimately implementing segregationist measures which fragmented the physical landscape of the country. The inequality and social divisions in the

post-apartheid era are in many significant respects still in place. Racial mixing was not encouraged which directly contributed to the way in which the spatial form of cities/towns was planned out (Meth, 2000; Christopher, 1997; Feinberg, 1993).

The spatial form of the cities and rural areas was bound by laws, which restricted movement of people who were 'non-white'. Racial zoning within the city took place; areas were classified as 'White', 'Asian', 'Coloured' and 'Native' (Christopher, 1997; Swilling et al., 1991). Several government bodies implemented apartheid policy, which led to unequal distribution of resources. Additionally, land that was deemed for white/European settlement only, was forcefully taken from its previous owners who were moved to the periphery of the city/town or relegated to homelands/Bantustans (Swilling et al., 1991). Through the actions of the government in question with the implementation of the apartheid policy, marginalised groups could be controlled and were discriminated against (Christopher, 1997). Hence, the government at the time decided what type of development needed to take place in these areas, and, as a result, they deliberately provided good services to one group and neglected the others in order to maintain the social divisions enforced by apartheid policy and colonialism prior to this. (Freund and Padayachee, 2002).

With the establishment of the unitary state in 1910, the political philosophy undertaken was segregationist, signalling white/European supremacy at all costs (Christopher, 1990). One of the notable pieces of legislation which had an impact on the physical space of the country was the *Native Land Act (No. 27 of 1913*). It impacted significantly on the spatial distribution of people which set the tone for what was to come in the not too distant future (Makhanye, 2013; Mabin and Smit, 1997). This Act was introduced prior to the National Party (NP) coming into power in 1948. The Act signalled the underdevelopment of particular racial groups in society (Feinberg, 1993). It prohibited 'blacks' from acquiring land in the city, therefore they were subjected to homelands/Bantustans, hence Black/Africans could only purchase land within the scheduled areas demarcated by the state (Makhanye, 2013; McCUSKER and Ramudzuli, 2007; Feinberg, 1993). The *Native Land Act,* and a number of other items of legislation implemented at the time, perpetuated racial discrimination. Hence it could be argued that this Act was to blame for the inefficient local government structures found in the rural communities across the country in the post-apartheid era. The Act paved the way for what was to come when the Nationalist Party took over and implemented and enforced segregated development on a larger scale.

With the need intensifying to control the movement of marginalised groups in the city, the government sought to implement the *Native Urban Areas Act (No. 21 of 1923*). The impact of this segregationist type of legislation is still felt currently in South Africa as it has had a

lasting impact on the spatial form of cities, towns and rural areas. These measures ensured that the ruling class maintained their dominance over other groups in the country and sought to engrave their imprint on South African society for eternity. This act was amended numerous times during the 60 year period it remained in effect, and created the stepping stones for the National Party when it implemented the apartheid policy.

> The *Native Urban Areas Act* provided for the establishment of municipal locations throughout the country to house the Black population. The various amendments to this Act in the ensuing 60 years laid down a mass of regulations effectively controlling most aspects of Black activity in the urban areas, where they were officially regarded as "temporary sojourners", as "the black man could stay in town while he had a job but should depart therefrom as soon as he ceases so to minister (Christopher, 1990:426).

This restricted the level of access that marginalised groups at the time had to the city/town, hence the Act controlled where 'black' people settled within the urban setting. 'Black' people lived close enough to areas where migrant labour was required, but far enough away to ensure racial mixing would not occur with the elite group in South African and would thus protect 'white'/European privilege. The level of racial zoning would reach a climax after the 1948 national elections with measures put forward to discriminate against a large group of people in order to solidify 'white' dominance (Miraftab, 2012; Nhlapo et al., 2011; Feinberg, 1993).

The Native Urban Areas Act (No. 23 of 1923) in conjunction with the *Native Trust and Land Act (No. 18 of 1936), Native Land Acts (No. 27 of 1913),* and the *Native Urban Areas Consolidation Act (No. 25 of 1945)*, lawfully formalised planning for spaces occupied by marginalised groups. Through the legislation passed into law, each municipality was required to identify areas where the Black population would be located. 'Black' or 'Native' people as they were referred to, could not, under segregationist legislation, purchase land outside areas designated by the state, hence these laws gave rise to what is referred to as 'townships' and the underdevelopment of homelands/Bantustans or rural towns. These areas were heavily controlled and regulated under the apartheid regime, to enforce the laws/ideals of the apartheid state. The way in which the government at the time approached how marginalised groups were treated and where they would be placed, formed the basis of the apartheid policy which further restricted the movement of 'black' people after the National Party came into power in 1948 (Berrisford, 2011; Nhlapo et al., 2011; McCUSKER and Ramudzuli, 2007; Mabin and Smit, 1997; Maharaj, 1997; Christopher, 1997; Christopher, 1987).

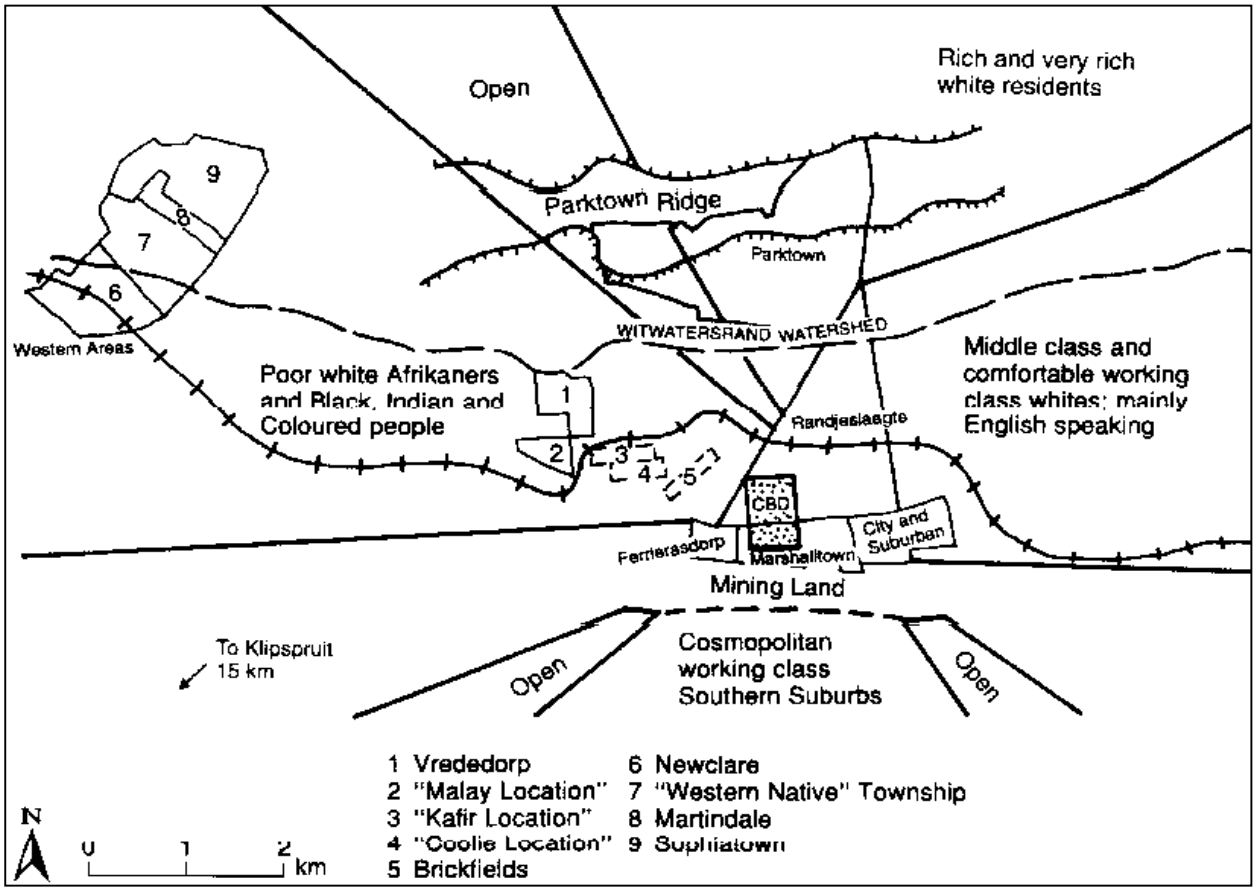
After winning the national elections in 1948, large- scale spatial reconstruction took place where a number of people were removed from areas designated for white occupancy (Christopher, 1990). National legislation like the *Group Areas Act (41 of 1950), Reservation of Separate Amenities Act (No. 49 of 1953), Bantu Authorities Act (No. 68 of 1951), Group Areas Development Act (No. 69 of 1955)* and *Bantu Homeland Citizenship Act (No. 26 of 1970*), signified the intent of the national government led by the National Party during the days of apartheid. Through apartheid legislation and policies to match, the government achieved wall-to-wall segregation, ultimately creating unequal divisions in South African society along racial lines. *The Group Areas Act,* in particular, was key to enforcing apartheid ideology (Newton and Schuermans, 2013; Berrisford, 2011; Meth, 2000; Khosa, 1998; Maharaj, 1997; Maylam, 1995; Swilling et al., 1991; Christopher, 1987).

> The *Group Areas Act (GAA) of 1950* was one of the key instruments used to reinforce the ideology of apartheid. It served as a powerful tool for state intervention in controlling the use, occupation, and ownership of land and buildings on a racial basis, and emphasized separate residential areas, educational services, and other amenities for the different race groups (Maharaj, 1997:135).

Apartheid legislation was formulated to preserve 'white'/European dominance in the country, which was the goal of the National Party after winning the national elections (Christopher, 1997). These measures further restricted legislation that was established by the previous government during the colonial era. Apartheid spatial planning saw to it that all cities and towns were racially zoned, thus the city was divided into four major racial groups being; 'Black', 'White', 'Coloured' and 'Indian' as highlighted in (figure 5) below (Christopher, 1997).

The group in South African society who occupied the most desirable land was the 'whites', while the other groups were placed on the periphery of the city. These spaces were subjected to the unequal distribution of amenities and infrastructure, highlighting the apartheid ideology at play, where one group is seen to be superior to the rest (Freund and Padayachee, 2002). In these areas, inadequate infrastructure was present and people were generally placed next to areas where high volumes of intense/ polluting industrial activity took place or land that was seen as not economically viable (Berrisford, 2011; Swilling et al., 1991). Under the *Group Areas Act* the "distribution of white owned property formed the basis of the delimitation of the groups" (Christopher, 1997:313). The apartheid spatial planning helped foster separate community identities, thus separate facilities were placed in all these areas for the various groups, but the level of services differed considerably in comparison to the level supplied to the ruling class during the apartheid era.

Figure 5: Apartheid spatial engineering/planning: The example of Johannesburg



Source: (Beavon, 1997)

The effect of apartheid spatial planning on South African society is devastating. As stated earlier it has caused inefficient cities today, due to the fragmented spatial structure and underdevelopment of areas occupied by marginalised groups. A large number of people are faced with the inability to meet their basic needs, which directly influences their ability to be contributing members of society and to strengthen South Africa's economy, due to the disjuncture in the countries spatial form and the problem it represent post-1994.

3.2.2 Post-apartheid and the changes that took place

With the turn of the century, South Africa transitioned out of apartheid into democracy and, during that time, the Government of National Unity was formed in 1994 to oversee the drafting of the new constitution, which is the supreme law of the land and against which all other laws are judged (Mabin and Smit, 1997). With the eyes of the world paying attention to every move, the new government was faced with the task of undoing the injustices of the past without inflicting any retaliation/ reverse racism on the 'white' population of the country (Pillay et al., 2006). Therefore the government was set with the responsibility to integrate a society divided along racial lines, socially and spatially, due to the legacy of apartheid planning (Christopher, 2001). Furthermore a set of legislation and policy that was drafted and

implemented after the 1994 elections ensured that the country would not experience the atrocities which occurred under the apartheid government. The new dispensation was aimed at bridging the gap created during the apartheid era (e.g. socially, economically, politically and spatially) (Blumenfeld, 1996).

The new government was tasked with the objectives of achieving economic growth, yet alleviating poverty, as well as unifying a country segregated spatially, to ensure that the injustices of the past did not manifest in the new government (Pillay et al., 2006). Hence, spatial policy/planning was seen as an appropriate tool to use in achieving the objectives set by the government after the 1994 elections (Newton and Schuermans, 2013; Todes, 2006).

> Therefore, the *Development Facilitation Act (No. 67 of 1995), the Housing Act (No. 107 of 1997), the National Water Act (No. 36 of 1998), the National Environmental Management Act (No. 107 of 1998), the Local Government Municipal Structures Act (No. 117 of 1998), the Municipal Demarcation Act No. 27 of 1998), the National Land Transport Interim Arrangements Act (No. 45 of 1998), the National Heritage Resources Act (No. 25 of 1999), the National Land Transport Transition Act (No. 22 of 2000), the Municipal Systems Act (No. 32 of 2000)* came into existence (Logan, 2012:14).

With certain sections of the new legislation being declared unconstitutional years later and recalled, this ensured that new legislation would be drafted and other legislation amended. Furthermore, the new legislation had to align with the *Constitution*, which is the cornerstone on which the democracy of the Republic of South Africa is based.

With a democratically elected state in power, change was needed. To fast-track development and address the injustices caused by apartheid planning, the *Development Facilitation Act (No. 67 of 1995)* (DFA) was passed, in conjunction with the *Reconstruction and Development Programme (RDP)* (Blumenfeld, 1996). The RDP and the DFA were implemented which sought to redress the unequal divisions/ development that occurred during the apartheid era and colonialism. There was a need to address the fragmented spatial structure and to still ensure that a conducive environment for private sector investment to flourish in remained (Pillay et al., 2006; Todes, 2006).

> The 1994 RDP called for the need to break down the apartheid geography through land reform, more compact cities, and decent public transport and by promoting densification and unification of the urban fabric, redressing imbalances and promoting housing close to work, and access to employment and urban resources (Pillay et al., 2006:55).

The state committed to delivering housing, health care, education, electricity and water supply, transport and various other services within a five year period (Blumenfeld, 1996). These were essential services that were needed at the time, and the RDP provided the answer to attaining these services (Blumenfeld, 1996). The RDP was seen as a breath of fresh air as it represented both the socialist and neo-liberal principles that would boost the country's economy. Furthermore, it was to provide the necessary social services that were lacking during the apartheid regime (Pillay et al., 2006; Hillier, 2002). The policy represented a system where open dialogue was encouraged by various interest groups; this was seen as both a strength and as a weakness. Reaching a consensus regarding controversial policy issues was a problem at times. With the demise of the RDP, the new government was criticised for not being able to deliver on promises made to its people prior to the elections.

Many other spatial policies were introduced during that period, but these suffered a similar fate to the RDP (Streak, 2004; Cheru, 2001). They reinforced social divisions and inequality, creating a highly developed 'first world' and an underdeveloped 'third world' across the country, maintaining the *status quo* established during apartheid and the colonial era. As stated by the *Congress of South African Trade Unions* (COSATU), the spatial policies implemented in the advent of democracy were a clear failure (Lyons et al., 2001). They did not live up to the promises made in the RDP, which were meant to address the injustice of inequality, spatial fragmentation of the city and to provide the people with the necessary services denied to them in the past.

Growth Employment and Redistribution, (GEAR) in particular, pursued economic growth through implementation of pro-growth strategies, in many cases creating social divisions based on class lines (Lyons et al., 2001). The GEAR strategy reverted to the principles that existed during the apartheid era. Furthermore, economic growth was stressed over everything else, therefore the economy was relied upon to provide the solutions to solving the problems of poverty and inequality across the country (Mini, 2012).

With the failure of national policy to redress the injustices of apartheid planning, and not being able to deliver on promises made, the government noted that a shift in its approach to spatial planning in the country was needed. Therefore, under the *Municipal Systems Act (No. of 2000)* the *Integrated Development Plan (IDP*) was born. Under this Act, every municipality in the country is required to have an IDP. The IDP approach was influenced by the *Global Planner, Commonwealth of Planners Association* and by the New Urbanisms perspective (Mini, 2012). The shift in focus, allowed for community engagement to form part of the whole process, and for local government to spearhead development through spatial planning within its geographical boundaries (Oranje, 2010; Visser, 2001).

Integrated development planning speaks to "the principles of social justice through creation of inclusive urban citizenship, to provide an integrated pro-poor system of urban land-management, to streamline urban land-use that creates opportunities for the urban poor and addresses poverty issues" (Mini, 2012:162). The IDP approach signified the change in spatial planning, where localised development was made a priority, where development geared to solving local problems would be implemented (Mini, 2012; Binns and Nel, 2002). The IDP approach was seen as an instrument to foster urban growth in cities in the post-apartheid era. The plans to be implemented should align with all other plans put forward by the other spheres of government. Thus there is a direct link between the mandate set at national, provincial and local levels of government (Oranje, 2010).

The new spatial planning approach highlighted in the IDP expressed integration, in an attempt to address the *Millennium Development Goals* (MDG), by reducing poverty and inequality, but also by protecting the environment at the same time (Mini, 2012). Furthermore, in the new approach, public-private partnerships are encouraged and are seen as a way forward in the governance of the local communities towards facilitating economic growth and creating employment opportunities (Oranje, 2010). With new legislation and policy coming to the fore (e.g. S*patial Planning and Land Use Management Act of 2013, National Development Plan (NDP)* and provincially, the *Provincial Growth and Development Strategy*), spatial planning is seen as a priority for the country going forward, to address the array of issues confronting the country at this time.

3.3 Transport planning in the South African context pre- and post-apartheid

Legislation enacted during the colonial and the apartheid era is one of many contributing factors that is preventing South Africa from developing at a much faster rate (Walters, 2013; Lucas, 2012; Khosa, 1998). "The transport sector in South Africa has traditionally been characterised by high levels of Government regulation" (Khosa, 1998:20). Legislation, aimed at protecting the rail system from direct competition from road-based means of public transportation, was promulgated from approximately the 1920s-1980s. The transport sector during this period in South Africa's history was not efficient nor competitive, rather aiming to foster the financial viability of the states railways (Groenewald, 2003). The Government had to re-evaluate the transport sector years later, based on emerging trends from prosperous economies of the world during the 70s, where deregulation, commercialisation and privatisation of public enterprises took place in the industrialised countries the world over (Lucas, 2011; Rogerson, 1999). Consequently, due to the political tensions in the country being at a high point, decisions were made which significantly affected the movement of people, especially those located in areas designated for marginalised groups.

The spatial structure of the South African cities and towns makes getting around very difficult without a proper transport system in place to supplement the movement of people from place to place in the post-apartheid era (Vanderschuren and Galaria, 2003). Public transportation in South Africa, according to Lucas (2011) has always been a problem and apartheid policy is still affecting the rate of development in the new political dispensation in the country. The scar left by apartheid's spatial planning/ engineering is well documented.

> To varying degrees, each town or city in South Africa reflects not only an unequal distribution of infrastructure, amenities and accessibility, but the distances between the places in which the poor and the well-off live exacerbate that inequality. They also make for an inefficient spatial pattern with the costs of installing and maintaining infrastructure unusually high and public transport difficult to provide (Berrisford, 2011:249).

As a result of the disjuncture in the spatial structure of South African cities, town and rural areas, it is extremely difficult to implement new transport infrastructure/ systems. Furthermore, the disjuncture influences not only how transport systems function, but also how these measures must be put in place to benefit a large group of people instead of only a select few, as in the past and, lastly, until such time that new systems are put in place and are operating effectively, many will be hindered from participating in the country's economy.

Public transportation and the transport sector, as a whole, in the South African context has faced a lot of problems in the past; during the days of colonialism right through to the apartheid era, and, as has been pointed out on a number of occasions in this dissertation, it is still affecting people in the post-apartheid era. Furthermore, access to public transportation is better in some areas of the country than in others. With the rush to fast-track development and to provide people with housing through the implementation of the *Development Facilitation Act of 1995 (DFA)* and the *Reconstruction and Development Programme (RDP)* after the 1994 election, the government indirectly perpetuating elements of apartheid style planning in the new South Africa by locating people in areas away from centres of activity (Nel and Rogerson, 2009; Pillay et al., 2006; Todes, 2006).

The spatial structure of the city has not changed much since the change in power after 1994 and the past spatial engineering continues today (Walters, 2013; Patel, 2000). Apartheid policy made access to public transportation for the marginalised groups in the country very difficult in the past. To this day, people are still being pushed to the fringes of the city, increasing the pressure on the state to provide better access to public transportation for these newly developed and existing communities (Lucas, 2011). The government faces the

challenge of providing safe, efficient, accessible and affordable means of public transportation (Vanderschuren and Galaria, 2003).

The physical structure of South African cities, it could be argued, is the main source of all the issues facing the country's public transportation system. The physical structure of the country and the way in which transportation planning was approached in the past could be seen as the obstacle that prevents meaningful change in improving public transportation now and in the future. Progress in transport services over the years has been slow, looking at physical infrastructure, policy, legislation and other measures implemented to date and proposed for the future do not show sufficient signs of transformation. That having been said, addressing centuries of inequality across the board cannot be resolved within twenty years of democracy. The transport legislation/policy and the changes the government puts forward will determine only the direction in which the transport sector is going. In addition, whether or not marginalised groups will have better access to basic service through improved mobility remains to be seen. The awkward question that arises is whether or not having an improved public transportation system in South Africa can, in reality, aid in addressing the problems going forward.

3.3.2 Apartheid transport policy and legislation, the impact on the people

From as early as the 1930s the government made a point of regulating the transport sector. The *Le Roux Commission*, established in 1929, sought to regulate the state of public transportation in South Africa, protecting the government's railways from direct competition from the other modes, hence aiming to foster the financial viability of the state's railways (Khosa, 1998). According to the commission, "the state of public transport was one of 'great confusion and disorder' because 'competition was unrestricted and uncontrolled' before 1930" (Khosa, 1998:21). Based on the recommendation made by the commission *The Motor Carrier Transportation Act (No. 39 of 1930)* was enacted soon after, which introduced transport regulations on a scale unprecedented in South Africa's history at the time (Khosa, 1992).

While *The Motor Carriers Transportation Act* was still in effect, government restricted and controlled the number of modes of public transportation that operated in the country, stifling competition and creating transport monopolies (Khosa, 1992). *The Motor Carrier Transportation Act* was amended numerous times, since its inception to 1977, but the principles remained unchanged until the introduction of the *Road Transportation Act (No. 14 of 1977*).

The Motor Carrier Transportation Act introduced one *Central* and ten *Local Road Transportation Boards*. "South Africa was geographically demarcated into ten 'proclaimed transport areas' where LRTBs had powers to police the volume of transport and to enforce the *Motor Carrier Transportation Act*" (Khosa, 1998:21). *The Central Road Transportation Board* (CRTB) was responsible for coordinating numerous activities and for eliminating various services, while the *Local Road Transportation Boards* (LRTB) had the power to issue motor carriers' certificates for applicants in their transport areas (Khosa, 1992; Dugard, 2001). The purpose of *The Motor Carrier Act* was to protect the state's railways from direct competition by road carriers. Due to the power of the LRTB, it also limited competition of other modes of public transport in areas where there were no railways, through setting up a quota of certificates (Khosa, 1997). These measures affected many marginalised groups, especially Africans dependent on taxis as their transport mode of choice, as well as independent operators throughout the country.

The Road Transportation Act was passed in 1977, a year after the 'Soweto uprising'. Thus prior to the Act being introduced:

> Members of Parliament still had fresh memories of the political rebellion which started in Soweto in 1976. Some MPs warned that if repression and regulation continued in the transport sector, Africans would be further politicised, resorting to boycott of bus and train services (Khosa, 1998:22).

Maintaining the stringent transport regulations of the previous government was decided upon on the basis that competition would lead to the oversupply of services on popular transport routes, hence resulting in chaos (Khosa, 1992). A new transport commission was appointed by the state in response to the increasing transport subsidy bill, the protests against the raising of public transportation fares and the financial crisis experienced by the apartheid state (Khosa, 1998). The *Welgemoed Commission* was tasked with finding means around the global financial crisis experienced during the 1970s and with reducing the subsidy spent on public transportation during the 1980s (Dugard, 2001; Khosa, 1998).

The introduction of the *White Paper on Transport Policy* was an important event for public transport in South Africa's history and it was approved in Parliament in January 1987 (Miraftab, 2012; Khosa, 1998). Based on the recommendation from the *National Transport Policy Study (NTPS)* which operated through advisory committees, one of them being the *South African Black Taxi Association, (SABTA)* it established, in 1981, the first Black national taxi association the *South African Bus Operators' Association (SABOA*) (Khosa, 1998). *The White Paper on Transport Policy* allowed the minibus taxis to operate within the taxi industry.

A taxi, according to the NTPS, was defined as a 15-seater minibus, therefore the ability to ensure road-worthiness and adhere to road safety requirements would be the only form of control determining entry into the industry (Dugard, 2001). The government accepted the NTPS recommendation that the transport policy should promote deregulation of the transport sector and allow competition between all modes of transport. *The White Paper on Transport Policy* was accepted by the private sector who stated the importance of a market-driven transport system, but the SABTA rejected it.

The shortfalls of the transport policy towards the end of apartheid era were that the policy did not speak to critical issues affecting the sector, nor did it speak for the people who made use of these services. Deregulation and privatisation transport policies did not address how efficiency would be improved, nor did they address the issue of standardised cheaper transport fares, which affect the working class who are dependent on public transportation. The transport policy that was introduced, was in favour of a service regulated by the market forces and not by people who depend on public transportation. In 1992, *The National Transport Policy Forum (NTPF*) was launched, aiming to bring together all stakeholders and interest groups who were previously excluded from the process. The transport policy was publically discussed and debated by credible representatives of the members of *The National Transport Policy Forum* (Walters, 2013; Schalekamp and Behrens, 2010; Khosa, 1998; Khosa, 1992). Through the NTPF, access to public transportation was seen as a basic human right, and it was additionally stated that public transportation should be an instrument for transformation within the South African society, owing to the country's political past.

3.3.3 Transport planning after 1994, policy and legislation implemented and the impact on the people and the problems it currently presents

With the *White Paper on National Transport* passing in September 1996, it ushered in the newly elected democratic government's intent with regards to the future of the transport sector in South Africa. Trying to undo the inequality that the country had suffered under colonial and apartheid rule, concerning space, race, and the provision of and access to transport, *The White Paper* aimed to:

> provide safe, reliable, effective, efficient, and fully integrated transport operations and infrastructure which will best meet the needs of freight and passenger customers at improving levels of service and cost in a fashion which supports Government strategies for economic and social development whilst being environmentally and economically sustainable (Khosa, 1998:28).

Therefore, public transportation would be used as an instrument for change, in tackling the issues brought forward by the apartheid regime and colonial powers. The democratic government approached policy development in an entirely different manner to that which was inspired by the *Welgemoed Commission* and the *Le Roux Commission*. There was greater participation through stakeholder engagement than in previous encounters with regards to policy formulation (Khosa, 1998).

The government, after 1994, intended to reverse the legacy of apartheid through strategic planning, participatory policy formulation and investing in an infrastructure that would see the transport sector grow. *The White Paper on National Transport* identified access to public transportation as a basic human right, thus public transportation was seen as an appropriate tool to ensure that development reached the far-flung areas neglected by the previous government (Khosa, 1998). *The White Paper* promoted deregulation of the transport sector and allowed competition to occur, which was not a feature of the past legislation. This proved to be both a blessing and a curse. The principle of competitive tendering for services was realised, which opened the sector up to being market driven, allowing previously disadvantaged operators to participate in the provision of public transportation (Walters, 2013).

In the past, the government's role when dealing with the transport sector was that of an enforcer and little attention was paid to policy formulation and strategic planning. The idea of deregulation and of creating an environment for competition, identified in *The White Paper,* caused an uproar amongst key stakeholders in South Africa. The *South African Black Taxi Association*, the *Southern African Bus Operators' Association* and trade Unions were against the policy for various reasons. The taxi association was concerned with the uncertainty of whether or not the state would keep the promises made regarding financial and technical assistance. The bus association opposed this on the basis that the subsidy received by a few monopolies over the year was coming to an end and this was to be replaced by interim contracts and the tender process. Dealing with the issues presented by those aggrieved by the *White Paper* was a two year process "between the DoT, organised labour and the *Southern African Bus Operators Association* (SABOA) (representing operators)" (Walters, 2013:36). Furthermore, discussions were also required regarding job losses and the reduction of service conditions and benefits, which eventually resulted in the *Tripartite Heads of Agreement 1999* being established. The purpose of the agreement was to reduce the impact the market driven transport was having on the operators, particularly the competitive tendering process (Parnell and Mabin, 1995; Davies, 1981).

Based on the vision of the *White Paper on National Transport 1996*, the *Moving South Africa Strategy study* was conducted in 1998, in which a multi-modal transport vision and strategy for South Africa was realised (Walters, 2013). A corridor focus was suggested, creating linkages between strategic economic centres within regions and the densification of these very corridors, as well as optimising modal economics (Walters, 2013). The suggestion made by the *Moving South Africa Strategy* formalised the minibus taxi industry, identifying its role in the broader context of public transport provision in South Africa. With all that has happened in this country from the colonial era right through to the apartheid era, very little progress has been made in the transport sector. Post-1994 transformation is not evident across the board, especially concerning the minibus (taxi) industry. The *South African National Taxi Council*, which is the national body representing minibus taxi operators and associations mentions the lack of equal support by the government financially with that failing in the provision of appropriate infrastructure as stunting progress for the minibus taxi (Walters, 2013; Woolf and Joubert, 2013). The national transport study conducted by the Department of Transport, published in 2003, proved the inequality that exists concerning equal access to public transport. Proper transport provision is needed across the board.

In moving away from apartheid policy/ legislation, major changes took place to improve public transport in South Africa. Programmes like the *Taxi Recapitalisation Programme* and *Integrated Rapid Public Transport Network* (IRPTN) in 2006 to address aging minibus taxis, and the latter introducing BRT to the South African public, as well as plans like the *Public Transport Action Plan,* the *Integrated Transport Plan* and the *Public Transport Strategy* were all strategic policy documents championed by the Department of Transport to improve public transport in the country and to address the issues faced by the sector. These interventions attempted to show a way forward for the future transport needs of the country, to ensure public transport became effective and efficient, going forward. To improve accessibility and mobility, continuous transport studies in 2003 and 2013 (*National Household Travel Survey)* were undertaken to identify transport trends of the South African public. It was hoped that this would help to improve existing modes of transport or to identify gaps in existing modes of transport and to implement new and improved strategies to deal with these gaps. *The National Land Transport Transition Act (No. 22 of 2000)* and the *National Land Transport Act (No. 5 of 2009*), sought to rationalise public transport in the country, identifying the roles given to the different levels of government, concerning public transport provision and transport infrastructure, both provision and maintenance as highlighted in the *Constitution of the Republic of South Africa.* Past injustices must not be perpetuated to hinder transport provision in post-apartheid South Africa. There is an urgent need to identify principles that could guide present and future transport provision for the country (Venter, 2013; Walters,

2013; Woolf and Joubert, 2013; Lucas, 2011; Schalekamp and Behrens, 2010; Govender and Allopi, 2006; Marrian, 2001).

3.3.4 The direction in which the government is headed and the problem that this currently presents

In 2006, the *National Department of Transport (DoT) of South Africa* launched a transport policy programme that would reinvigorate the urban landscape's mobility. It was deemed that, through the *Integrated Rapid Public transport Network (IRPTN) programme,* urban mobility would improve dramatically (Walters, 2013; Schalekamp and Behrens, 2010; Walters, 2008). Currently, South Africa's transport hopes and dreams are pinned on the introduction of new Bus Rapid Transit (BRT) systems that will only be implemented in twelve major cities across the country (Geurs and Van Wee, 2004). There is a consensus that these major infrastructure projects are needed to bring high quality, modern and efficient mainstream public transport services to the inner cities to better service the growing need for an improved public transport system. According to Moodley et al. (2011) the plan is to incorporate the BRT system with other modes of public transport. With the South African constitution speaking to the concept of integration/ inclusive planning, public transportation is moving in the same direction with the introduction of the Bus Rapid Transport system (BRT) currently being introduced in the country (Venter, 2013).

The introduction of BRT systems was officially sanctioned in the DoT through the *Public Transport Strategy* and the *Public Transport Strategy Action Plans of 2007* (Walters, 2013). These documents spell out government policy and strategy and provide guidelines for the introduction of the systems in South Africa. The first city in the country where it was implemented was Johannesburg, (Rea Vaya) and the other city where it is operational is Cape Town, (MYCiTi) however the plan is to implement this transport initiative in major cities across the country (Walters, 2013; Lucas, 2011; Schalekamp and Behrens, 2010).

The problem that is raised with the implementation of the BRT is that it will not address the transport problems found in small municipalities and in rural communities. The state is trying to do away with the taxi industry, in so doing, it is not acknowledging the impact that this industry had in serving people where the state failed to do so. The current attempts appear to be geared towards better regulation of the public transport sector in order to break the stranglehold that the taxi industry has on the transport sector. In reality, the people who need access to improved transport services will not be reached by the BRT service. Access to public transportation in the South African context is still a barrier that divides many.

BRT implementation, the challenges it is faced with:

- Rushed implementation - several components incomplete at the time of commissioning, but gradual improvement over time has been observed;
- Very tight financial planning as systems usually do not receive operational subsidies - the tight plans trigger a shift of some of the costs that are immediately transferred to the users in terms of larger vehicles and lower frequencies and a lower level of service which hurts the passenger's travel experience;
- Very high occupancy levels - the adopted standard of 6-7 standees per square meter is not acceptable by the users.
- Early deterioration of infrastructure - lack of road surface reinforcement or problems in design and construction result in maintenance issues.
- Delayed Implementation of fare collection systems, which often require longer timetables than initially expected and very tight supervision.
- Insufficient user education for initial implementation and system changes

(Hidalgo and Gutiérrez, 2013:11).

3.4 Transport planning internationally, particularly focusing on developing countries

Public transportation and the rate of development are linked (Delbosc and Currie, 2011a; Delbosc and Currie, 2011b). Not improving one's transport system holds the country back from future investment and development opportunities (Buehler and Pucher, 2011). The international community has improved outdated transport planning methods that do not cater to the needs of current and future generations. With the role that public transport plays in providing an opportunity for development, the focus is on integrated public transport networks, mainly the Bus Rapid Transit system (BRT) which is implemented to improve access to public transportation for all, a notion that is challenged. (Miranda and Rodrigues da Silva, 2012; Ponnaluri, 2011; Gwilliam, 2003).

According to Hidalgo and Gutiérrez (2013) owing to the low cost and rapid implementation in comparison to rapid rail transit and other modes that offer a similar level of efficiency, BRT is expanding rapidly as a transit option. Public transport is seen as more of a right than a privilege, therefore more and more people are encouraged to make use of public transport in order to ensure that there are less people on the road making use of their private cars (Deng and Nelson, 2011). Curitiba and Bogota are the model examples of how to implement this attractive transport system, there is a shift in which access to efficient, reliable and safe transportation takes precedence over planning for a private car (Hidalgo and Huizenga, 2013; Miranda and Rodrigues da Silva, 2012).

Issues surrounding social exclusion, according to Stanley and Lucas (2008) and Delbosc and Currie (2011c) take centre stage, as there is a link between the level of access to these

transport services or the lack thereof to the rate of progress a society encounters. Therefore, the international community highlights the need for integration, identifying the growing need for an improved public transport infrastructure that puts the needs of the people dependent on public transportation ahead of those who have the luxury of owning a private car.

3.4.2 Curitiba – Brazil

In identifying the needs of the people, the spatial landscape of the city of Curitiba, capital state of Parana, located on the southern part of Brazil was over 50 years in the making. The process started in the 1960s. A conscious decision was made to develop a city master plan that would direct land-uses and transport planning for the coming decades. Hence the manner in which the city is structured accommodates a successful land-use and street hierarchy catering to the demand for public transport consistency (Miranda and Rodrigues da Silva, 2012; Rabinovitch, 1996). According to de Vasconcellos (2005) and Rabinovitch (1996) the growth of the city is attributed to the unconventional decision made to adopt a master plan linking land-use and transport planning that was implemented in the 1970s. In addition, it aided in the integration of housing, commercial development, recreational facilities and transport networks that was ahead of its time. As a result, the future growth of the city is planned for and controlled in a linear trajectory. Furthermore, urban growth was not erratic like in many cities in the developed and developing world at the time; rather, development is along a planned transport system and is not dictated by spontaneous transport routes.

3.4.2.1 Curitiba's public transport system (BRT) and its influence

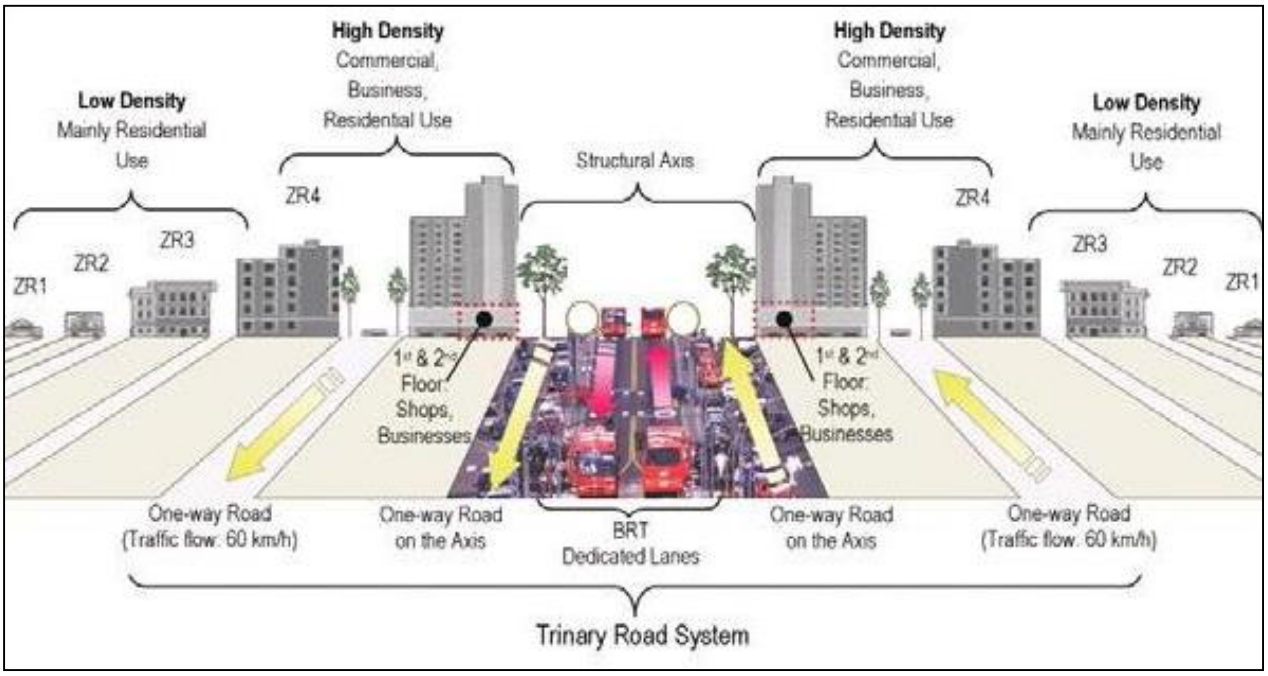
Curitiba's transport systems function systematically and they are very efficient. Street hierarchy plays an import role in sustaining the movement of people throughout the city and in providing access across the board (Hidalgo and Gutiérrez, 2013). Curitiba makes use of a trinary road system concept, "the concept is formed by a set of three parallel streets, in which the external streets are used to provide direct and fast connections between the CBD and the city periphery" (and vice-versa) for the general traffic as seen in (figure 7). Conversely, "the central streets are reserved for express transit routes (internal lanes) and access to the local traffic (external lanes)" (Miranda and Rodrigues da Silva, 2012:142). Owing to the transport system, development is rife, commercial activities, infrastructure development and various other services are stimulated along the transit corridors as seen in (figure 8 below).

The principles that guided land-use and transport planning:

- Developing a sustainable city, through sustainable and integrated urban planning;
- Economic support to urban development;
- Infrastructure improvement;
- 'Decongestion' of the central area, pedestrian priority and heritage rehabilitation;
- Social justice, quality of life and public health;
- Historic district preservation and regeneration;
- Pedestrian-oriented urban design ;
- Integrated transport system – Transport Orientated Development; and
- Encouragement of economic development by reducing the costs of mobility, trade and exchange within the city

(Soltani and Sharifi, 2012; Rabinovitch, 1996).

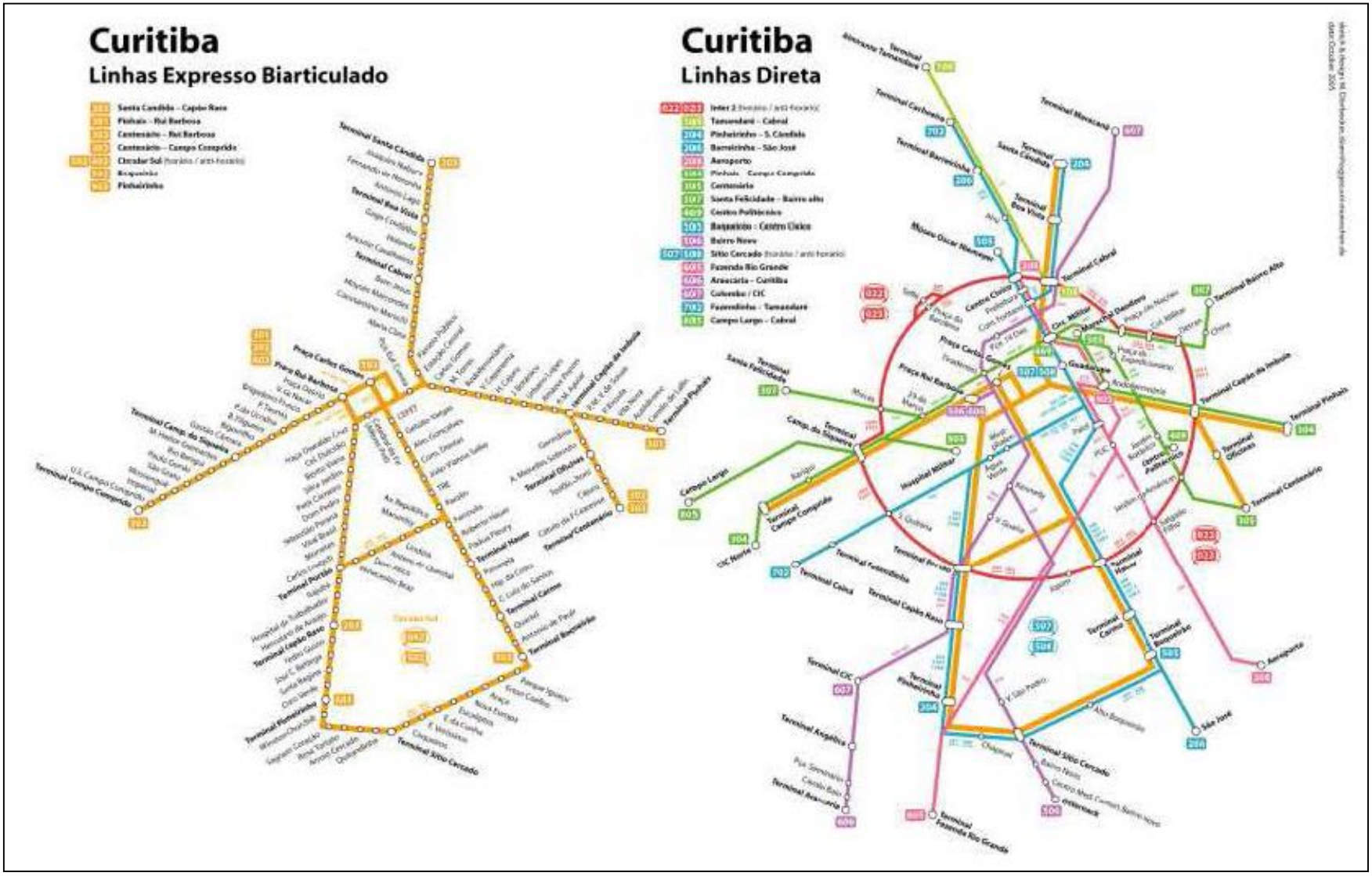
Figure 6: Housing and commercial development density areas, and their link to transport networks (Trinary Road System)



Source: (Pereira, 2013)

The transport system, known as the RIT, (Integrated Transportation Network in Portuguese), makes use of a trunk-feeder system with stops (terminal and tube stations) along the corridors providing physical integration. The routes are coloured differently, to illustrate the functionality of the route and the type of vehicle travelling on it. As highlighted in (figure 8) below, "express routes, for instance, are operated with bi-articulated red buses while feeder routes use orange regular buses or even micro-buses" (Miranda and Rodrigues da Silva, 2012:143). Overall, the transport system in Curitiba set the standard for other countries wanting to emulate the system and implement it in their respective cities. Furthermore, it provides the public with an efficient transport system that not only caters for the current, but also for the future needs of the people, with exemplary land-use and transport integration.

Figure 7: Illustration of Curitiba's transport network



Source: (Broadus, 2010)

3.4.3 Bogota – Columbia

Bogotá is the capital city of Columbia and is located on the north-western border of South America. With the success of success of IRT in Curitiba, Bogota likewise implemented this transport system in 2000, which is known as the Transmilenio. *The Master Plan for Mobility and Bogotá's Development Plan* called *Bogotá a positive city: to improve living* seeks to improve the quality of peoples' lives and to improve the public transport operation through recognising the importance of inclusive sustainable urban planning (Abrahamsson, 2011). The vision of the master plan is to have the city operating solely on BRT by 2030, using a phased approach which will ultimately absorb all private operators into the new public transport system by then, thus formalising a paratransit system (Schalekamp and Behrens, 2009). Furthermore, the existing transport system was deemed problematic and chaotic; it brought about issues of congestion and accessibility. The middle to low-income (high-density) residential regions of Bogota were most affected by the inefficient transport system that consisted of private bus companies, restricting effective urban mobility. In addition, these areas are located distances away from employment opportunities and citizens needed access to economic activity in order to sustain a livelihood (Salazar Ferro et al., 2013).

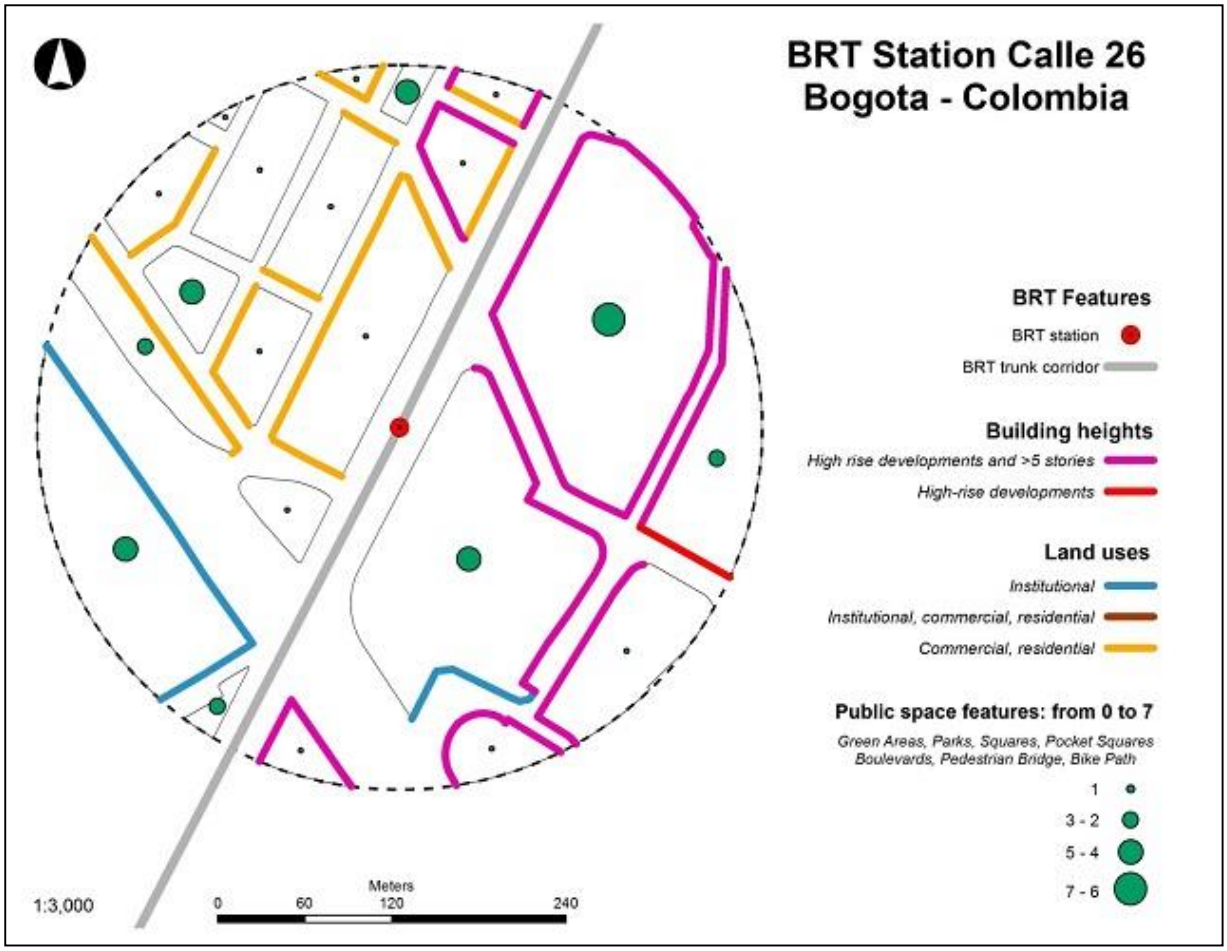
According to Cain et al. (2007) in order to stimulate the use of public transport and to encourage walking and cycling, the Transmilenio was adopted by Bogota as a long-term sustainable transport strategy. Furthermore, it has become an essential mode of transport for the low-income population of the city, being responsible for the increase in urban mobility and accessibility. To achieve this feat, the mode operates in the centre street of the city, using a dual carriageway and feeder routes to other parts of the city. A large station and terminals provide high-capacity service delivery that is both efficient and affordable for the low income commuters (cited in Deng and Nelson, 2011). The Transmilenio aims to, "improve the quality of life and productivity in Bogotá through a faster, safer and cheaper but less polluting and more equitable transport system" (TransMilenio cited in Logan, 2012:64). Unlike Curitiba's RIT, the Transmilenio failed in the integration of urban land-use and public transport across the city. Even with this setback, the system still functions and operates at a high speed and commercial capacity.

3.4.3.1 Bogota's public transport system and its influence spatially

What makes the Bogota's Transmilenio a success is the structure of the urban landscape that has been transformed to meet the expectations set by Curitiba's urban form. In addition, there is strategic positioning of economic zones and appropriate land-use densities. Easy access is provided through north-south roads that meet in the centre as highlighted in (figure

9). This is in stark contrast to how the urban form was structured before the implementation of the Transmilenio in 2000. The improved transport system made a huge difference by addressing the chaotic operation of the previous system. Consequently, the first phase of the Transmilenio focused on the integration of the peripheral residential areas of the city (Hidalgo and Gutiérrez, 2013; Bocarejo S and Oviedo H, 2012; Cain et al., 2007). The change focused more on efficient urban mobility within the city that brought about economic and infrastructural development that benefits the masses.

Figure 8: Land-use densities around stations and the linked to transport routes



Source: (Vergel-Tovar, 2015)

Planning principles that influence the Bogota's Transmilenio and land-use planning:

- Efficiency, quality, continuity, timeliness, fairness and security, in terms of mobility, comfort, safety and accessibility of the Transmilenio to the people;
- Sustainable urban mobility through transit orientated development;
- Safe, equitable, and sustainable mobility for Bogotá and the region with limited impact on environment and health, aiming to support economic development;
- Inclusive urban planning; and
- Densification, decentralization of activities in five multi-centres, and less concentrated development for a more efficient city,

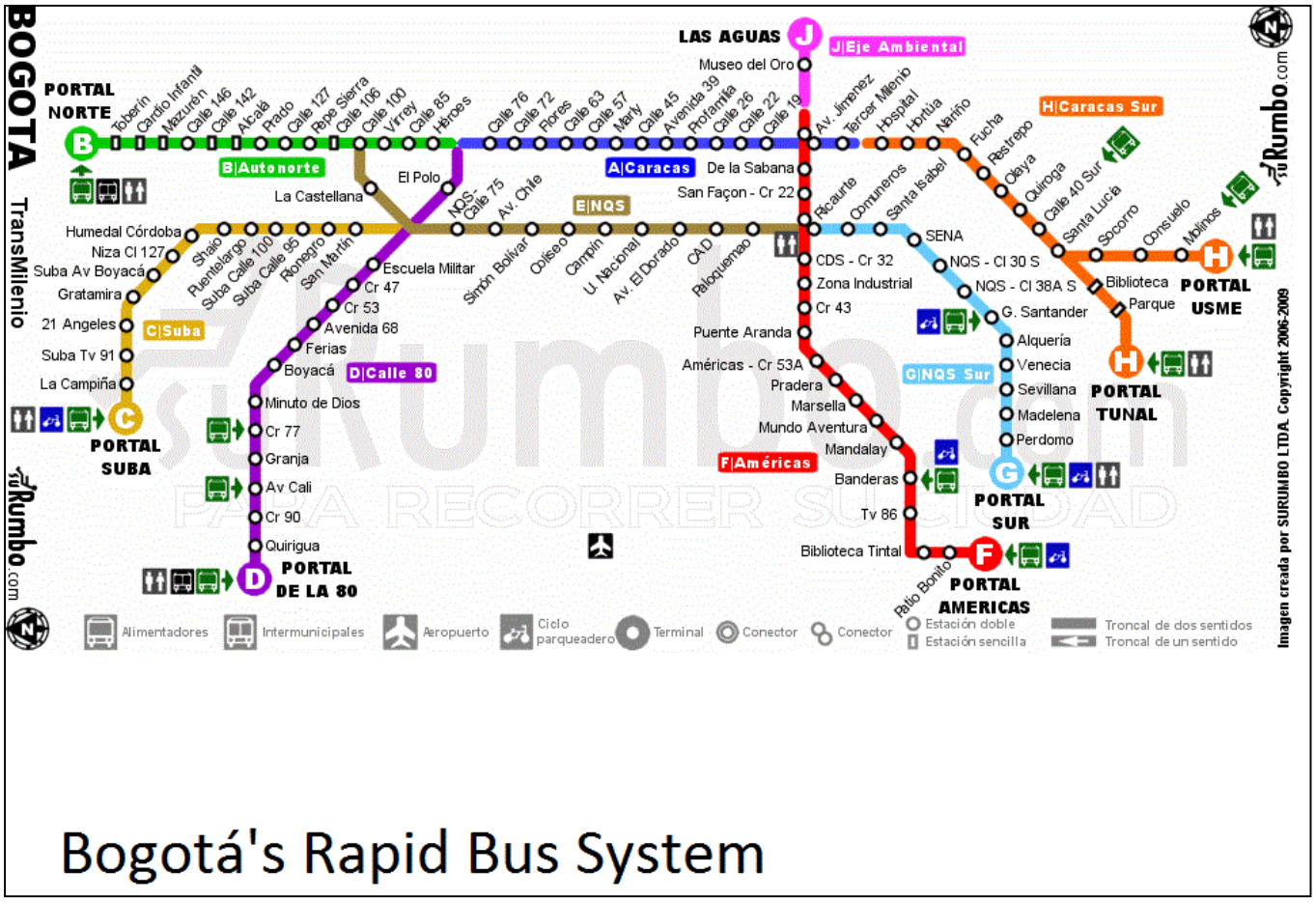
(Bocarejo and Tafur, 2013; Mitric, 2011).

As mentioned previously, Bogota's BRT system consists of a dedicated busway, which operates in the centre street of the city, using a dual carriageway and feeder routes leading to other parts of the city like residential areas located on the periphery of the city. Furthermore, it also consists of large stations and terminals to provide high capacity service delivery as seen in (figure 10). Likewise, the system also makes use of a smart card-based fare collection system, contributing to the efficient operation of this mode of transport overall (Salazar Ferro et al., 2013; Deng and Nelson, 2011).

According to Cain et al. (2007):

> Empirical evidence from Bogotá has demonstrated that BRT is capable of providing considerable passenger capacity in a high population density city. Transmilenio in Bogotá, the highest capacity BRT system in the world, can carry up to 45 000 pphpd, which is even greater than many rail-based systems. In 2005, Transmilenio during Phase 1 (42-km corridors) could carry 770 000 passengers per day. In 2007, the system could carry nearly 1.3 million passengers on the 84-km corridor routes on an average working day (Deng and Nelson, 2011:85).

Figure 9: Illustration of Bogota's transport network



Source: (Ceaser, 2011)

3.4.4 Lagos – Nigeria

With the aftermath of the global economic meltdown in the 1980s, a number of sectors took a knock, resulting in Nigeria's economy suffering under global pressure. Furthermore, public transportation was severely affected too; it has not fully recovered since the collapse of the *Lagos State Transport Corporation* in the 1980s. As in many African cities, access and mobility were hindered and the city of Lagos is no exception. Public transport was described as ineffective and inefficient. In addition, public transport consisted mainly of paratransit units, being minibus '*danfos*' and midi-buses '*molues*', additionally, very few buses operated in the city in comparison to other modes of transport; overall, it was in the hands of the private sector (Adebola et al., 2014; Aderamo, 2012; Odufuwa and Fasina, 2012; Agunloye, 2011; Kumar and Barrett, 2008).

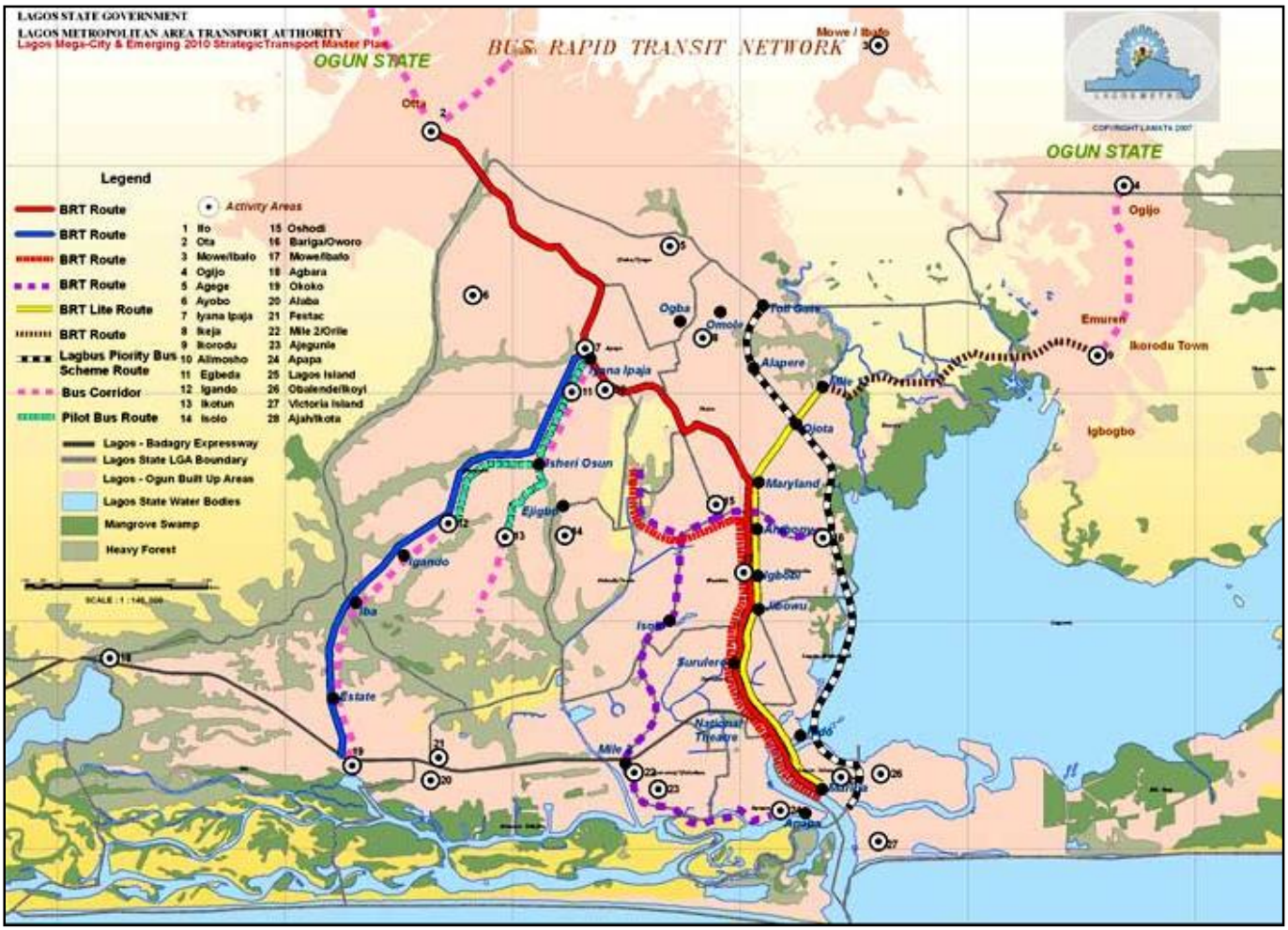
Lagos might be the smallest state in Nigeria, but it is the most populated, "the population of the megacity is projected to be about 25 million, making it the third-largest city in the world" (Kumar and Barrett, 2008:77). With a growing population, the city of Lagos needs to provide adequate public transport to the masses. Hence the Lagos Metropolitan Area Transport Authority (LAMATA) implemented the BRT system in Lagos to improve public transport in the city in its first phase of the overall project. Moreover, with the benefits BRT witnessed in Bogota and Curitiba respectfully, it was a suitable transport tool for the city. Furthermore, to address problems confronted by the public, especially congestion attributed to the reliance on private cars, as well as paratransit operation in the city, the second phase of the project will see the implementation of Light Rail Transit (LRT); nonetheless, BRT officially started operating in 2008 in Lagos. The plans geared for public transport in Lagos are slightly different to those implemented in cities throughout Latin America and the rest of the world, looking at what will best cater to the needs of masses (Adebola et al., 2014; Aderamo, 2012; Odufuwa and Fasina, 2012; Agunloye, 2011; Kumar and Barrett, 2008).

3.4.4.1 Public transport in Lagos: Looking at the influence of the BRT system.

Since its introduction, BRT has had an immediate impact on addressing a multitude of issues that Lagos's public transport system faced. It has improved efficiency and assisted in providing affordable public transportation to the masses, hence the amount of time spent in traffic has reduced significantly in comparison to in the past. In addition, it has improved mobility and accessibility to public transportation and, to a larger extent, provided people with the ability to seek employment opportunities, or to access a number of resources which were previously not within their reach. The BRT has also contributed to the reduction of carbon dioxide emissions significantly, due to major corridors not being as congested during

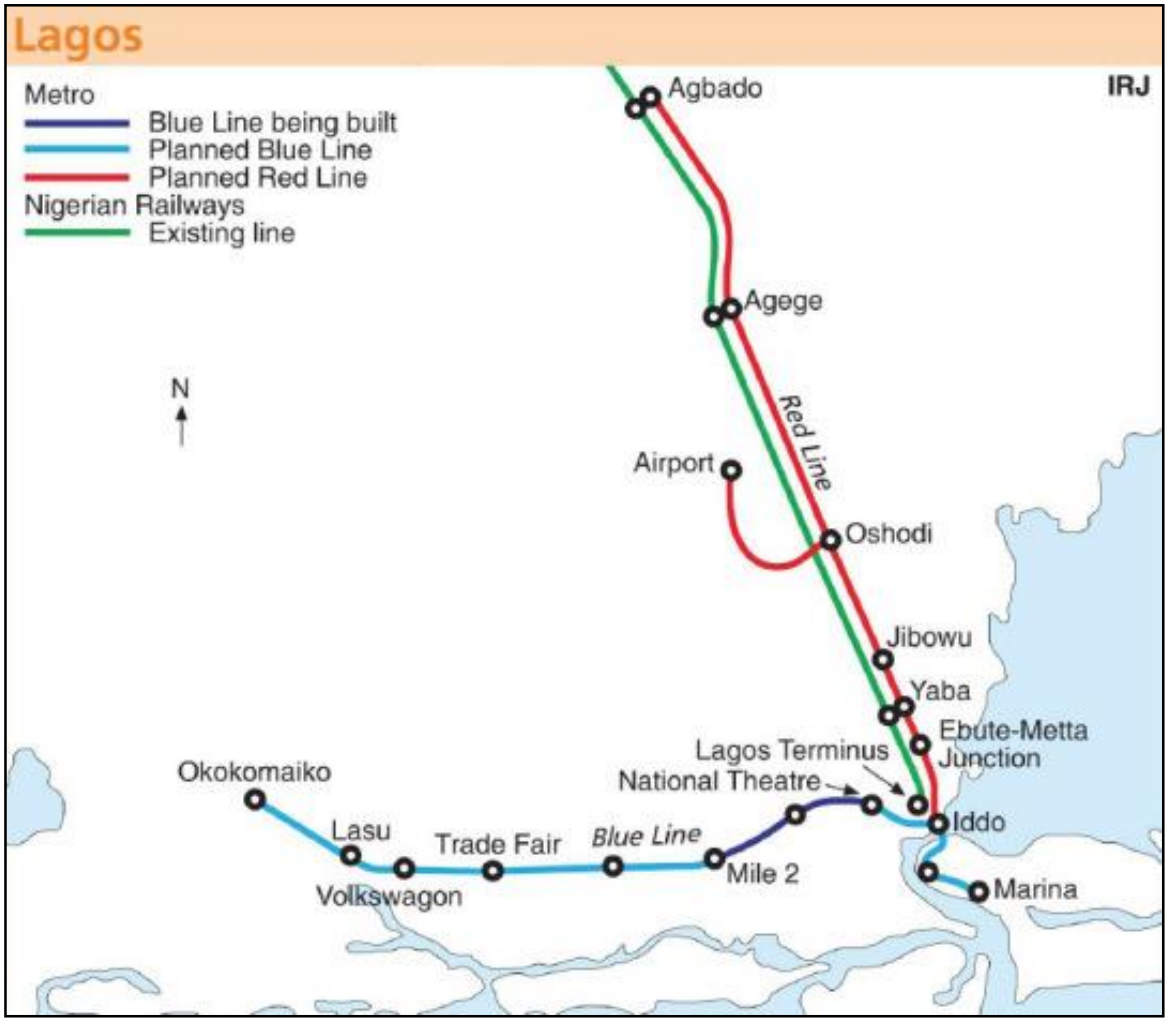
peak hour traffic and more people preferring BRT to other modes of public transport and their private cars. Light Rail Transit (LRT) is a mode of transport planned to accompany BRT in the second phase of the overall project. The plan is to develop an effective and efficient mode of transport that will link the mainland and the island. The LRT will provide an alternative efficient transport option within the mainland and access to the island as highlighted in (figure 11 and 12) below (Adebola et al., 2014; Cervero, 2013; Aderamo, 2012; Odufuwa and Fasina, 2012; Agunloye, 2011; Kumar and Barrett, 2008).

Figure 10: BRT routes in Lagos, Nigeria



Source: (LAMATA, 2009)

Figure 11: Planned LRT routes in Lagos, Nigeria



Source: (Gboyega, 2013)

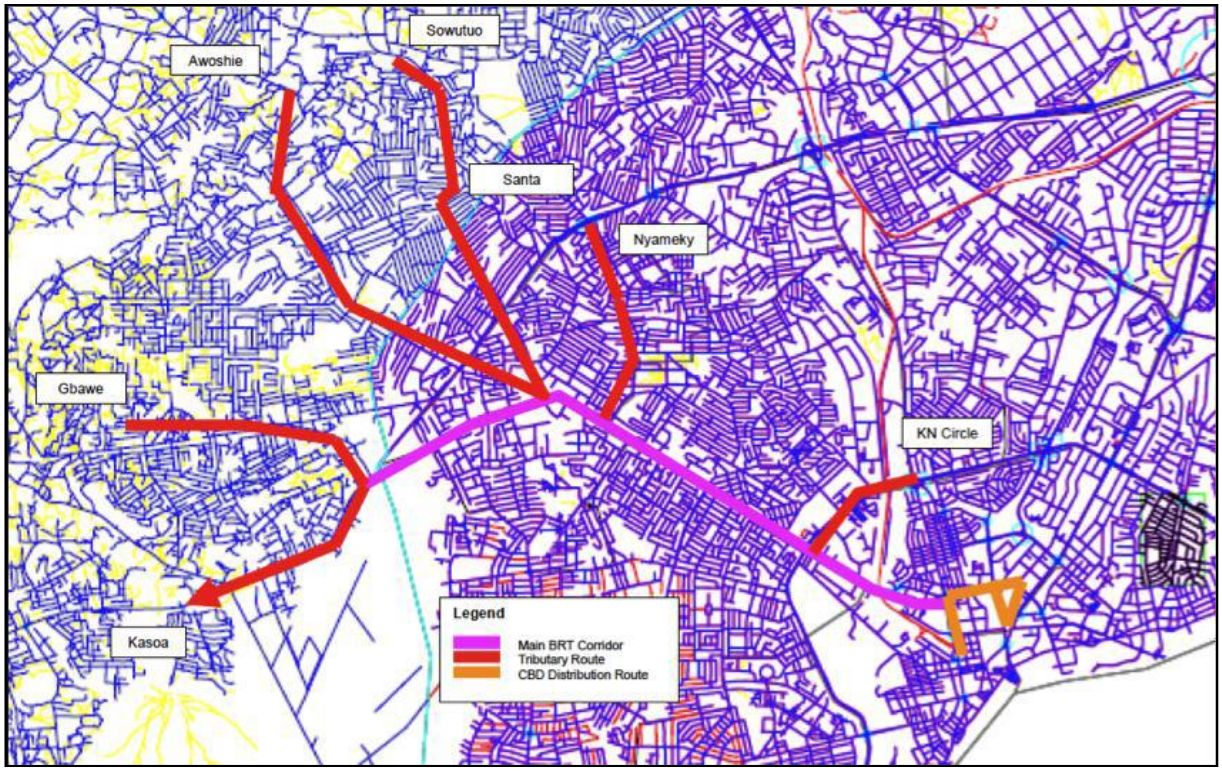
3.4.5 Accra- Ghana

Public transportation in Accra Ghana is much like that in Lagos and the rest of Africa and just as in the greater developing world's cities is dependent on paratransit modes that dominate formal modes of transport in the sector. "The main component of the public transport system is *'tro-tros'*; a self-regulating sector composed of minibuses responsible for carrying 56% of daily passengers in the Greater Accra Metropolitan Area (GAMA)" (Salazar Ferro et al., 2013:128). It was felt that the paratransit system exhibits major problems within the city and does not meet the daily needs of the public at large, especially in addressing accessibility and enhancing mobility, but ultimately in ensuring an efficient and effective operation. The impact *'tro-tro'* has throughout Accra and its instinctive nature in adhering to the demands generated by the public is evident. Despite the flexibility in operation and rapid response to serve new developments in the city, the *'tro-tro'* as a formal mode of transportation, has not yet been introduced (Salazar Ferro et al., 2013; Porter, 2012; Finn, 2011; Porter, 2010; Kumar and Barrett, 2008).

3.4.5.1 Public transportation in Accra: BRT and '*tro-tros*' and densities surrounding stops

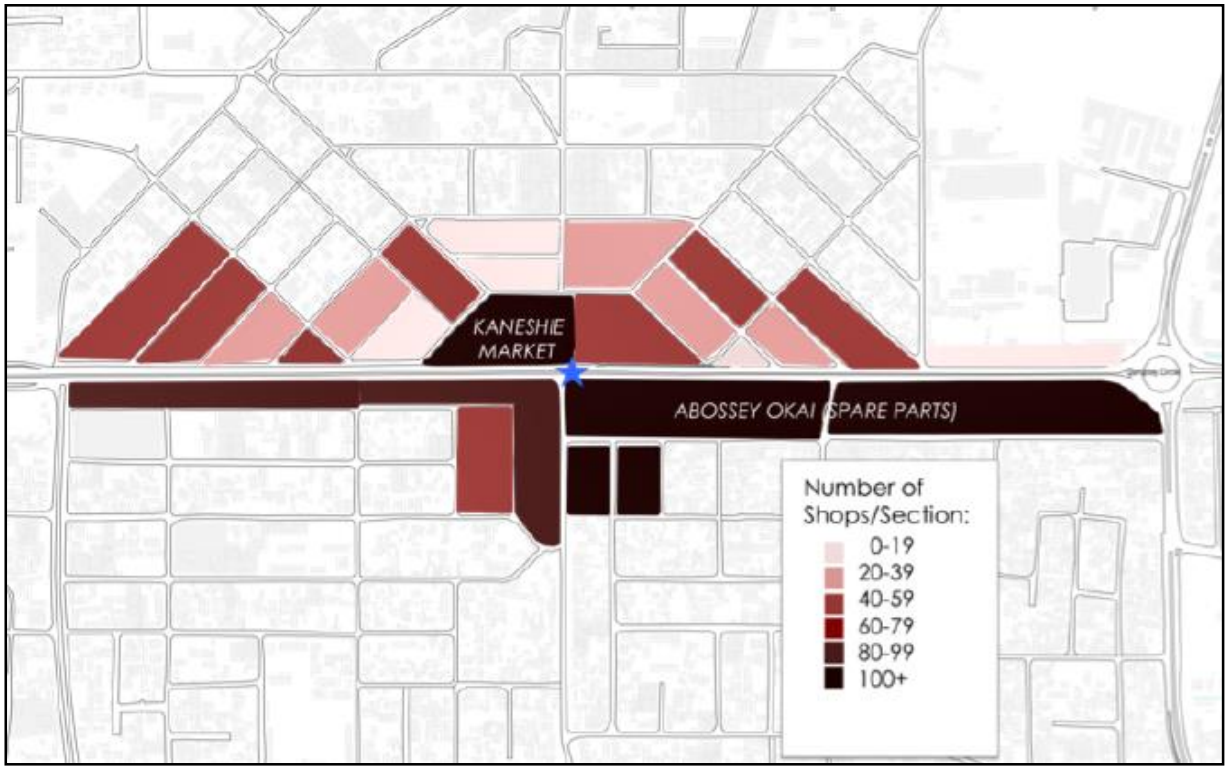
New infrastructural developments in Accra are responsible for travel distance to employment destinations increasing. There has also been growing, exclusion of the poorest in society, as the cost of the use of transport has increased as well. Even in this instance, paratransit still flourishes, providing transport in many instances where there is no formal mode of public transportation. Thus, in a bid to break the stronghold '*tro-tro*' has on the transport sector, and to formalise the paratransit mode, Accra, much like the major cities in the rest of Africa and Latin America has implemented BRT. Furthermore, it is said that BRT will improve the public transport operation because it addresses the problems that are associated with public transportation systems present in the city. It provides effective and efficient public transportation to the city, addressing the shortfalls of '*tro-tro*' overall. As seen in (figure 13) below, transport corridors are developed to service BRT. As seen in (figure 14), the stations/stops are placed in strategic locations where future economic development is anticipated. Furthermore, it also accommodates existing economic nodes that experience intense economic activity with a BRT located in close proximity (Salazar Ferro et al., 2013; Finn, 2011; Okoye et al., 2010).

Figure 12: Accra's potential BRT route



Source: (Okoye et al., 2010)

Figure 13: Densities of economic activity in close proximity to a BRT stop in Accra



Source: (Okoye et al., 2010)

3.5 The influence of transportation in South Africa and related issues

Public transportation in South Africa has a huge impact on many people's lives on a daily basis. The legacy of apartheid has caused segregated development which is still the case, post-1994, in the urban land scape of South African cities. The one way in which the country could be integrated is through public transportation, by investing in proper transportation infrastructure is a step in the right direction for the country as a whole. The conditions of the past are still present in South African society, with much effort by the government to do away with the social ills of the past. The legacy of apartheid and other factors continues to be a stumbling-block that prevents any meaningful change occurring in many communities in the country. The policies that the government implemented in 1994 and onwards have been both positive and negative. Some perpetuated past inequalities, however others weren't given sufficient time to deliver on promises made.

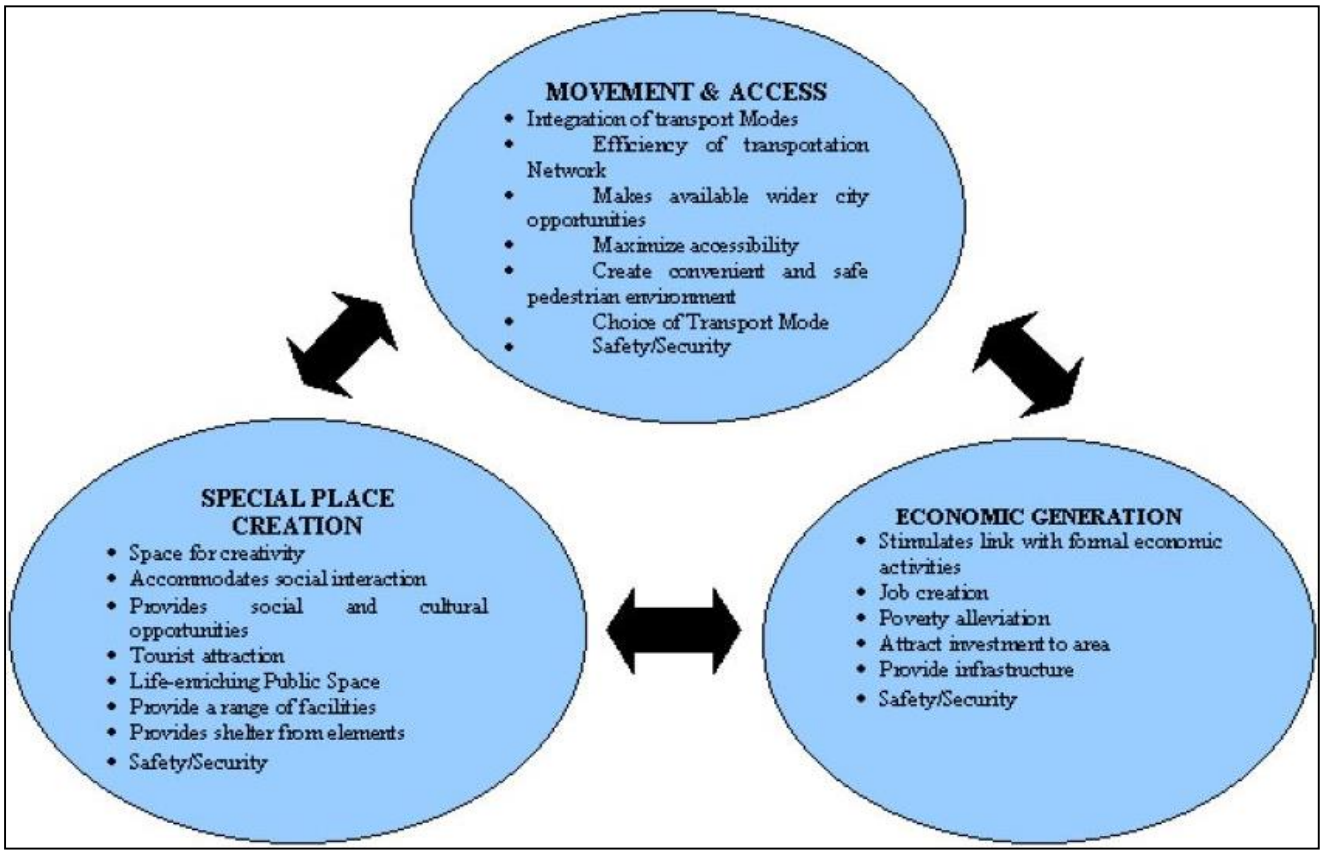
3.5.2 Transportation and its influence on mobility, accessibility and socio-economic sustainability, the need for sustainable transport planning

The way transport planning is approached in South Africa needs to change. Looking at the country's volatile past and the condition of public transport, currently, the system does not aid in addressing the needs of the poor. Public transport should promote a positive living environment through improving efficiency, mobility and accessibility. According to Finnveden

and Åkerman (2014) public transportation has been identified as the key to improving the lives of many. Consequently, those who were previously excluded due to inefficient public transportation, have the opportunity to move around with relative ease and benefit from the factors associated with this new-found mobility. Hence there is a clear link between access to public transportation and social exclusion, mobility is one of the many factors that determine one's social well-being and it affects the entire community to a greater or lesser degree (Stanley and Lucas, 2008; Preston and Rajé, 2007).

According to Stanley and Lucas (2008) social exclusion is an important area of study, linking transport or the lack thereof to the rate of progress individuals and societies encounter. The ability to be mobile and to have access to areas of intense activity allows for social integration due to interaction, increasing social capital and the overall well-being (Stanley et al., 2011). The international community highlights the need for integration, identifying the growing need for an improved public transport infrastructure that puts the needs of the people, at large, over those using their private cars. Therefore, three pillars identified in the diagram below can be achieved. Thus, the problem associated with the taxi industry currently should not reduce the potential of the industry to address issues confronted by the poor as it did when the industry was introduced.

Figure 14: The importance of an efficient public transport: the three spheres it influences



Source: (Verster, 2003)

With an improved public transport system in place, this can lead to self-sufficient individuals. Socio-economic sustainability is directly affected by one's ability to take part in the economy in some way or form as highlighted in the (figure 6) (Röling, 1997). Increasing access to public transport is key to addressing the issue of poverty in the country. Increased access allows people, in particular, marginalised groups, to have more opportunities at their disposal and without just limiting them to their immediate surroundings. Transport and land-use planning should be geared to sustaining the population socially and economically. The inability to ensure this leads to social exclusion, be it physical, due to inefficient public transportation, or social. Without proper public transportation, the economic growth of an area is hindered and the social fabric of society is affected negatively.

3.5.3 The minibus (taxi) industry, its rise and impact on South African society

The minibus (taxi) industry has, for many years, transported the majority of public transport users to and from various locations across the country (Khosa, 1992). "In South Africa, the dominant public transport mode is the 16-seater minibus taxi" (Walters, 2013:42). During the colonial, apartheid and post-apartheid eras, the taxi industry filled the gap in service delivery where the state failed to do so, particularly by transporting communities located on the periphery of the city and rural towns (Schalekamp and Behrens, 2013; Khosa, 1992). The industry got its start due to segregationist legislation in effect during the early 1900s that restricted the movement of black South Africans at the time (Woolf and Joubert, 2013). It started off with individuals with their own cars giving stranded pedestrians lifts, due to the fact that the public transport system did not meet the needs of the marginalised groups in the country. Furthermore, modes of transport supplied by the government were inefficient and favoured the needs of the white group over the majority of the population (Khosa, 1992). Therefore, to restrict competition, the apartheid legislation controlled the number of modes of public transport that operated in the country, stifling competition and creating transport monopolies (Woolf and Joubert, 2013; Khosa, 1998). Consequently, the black African taxi industry operated illegally to provide a much needed service to the people.

With apartheid policy not allowing black people to invest in property or in other fixed assets, buying a taxi was the only lucrative platform that would ensure financial returns on an investment for black families (Woolf and Joubert, 2013). The loophole in the transport policy allowed many black South Africans to exploit the system and hence gain entry into the transport sector. People trying to gain entry into the transport sector had to be innovative during apartheid; this was the only way in which black South Africans who were previously restricted from the right of access to public transportation could gain access to it. The taxi industry operated under tough times and many state that not much has changed since then

(Booysen et al., 2014; Woolf and Joubert, 2013; Lucas, 2012; Lucas, 2011; Schalekamp and Behrens, 2010).

The minibus (taxi) industry still provides an essential service to the majority of the people living on the outskirts of the city, who need cost-effective transport to allow them to participate in the economy (Schalekamp and Behrens, 2013).

Despite the recent rapid growth in car use, public transport and walking are still the predominant 'lifeline' forms of mobility for the vast majority of South Africans in order to access work, schools and services. According to the *National Household Travel Survey* (NHTS 2003):

- 38 million citizens live in households with NO access to a car;
- 80% of adults do not have a driver's licence;
- 14 million children walk to school, 7 million workers and learners use public transport; and
- 13.7 million people used public transport at least once a week while only 7 million used a car

(Pillay and Seedat, 2007:399)

According to the *National Household Travel Survey in 2013 (StatsSA, 2013)*:

- 67.4% of households have no access to a car;
- 73.1% of adults do not have a drivers licence;
- 17,5 million learners attended educational institutions of that 11.1 million (63.4%) learners walked to school; and
- 21.3% of learners made use of public transport, of that 69.4% (2.6 million) used minibus taxis and 4.8 million workers used public transport.

The transport plans put forward by the government for major cities across the country do not speak to the heart of the problem confronted by the poor, living in small towns or rural areas.

> In these areas the taxis are fulfilling an essential service to provide mobility. These taxi niche areas should be acknowledged by decision- makers, and actively promoted and developed instead of discouraged in an overall attempt to formalise the industry (Woolf and Joubert, 2013:291).

Many of the housing projects implemented by the government are still taking place on the periphery of the city, maintaining practices that were typical of the apartheid government years, prior to 1994. Therefore the industry, in many instances, sees the opportunity to provide individuals who reside in these far-flung areas with access to public transportation in a cost-effective way, as little physical infrastructure is needed to operate. Mobility, which was not planned for when placing people such distances away from economic centres, is

ensured, thus the taxi industry integrates communities with the broader society who would otherwise be excluded.

3.6 Summary of the chapter

The spatial structure of the city has a huge impact on how transport networks function. In the case of South Africa, with the effects of apartheid planning still present, the ordinary citizen is the one who is affected by this. Public transportation in South Africa has faced a lot problems in the past; some areas in the country are better off than others. The current government is still perpetuating elements of apartheid style planning in the new South Africa. To this day, people are still being pushed to the fringes of the city, increasing the pressure on the state to provide better access to public transportation for these newly developed communities. The government faces the challenge of providing safe, efficient, accessible and affordable means of public transportation. With high levels of urbanisation and inward migration from other African countries taking place, it is becoming a major problem for the state to provide adequate services for its people. The physical structure of South African cities is one of many issues facing the country's public transportation system. The physical structure of the country and the way in which transportation planning was approached in the past can be seen as obstacles preventing meaningful change in improving public transportation in the future. With the challenges facing minibus taxis in South Africa, past and present, change is taking place with the introduction of BRT, but this system does not serve small towns and rural areas in the country, as these require efficient, accessible public transportation.

It is the author's aim to highlight the potential of developing the minibus taxi industry, in order to fulfil the need for efficient public transport that is required in small towns and rural areas. This will not detract from the change that BRT has brought to the cities in which this system has been implemented in South Africa, and the rest of the cities in Africa and Latin America. In chapter 4, these points are made clear, indicating the impact efficient public transport has for all.

Chapter 4: Study Area – uMhlathuze Local Municipality

4.1 Introduction

The public transport problems confronted by uMhlathuze Local Municipality are not unique to this case study, but, for the most part, they are similar to those common to many municipalities across the country. This case study may hopefully provide a different perspective and present different solutions towards addressing these problems. This section explores the complexity that surrounds public transport within uMhlathuze, highlighting the role public transport plays and the strategies that have been suggested by the municipality to address the broad social problems it is facing.

With the image of the municipality changing, with new developments taking place in areas where minority groups reside; 'black townships', rural towns and peri-urban townships: eSikhaleni, Vulindlela, Ngwelezane and Enseleni, and the economic hubs of the municipality: Richards Bay and Empangeni, public transport should reflect the same developments. The population of the municipality could only benefit from any progress made with regards to improvements in land-use and transport planning. Pursuing concepts and theories highlighted in chapter 2 can only benefit the municipality and the population going forward.

4.2 Study area in context

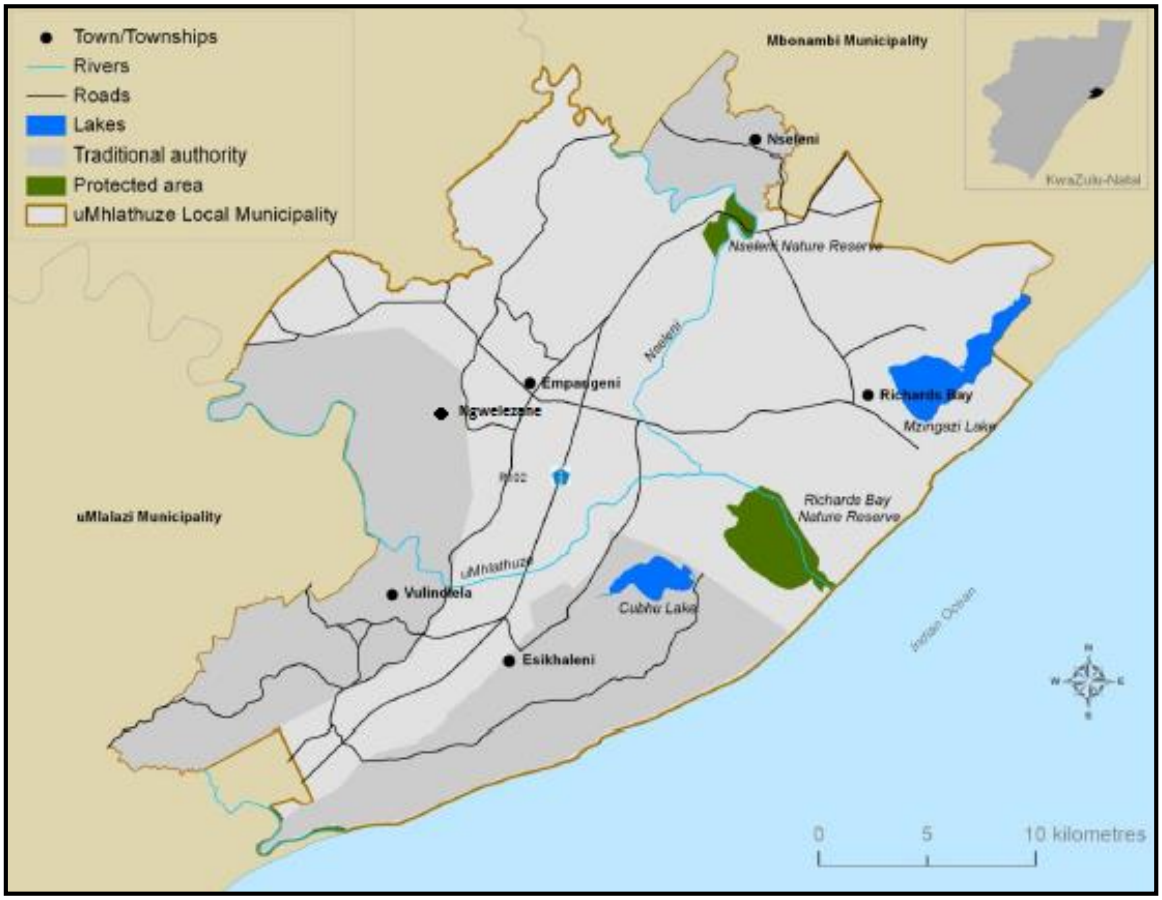
4.2.1 Geographic location of the study area

"The city of uMhlathuze as it is known is one of six local municipalities within the uThungulu District Municipality in KwaZulu-Natal" (Mbambo and Slabbert, 2011:322). The uMhlathuze Municipality incorporates the towns of Richards Bay, Empangeni and the townships of Ngwelezane, eSikhaleni, Vulindlela and eNseleni. uMhlathuze Local Municipality is a major employment node within the uThungulu District, hence it attracts approximately 80% of the public transport trips within the uThungulu District (Mbambo and Slabbert, 2011). It consists of "rural and urban settlements, farms and nature reserves. Sugar cane fields, timber plantations, wetlands and fresh water lakes surround the two major towns Richards Bay and Empangeni" *(City of uMhlathuze Public Transport Amenities Study: Public Transport Stop Assessment and Improvements Report, 2010:2).*

The major road that runs through the municipality is the N2, in a northeast direction towards Swaziland and southwest towards Durban. Furthermore, it forms a link between the two major nodes, these being Empangeni and Richards Bay. Access is also gained to municipality through the R34 via the N2 from Ntambanana and the R102 that runs along the N2 (the old

main road) from uMlalazi towards Mbonambi *(uMhlathuze Local Municipality: Final Interated Development Plan Review 2015/2016, 2015).*

Figure 15: Map indicating various townships and nodes within the municipality



Source: (Xulu, 2014)

Table 4: Land area covered by respective towns, settlements and rural areas in km²

Area	Km²	Percentage
Richards Bay	289, 9966	36,4%
eNseleni	1,3325	0,2%
Empangeni	28,9386	3,6%
eSikhaleni formally known as (eSikhawini)	6,2304	0,8%
Vulindlela	8464	0,1%
Ngwelezane	3,7001	0,5%
5 Traditional Authority areas, 21 rural settlements and 61 farms	464,9261	58,4%
Total municipal land area	**795,9707**	**100%**

Source: *(uMhlathuze Local Municipality: Final Interated Development Plan Review 2015/2016, 2015:36)*

4.2.2 *Status quo* of the municipality

This section highlights the current situation in the municipality, focusing on relevant issues relating to population growth trends, labour and employment indicators, household size, education levels and lastly the *status quo* of public transportation.

4.2.2.1 Population growth trends

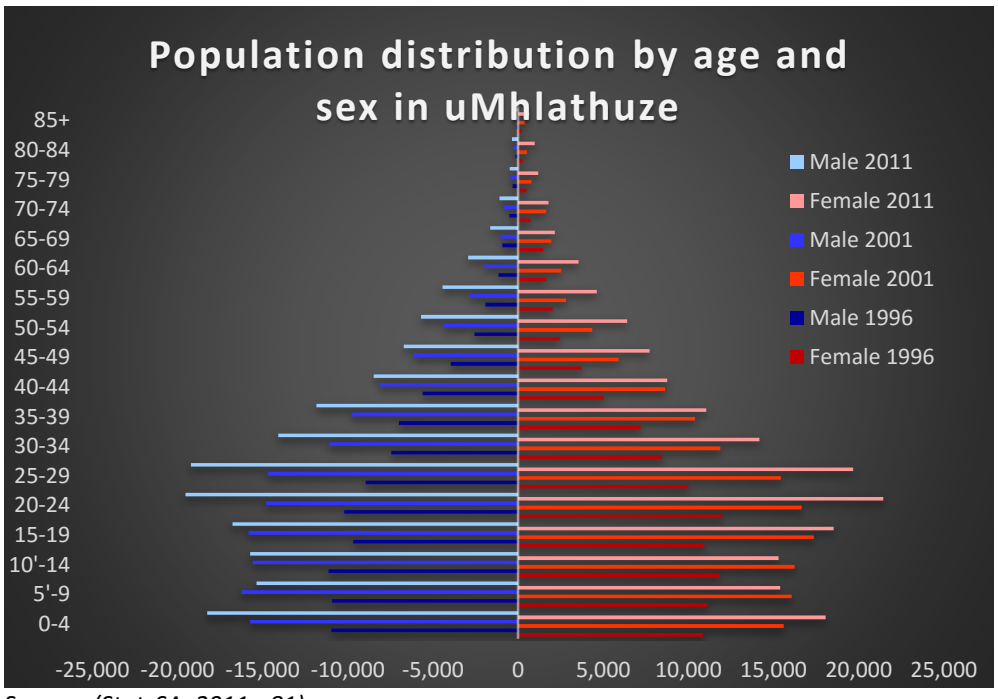
The overall population of uMhlathuze increased during the period 1996-2011, particularly with regard to the different age groups and gender distribution in those respective years as illustrated in the (graph 1) and (tables 5 and 6) below. The municipality has a large youth base as seen in 2011 statistics. The total number of people under the age of 14 years accounts for 29.3% of the total population. Additionally, the percentage of the population that is between the ages of 15-34 years, (youth) consists of 42.9% of the total population in the same year. The group between the ages of 35-64 represents 24.6% of the total population. Furthermore, the group between the ages of 65-79 represents 2.5% and finally, the age group of 80+ comprises only 0.7% of the total population. With the rise in population in 2011, the need to provide adequate public transport increased. Furthermore, continued economic growth as well as the socio-economic wellbeing of the population, is dependent on an improved transport system. It is imperative for change to occur considering that the density of population increases year upon year; this would allow a considerable amount of people to have access to potential opportunities and resources.

Table 5: Population growth rate

Total population		Population growth rate (1996-2001)	Total population	Population growth rate (2001-2011)
1996	2001		2011	
196 894	289 190	7,7	334 459	1,5

Source: *(StatsSA, 2011a:97)*

Graph 1: Distribution of the population in five-year age group by gender



Source: *(StatsSA, 2011a:81)*

Table 6: Population density

Population Density	Total area	2001	2011
	793.8 km²	364.3 persons/km²	421.3 persons/km²

Source: *(StatsSA, 2011b)*

4.2.2.2 Labour and employment indicators

The graph and table below illustrates the number of people who are actively participating in the economy of the uMhlathuze Municipality in 2011, compared to 2001. The unemployment rate has decreased overall, but looking at (table 9) the percentage of unemployment in Traditional Authority Areas (TAAs) is a considerable amount, as they are situated distances from employment centres. In addition, overall a considerable percentage of the youth is still unemployed, with the rate at 40.8% in 2011, even though it is lower than the rate in 2001 at 50.7%. The working age reflects a considerable number of people, both male and female, and this increased in 2011. Furthermore, the disparity in average household income, as illustrated in the (graph 2) below, and the number of unemployed individuals overall highlights the significance of improved public transportation. Taking into consideration the impact access to efficient public transportation has on vulnerable individuals or on those who do not form part of the middle class; they need a safe, reliable and effective transport system.

Table 7: Gender of working age and total population

Age	2001			2011		
	Male	Female	Total	Male	Female	Total
0-14	47 568	47 916	95 483	49 342	48 768	98 109
15-64	89 653	95 996	185 649	109 691	115 978	225 670
65+	2 749	5 308	8 057	3 909	6 771	10 680
Total	139 970	149 220	289 190	162 942	171 517	334 459

Source: *(StatsSA, 2011a:116)*

Table 8: Employment status

Employed		Unemployment		Unemployment rate		Youth unemployment rate	
2001	2011	2001	2011	2001	2011	2001	2011
67 305	81 902	46 038	37 686	40,6%	31,0%	50,7%	40,8%

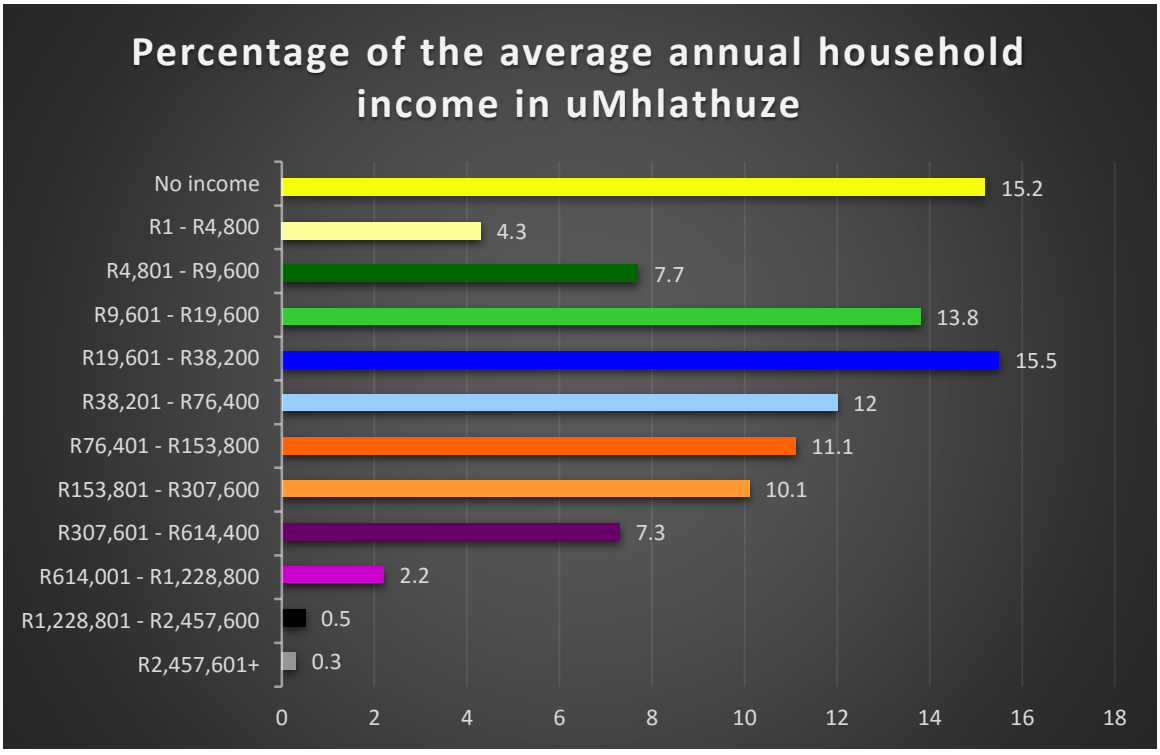
Source: *(StatsSA, 2011a:160)*

Table 9: Areas with highest % unemployment in TAAs and their location in terms of formal urban areas

Census Area in the TAAs	Rate of Unemployment	Location
Mzipofu	35.4%	Dense settlement directly northwest of Nseleni formal township
Ovondlo	41.6%	Dense settlement directly east of and bordering Nseleni formal township
Mabuyeni	45.1%	2.5km north northwest of eNseleni formal township
Mazimazana	30.6%	Directly north of Nseleni formal township
Mahunu	28.6%	Bordering Esikhaleni - south of Esikhaleni towards Port Dunford
Madlanghala	32.2%	Northwest of Qhubu Lake and close to Empangeni, Esikhaleni and Richards Bay
Esikhaleni	32.0%	Next to formal Esikhaleni

Source: *(Umhlathuze: Gateway to Globalisation or Forgotten Harbour Town?, 2014:37*)

Graph 2: Annual household income



Source: *(StatsSA, 2011b)*

4.2.2.3 Household size and education level

As seen from the latest statistics, (2011) (the tables below) the number of households in uMhlathuze Local Municipality has increased from that of 2001 and 1996 respectively, with many contributing factors warranting the rise in population and ultimately in the number of households. In addition, the number of female-headed and child-headed households has increased as well. These issues, even though minuscule in terms of the overall number of

households, are not positive factors. The political past of the country contributed considerably to the social ills confronting the municipality and South Africa as a whole. Furthermore, it gives rise to other problems, like no schooling or early drop-out rates from as early as primary schooling to pre- and post-grade 12. Like any economy, for it to prosper, the greater population needs to have obtained a particular level of formal education or training. The number of individuals completing grade 12 compared to the number of individuals entering grade 1 twelve years prior to this, is very low. The same is true for those who attended or completed some form of higher education as seen in the table below. School attendance and eventual completion could be improved with access to efficient public transport in areas that need it the most.

Table 10: Education levels

Education level	2001			2011		
	Male	Female	Total	Male	Female	Total
No schooling	12 923	16 759	29 682	5 898	8 523	14 421
Some primary	9 854	11 901	21 756	7 693	10 197	17 890
Complete primary	3 699	4 133	7 832	2 673	3 017	5 690
Some secondary	21 425	21 851	43 276	25 325	26 257	51 582
Std 10/Grade 12	20 241	20 268	40 509	36 319	37 858	74 176
Higher	8 427	9 026	17 453	13 185	14 884	28 069
Total	76 569	83 939	160 507	91 093	100 735	191 827

Source: *(StatsSA, 2011a:139)*

Table 11: Household size

Household population		Number of households		Average household size	
2001	2011	2001	2011	2001	2011
277 319	315 431	67 127	86 609	4,1	3,6

Source: *(StatsSA, 2011a:162)*

Table 12: Child headed households

No. of households headed by Children		Number of households		Percentage of households headed by children	
2001	2011	2001	2011	2001	2011
407	581	67 127	86 609	0,6%	0,7%

Source: *(StatsSA, 2011a:181)*

Table 13: Female-headed Households

No. of households headed by women		Number of households		Percentage of female-headed households	
2001	2011	2001	2011	2001	2011
24 128	35 237	67 127	86 609	35,9%	40,7%

Source: *(StatsSA, 2011a:183)*

4.2.3 *Status quo* of public transportation

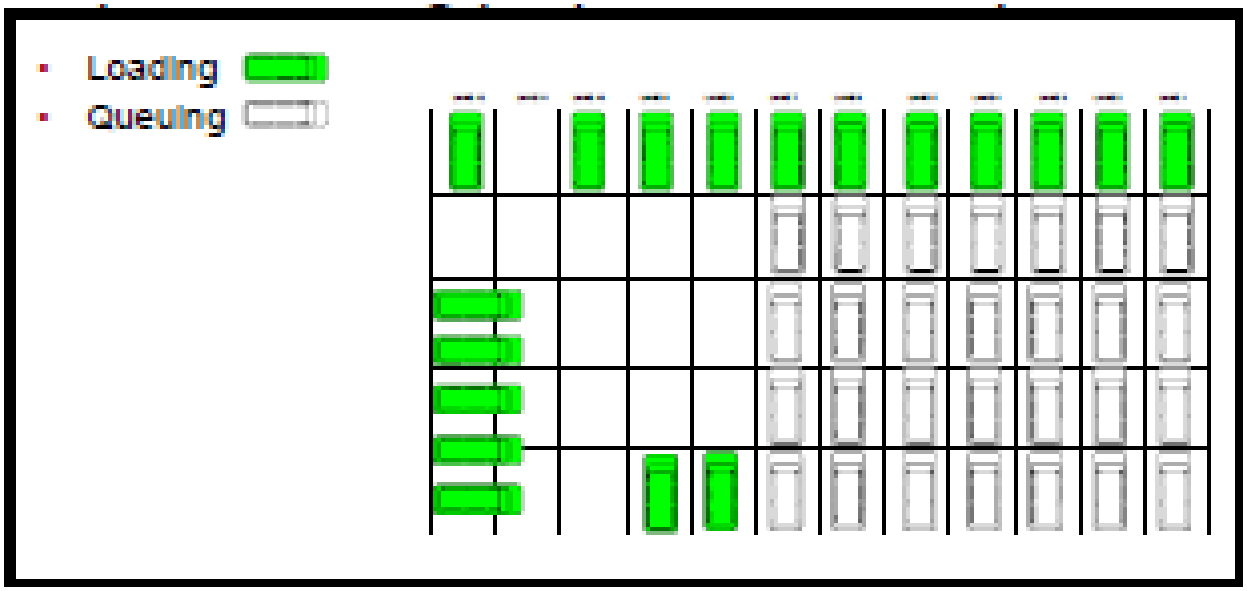
Public transport is an essential service that many people rely upon on a daily basis. Without it, many are left stranded, not being able to provide for themselves or their families if they are the sole breadwinners. The different nodes across the municipality face different problems concerning public transportation.

4.2.3.1 Richards Bay Plaza Rank, public transport routes and stops (formal and informal)

The manner in which the taxi industry operates has not seen many improvements from the time it was first introduced to the public in the early 1900s. This is evident in the Bay Plaza's taxi rank layout currently, as seen in (figure 16) below, and the problems that other bus/minibus taxi ranks encounter, as seen in (figure 17). The taxi industry or public transport system in general, needs new ideas to inspire better operation as a whole. The industry has the potential to be seen in a different light, but requires all relevant stakeholders involved to take the initiative and to work together for change to occur.

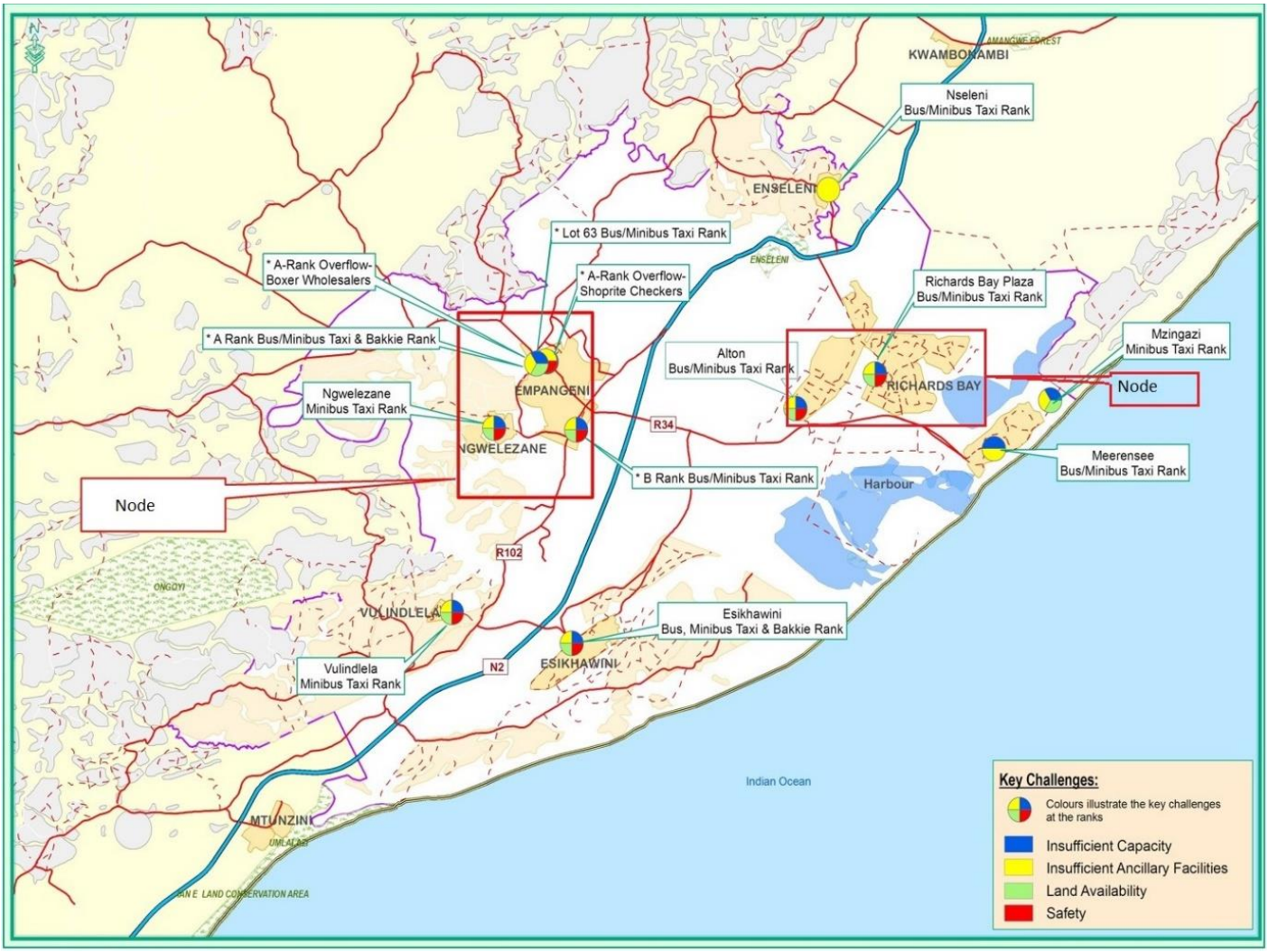
The current layout of the Richards Bay Plaza Rank loading area does not cater to the demand concerning the different flow of taxis and for an efficient transport system in the future. Figure 17 highlights the fact that this rank, in particular, faces an insufficient capacity, insufficient ancillary facilities, land availability and safety issues. It might still function as is, at present, but it does not address the future transport needs of the municipality and the public at large. Certain routes are much busier than others and the operation is lopsided, with not everyone enjoying the same level of service across the board. The queuing and loading area at the moment needs to be improved to cater for the growing nature of the industry. There should be a clear link between the various public transport stops and the time the minibus taxi leaves the ranks. From a passenger perspective, accessing a minibus taxi should be guaranteed within a particular time interval, regardless of the route and location. The manner in which the minibus taxis operate at the moment causes unnecessary delays with the movement of other vehicles, which affects overall operation, particularly when one considers that more people are making use of minibus taxis in comparison to traditional modes of public transportation. As seen in map (figure 17) below, the infrastructure is in place across the municipality, due to the demand that is generated by the public, hence the operation should reflect the growth experienced by the sector, accommodating the influx of people at the moment and anticipating future requirements that will increase over time (Mbambo and Slabbert, 2011; *City of uMhlathuze Public Transport Amenities Study: Public Transport Stop Assessment and Improvements Report, 2010)*.

Figure 16: Current layout of the loading at Richards Bay Plaza Rank



Source: (Mbambo and Slabbert, 2011)

Figure 17: Location of bus/minibus taxi ranks within uMhlathuze Local Municipality and key challenges



Source: *(City of uMhlathuze Public Transport Amenities Study: Public Transport Stop Assessment and Improvements Report, 2010)*

The map above (figure 17) and the map below (figure 18, p.77), indicate the status of bus/minibus taxi ranks, public transport routes and stops in the different nodes throughout the uMhlathuze Municipality. The maps take note of public transport trends, identifying the location and status of the ranks, public transport stops, both formal and informal, and the mode of public transport they serve (bus, minibus taxi or both). The map (figure 18) also indicates transport routes, both bus and taxi routes and new taxi routes where route licenses were issued. It also indicates main roads and the different settlement locations *(City of uMhlathuze Public Transport Amenities Study: Public Transport Stop Assessment and Improvements Report, 2010).*

It is noted that a number of routes and public transport stops face their own difficulties and, in a series of maps that follow, the issues faced by a number of nodes within uMhlathuze Local Municipality will be highlighted. The series of maps will indicate the main transport route, the type of route it represents and whether or not the stop is a bus, minibus or both public transport stop and the location of bus/minibus taxi ranks within the node. Furthermore, it will also indicate which public transport stop does not have a (lay-bye, shelter, bench) or a combination thereof *(City of uMhlathuze Public Transport Amenities Study: Public Transport Stop Assessment and Improvements Report, 2010:13).*

4.2.3.2 Richards Bay: CBD and the Industrial North

As seen in (figure 17) above and (figure 19, p.78) below, the bus/minibus taxi ranks, public transport stops and the routes face a number of issues. The ranks, as mentioned previously, have insufficient capacity to cater for the demand currently generated by passengers and the number of minibus taxis that are currently stationed at the rank at any given time. There are also insufficient ancillary facilities to accommodate the needs presented by informal traders, hence safety is a major concern as they obstruct the movement of minibus taxis at times. Furthermore, land availability is a major concern for future growth due to the ranks' location (City of uMhlathuze Public Transport Amenities Study: Public Transport Stop Assessment and Improvements Report, 2010).

The public transport stops and routes as seen in (figure 19) show that the CBD has a number of routes that accommodate both buses and minibus taxis with the designated public transport stops along the routes and good spacing of the roads and lay-byes to accommodate both buses and minibus taxis. The only problem is that there are no shelters provided along the routes as well as benches, considering the volume of passengers making use of public transportation within the CBD. Furthermore, it is also noted that the industrial north of Richards Bay has an adequate transport network coverage with public transport stops and

good spacing of the roads and lay-byes to accommodate both buses and minibus taxis. Only a small percentage, however, of the public transport stops have shelters, as well as benches *(City of uMhlathuze Public Transport Amenities Study: Public Transport Stop Assessment and Improvements Report, 2010).*

4.2.3.3 Richards Bay: Aquadene and Brackenham

There is adequate coverage of the transport routes and stops within the two suburbs with good spacing of the roads and lay-byes to accommodate both buses and minibus taxis as seen in (figure 20, p.79) below. There are a number of public transport stop along the public transport routes but do not have any benches (*City of uMhlathuze Public Transport Amenities Study: Public Transport Stop Assessment and Improvements Report, 2010)*. This demonstrates that the infrastructure to allow an efficient minibus taxi industry to operate is in place, but still needs adjustments to cater for future demands.

4.2.3.4 Richards Bay: Birdswood, Arboretum, Veldenvlei and Mandlanzini

In the suburbs of Birdswood, Arboretum and Veldenvlei, there are adequate transport networks, public transport stops and good spacing of the roads to accommodate both buses and minibus taxis, as seen in (figure 21, p.80) below. However, the majority of the public transport stops do not have lay-byes, but they do have shelters, almost all of which are fitted with benches *(City of uMhlathuze Public Transport Amenities Study: Public Transport Stop Assessment and Improvements Report, 2010)*. Many of the routes, excluding the main collector route, do not allow the operation of the minibus taxi industry hence, people living in the area, learners attending schools in the area and those working in the area have to depend on the bus which operates at odd hours. In addition, it is not convenient nor efficient, as people tend to struggle if they do not have access to a private car.

In the peri-urban township of Mandlanzini, which only has a formal road leading up to the establishment, the rest of the roads within in are informal and there are public transport stops allocated along the routes with fitted shelters and benches for people waiting for public transportation. People in this area enjoy sufficient access to public transportation from buses and minibus taxis operating in the area, but the mode most utilised is that of the minibus taxis (*City of uMhlathuze Public Transport Amenities Study: Public Transport Stop Assessment and Improvements Report, 2010*).

4.2.3.5 Richards Bay: Meerensee, Mzingazi and the industrial south

The suburb of Meerensee and the industrial south of Richards Bay have good transport routes and public transport stops both formal and informal throughout, as is evident in (figure 17)

above and (figure 22, p.81) below, to cater for buses and minibus taxis. Mzingazi, which is classified as a peri-urban township north of Meerensee, has one formal public transport stop on the main collector route, with many informal public transport stops to supplement the shortfall. In addition it has moderate formal transport route coverage, with informal transport routes and stops as seen in (figure 22) below. It accommodates the operation of both the bus and minibus taxi industry (*City of uMhlathuze Public Transport Amenities Study: Public Transport Stop Assessment and Improvements Report, 2010*).

Meerensee, particularly, has good placing of the roads and lay-byes, as half of the residential collectors have public transport stops and the majority of the stops have shelters, but are not fitted with benches. In addition, many of the routes, excluding the main collector route, do not allow the operation of the minibus taxi industry, hence people living in the area, learners attending schools in the area and those working in these areas have to depend on the bus which runs at odd hours. Therefore, it is not convenient nor efficient, as people tend to struggle if they do not have access to a private car. In the industrial south, on the other hand there is moderate bus route coverage and the necessary public transport stops on the routes. However, this caters mainly for buses and not minibus taxis due to the nature of activity that takes place here and it has shelters at the public transport stops *(City of uMhlathuze Public Transport Amenities Study: Public Transport Stop Assessment and Improvements Report, 2010).*

4.2.3.6 Empangeni CBD, industrial and residential area

As indicated in (figure 17) above, the bus/minibus taxi ranks face a number of difficulties. They have insufficient capacity to cater for the demand currently generated by passengers and the number of minibus taxi that are currently stationed at the rank at any given time. There are also insufficient ancillary facilities to accommodate the needs presented by informal traders, hence safety is a major concern as they obstruct the movement of minibus taxis at times. For that reason, land availability is a major concern for future growth at the A and B-ranks due to the location of the ranks in question (*City of uMhlathuze Public Transport Amenities Study: Public Transport Stop Assessment and Improvements Report, 2010*).

There is adequate transport coverage and public transport stops both formal and informal throughout the CBD, residential and industrial area south of Empangeni, as seen in (figure 23, p.82) below. There is sufficient spacing of public transport stops to accommodate both buses and minibus taxis throughout Empangeni. In addition, a relatively significant percentage of stops have lay-byes and shelters with fitted benches. A relatively small percentage is missing one of those elements within the CDB, residential and industrial areas, hence on-street

parking is made available (*City of uMhlathuze Public Transport Amenities Study: Public Transport Stop Assessment and Improvements Report, 2010*). Similar to Richards Bay, minibus taxis merely operate on the main collector routes and the suburbs of Empangeni are serviced by buses. Buses operate at odd hours, which is not convenient nor efficient.

4.2.3.7 Ngwelezane

As seen in (figure 17) above and in (figure 24, p.83) below, there is adequate provision of public transport infrastructure in the form of ranks, transport routes and public transport stops both formal and informal, that accommodate both buses and minibus taxis currently. The majority of the public transport stops have lay- byes as well as shelters, but some shelters are not fitted with benches. The figures show that 40% of the public transport is informal. The minibus taxi rank has insufficient capacity to supply the demand currently generated by passengers and the number of minibus taxis that are currently stationed at the rank at any given time. There are also insufficient ancillary facilities to accommodate the needs presented by informal traders, hence safety is a major concern as they obstruct the movement of minibus taxis at times. Furthermore, Ngwelezane taxi rank also faces land availability problems to accommodate the expansion of the rank for the future *(City of uMhlathuze Public Transport Amenities Study: Public Transport Stop Assessment and Improvements Report, 2010)*

4.2.3.8 eSikhaleni

As seen in (figure 17) above and in (figure 25, p.84) below, there is adequate provision of public transport infrastructure in the form of ranks, transport routes and public transport stops, both formal and informal that accommodate both buses and minibus taxis. Currently, a number of safety concerns were identified, since public transport stops are situated on busy roads with narrow lay- byes as shown in (figure 25). A quarter of the public transport stops have all the elements (lay-byes, and shelters with fitted benches) and the rest are missing some or all. The minibus taxi rank has insufficient capacity to cater for the demand currently generated by passengers and the number of minibus taxis that are currently stationed at the rank at any given time. There are also insufficient ancillary facilities to accommodate the needs presented by informal traders and potential entrepreneurs, hence safety is a major concern as informal traders obstruct the movement of minibus taxis at times. Furthermore, eSikhawini taxi rank also faces land availability problems to accommodate the expansion of the rank for the future (*City of uMhlathuze Public Transport Amenities Study: Public Transport Stop Assessment and Improvements Report, 2010*).

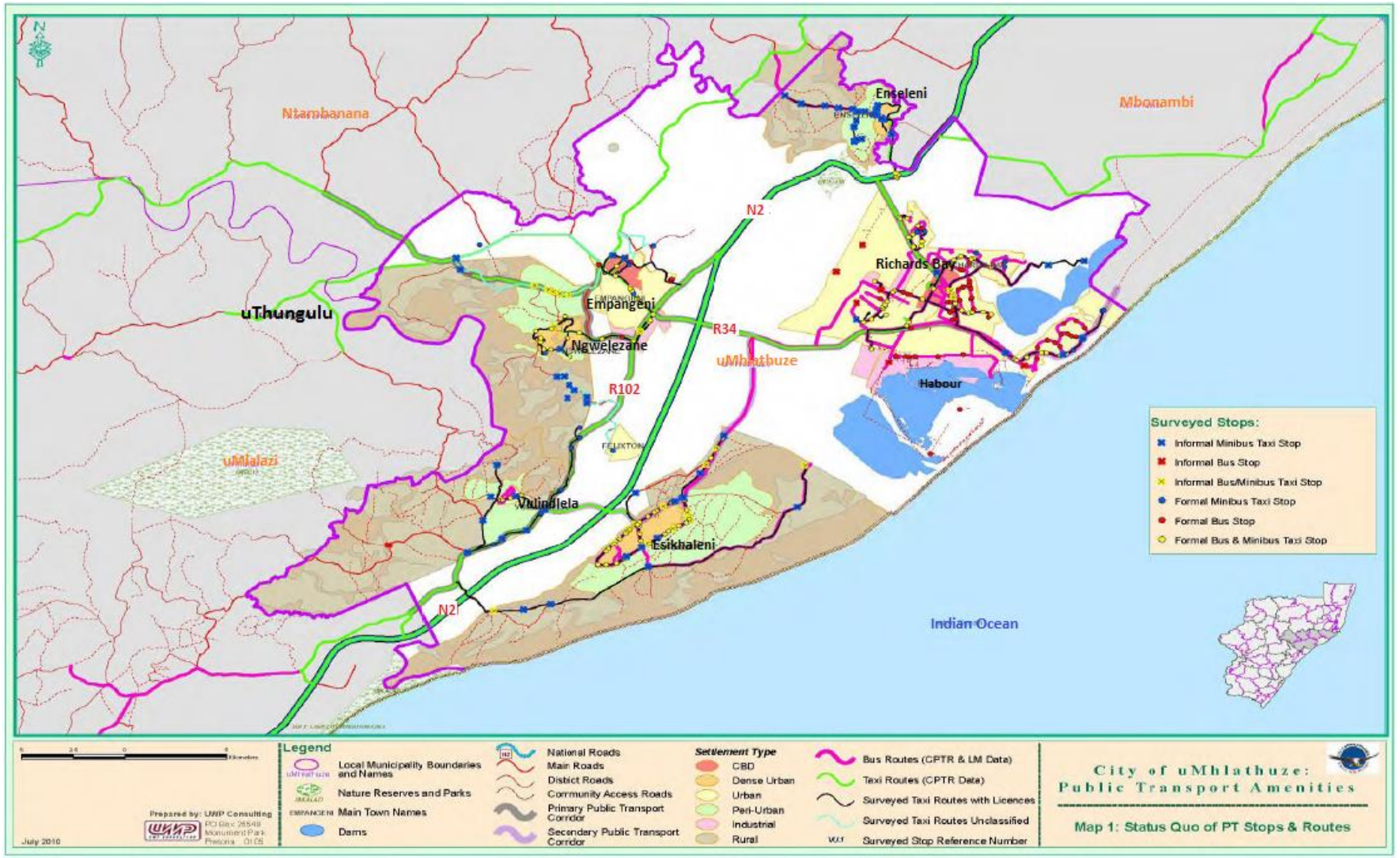
4.2.3.9 eNseleni

As seen in (figure 17) above and in (figure 26, p.85) below, there is adequate provision of public transport infrastructure in the form of ranks, transport routes and only informal public transport stops throughout eNseleni. The minibus taxi rank has insufficient ancillary facilities to accommodate the needs presented by informal traders and potential entrepreneurs *(City of uMhlathuze Public Transport Amenities Study: Public Transport Stop Assessment and Improvements Report, 2010*). In future, more attention is needed to improve the standards of the public transport stops and ranks as a whole. In addition, there is a need to develop the rank to ensure it can accommodate potential growth/ expansion that will arise due to the demand generated by commuters.

4.2.3.10 Vulindlela

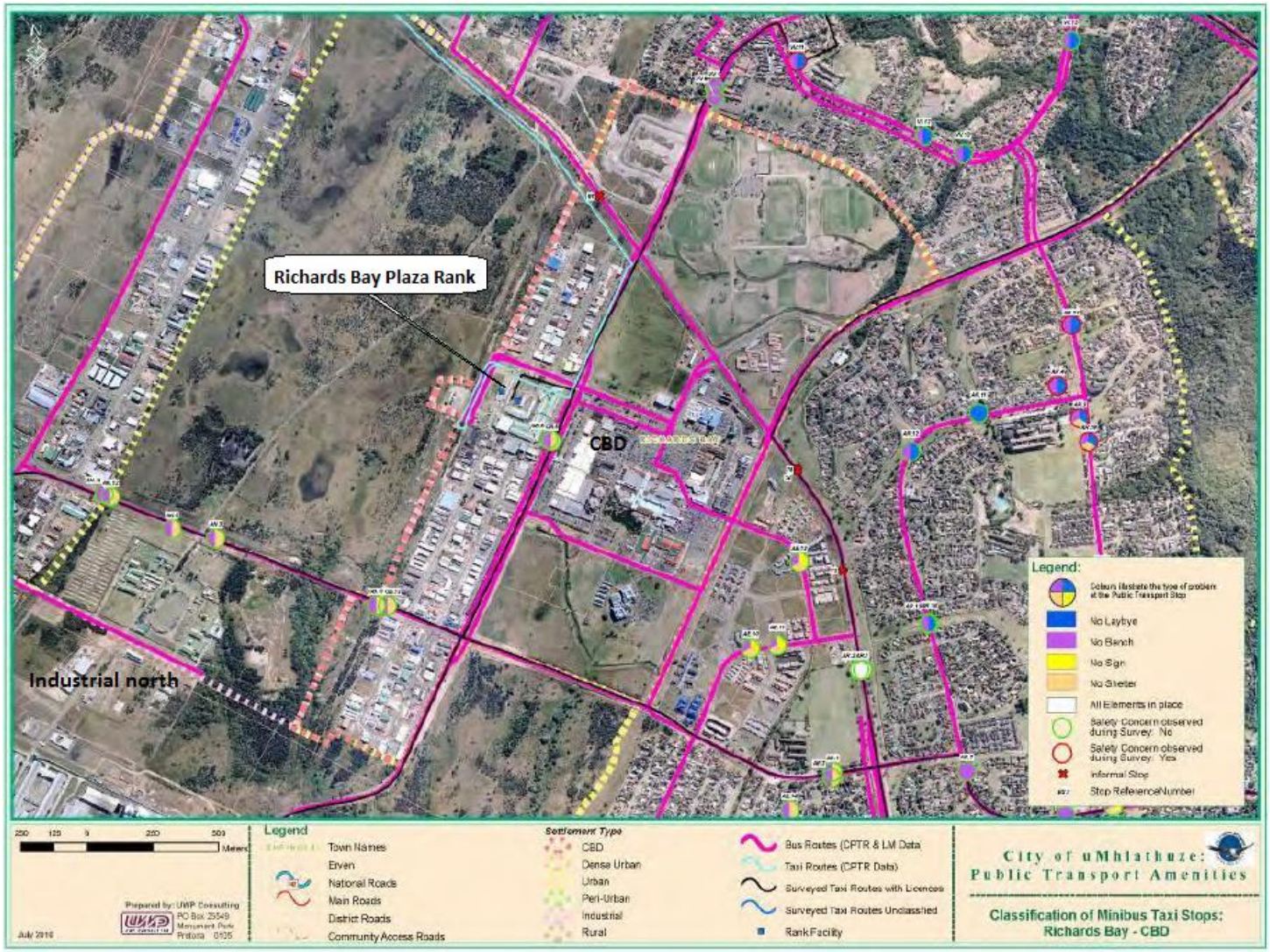
As seen in (figure 17) above and in (figure 27, p.86) below, there is adequate provision of public transport infrastructure in the form of ranks, transport routes and public transport stops both formal and informal that makes provision for buses and minibus taxis. There is a moderate transport network service and adequate provision of public transport stops. A significant percentage of the public transport public stops have all the elements in place (lay-bye, shelter fitted with benches); some will be missing an element. In addition, two stops in particular need urgent attention. These are situated close to the University of Zululand and consist only of lay-byes; they are in an unsafe location due to the bends in the road. The roads and lay-byes are spaced well to accommodate buses and minibus taxis. The minibus taxi rank has insufficient capacity to cater for the demand currently generated by passengers and the number of minibus taxis that are currently stationed at the rank at any given time. There are also insufficient ancillary facilities to accommodate the needs presented by informal traders and potential entrepreneurs, hence safety is a major concern as informal traders obstruct the movement of minibus taxi at times. Furthermore, Vulindlela taxi rank also faces land availability problems to accommodate the expansion of the rank for the future *(City of uMhlathuze Public Transport Amenities Study: Public Transport Stop Assessment and Improvements Report, 2010)*.

Figure 18: Transport routes, formal and informal public transport stops within uMhlathuze



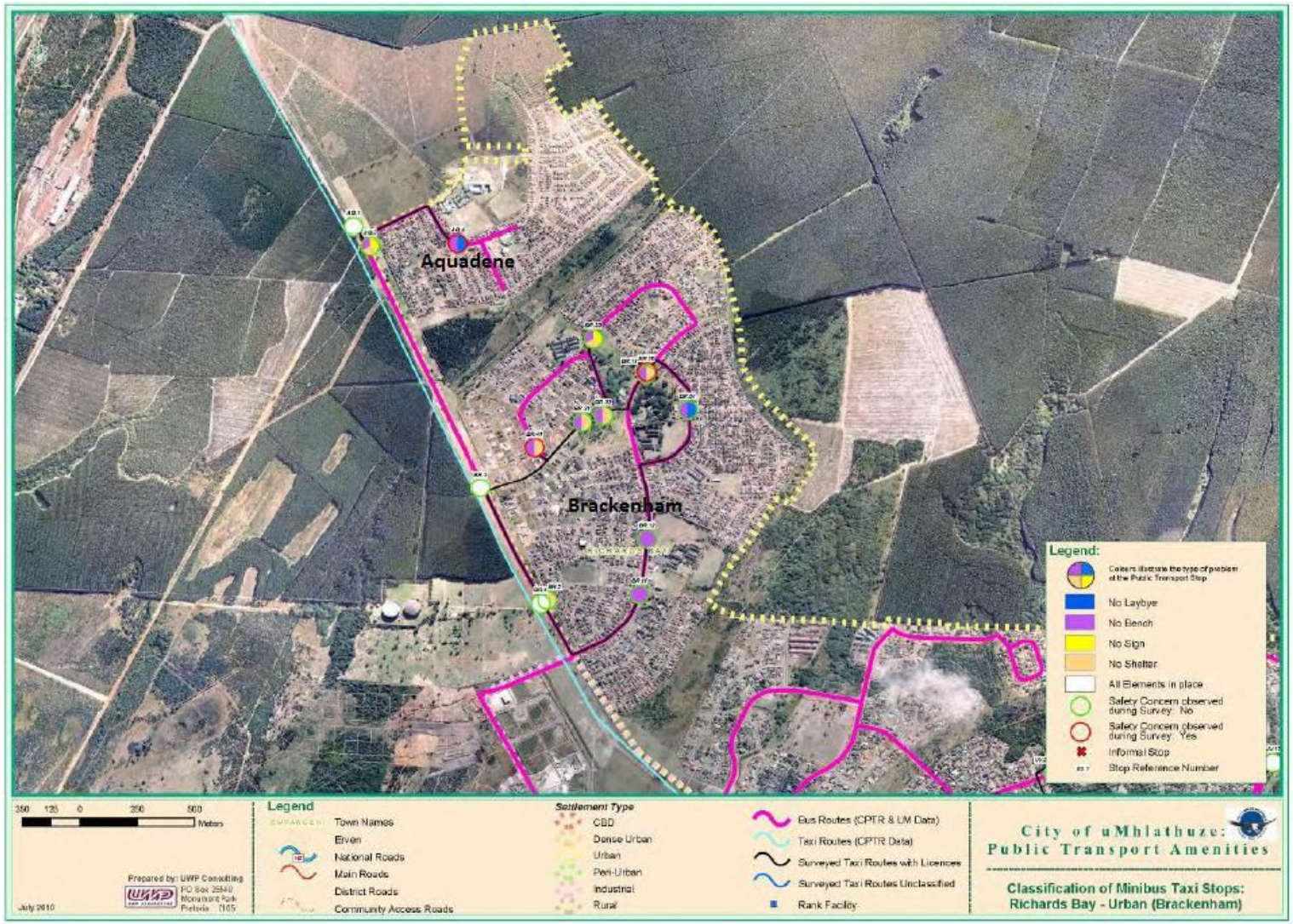
Source: *(City of uMhlathuze Public Transport Amenities Study: Public Transport Stop Assessment and Improvements Report, 2010)*

Figure 19: Status of public transport infrastructure in Richards Bay: CBD and the industrial north



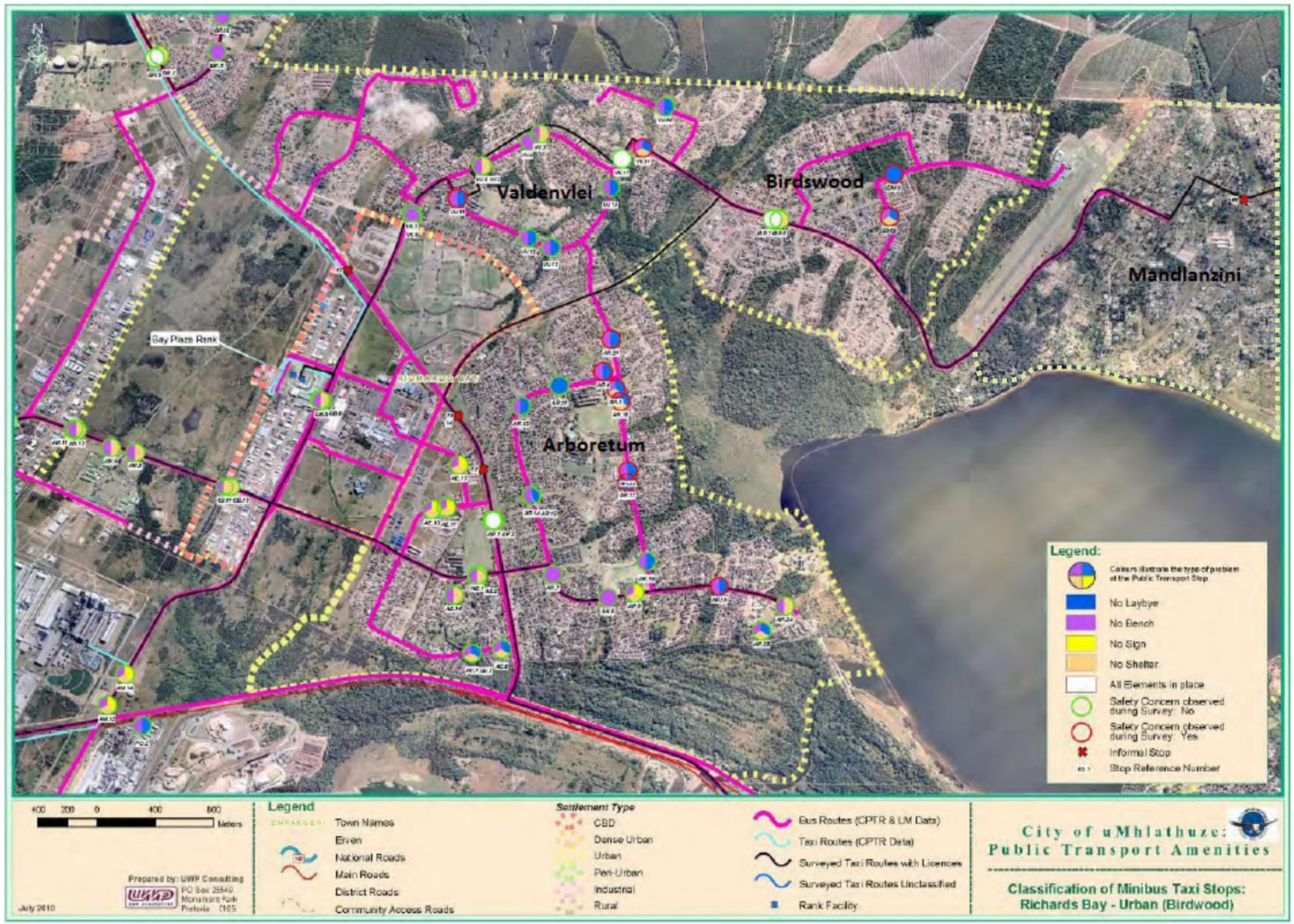
Source: *(City of uMhlathuze Public Transport Amenities Study: Public Transport Stop Assessment and Improvements Report, 2010)*

Figure 20: Status of public transport infrastructure in Richards Bay: Aquadene and Brackenham



Source: (*City of uMhlathuze Public Transport Amenities Study: Public Transport Stop Assessment and Improvements Report, 2010*)

Figure 21: Status of public transport infrastructure in Richards Bay: Birdswood, Valdenvlei, Arboretum and Mandlanzini

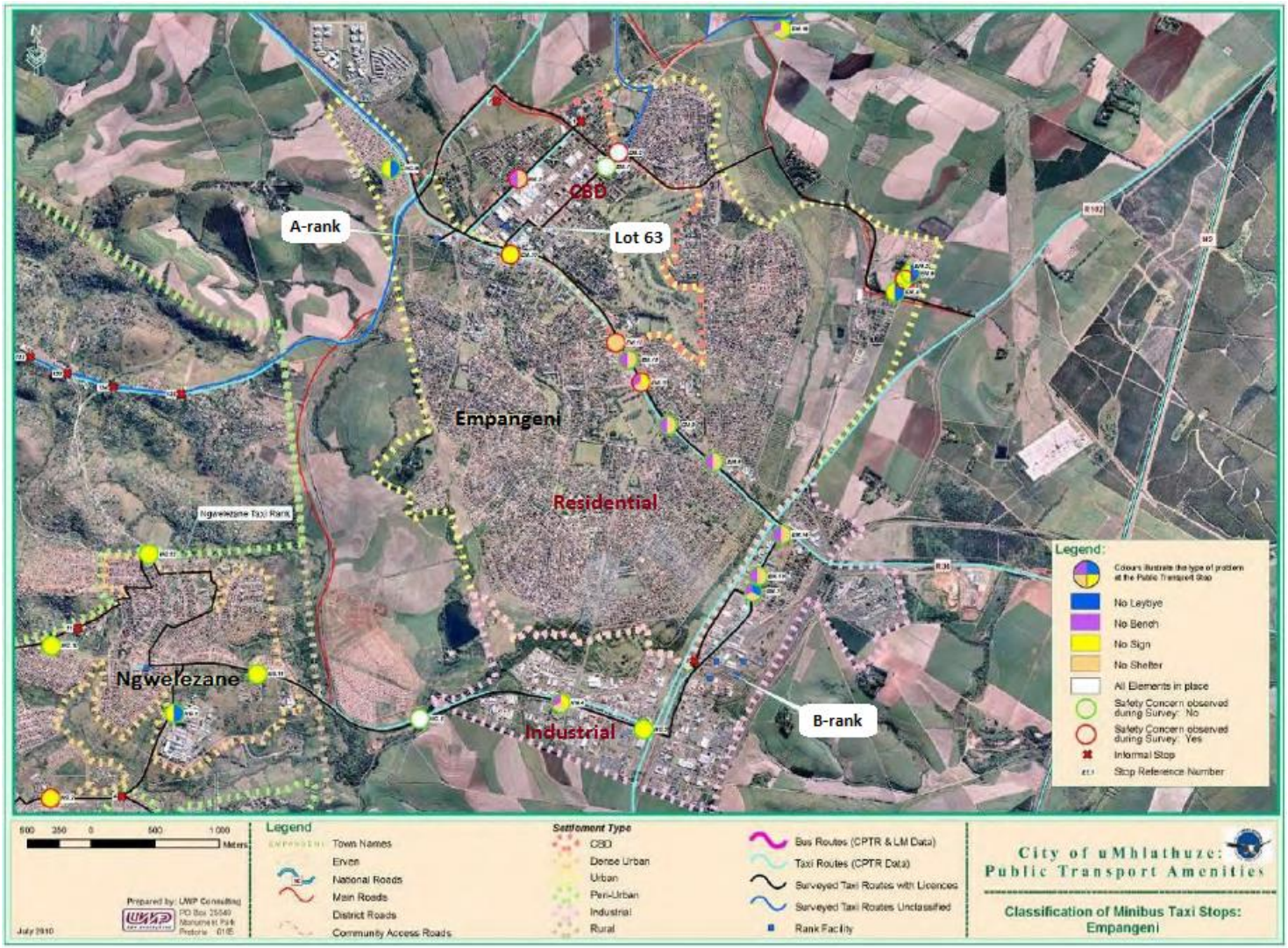


Source: *(City of uMhlathuze Public Transport Amenities Study: Public Transport Stop Assessment and Improvements Report, 2010)*

Figure 22: Status of public transport infrastructure in Richards Bay: Meerensee, Mzingazi and the industrial south

Source: *(City of uMhlathuze Public Transport Amenities Study: Public Transport Stop Assessment and Improvements Report, 2010)*

Figure 23: Status of public transport infrastructure in Empangeni CBD, residential and industrial area

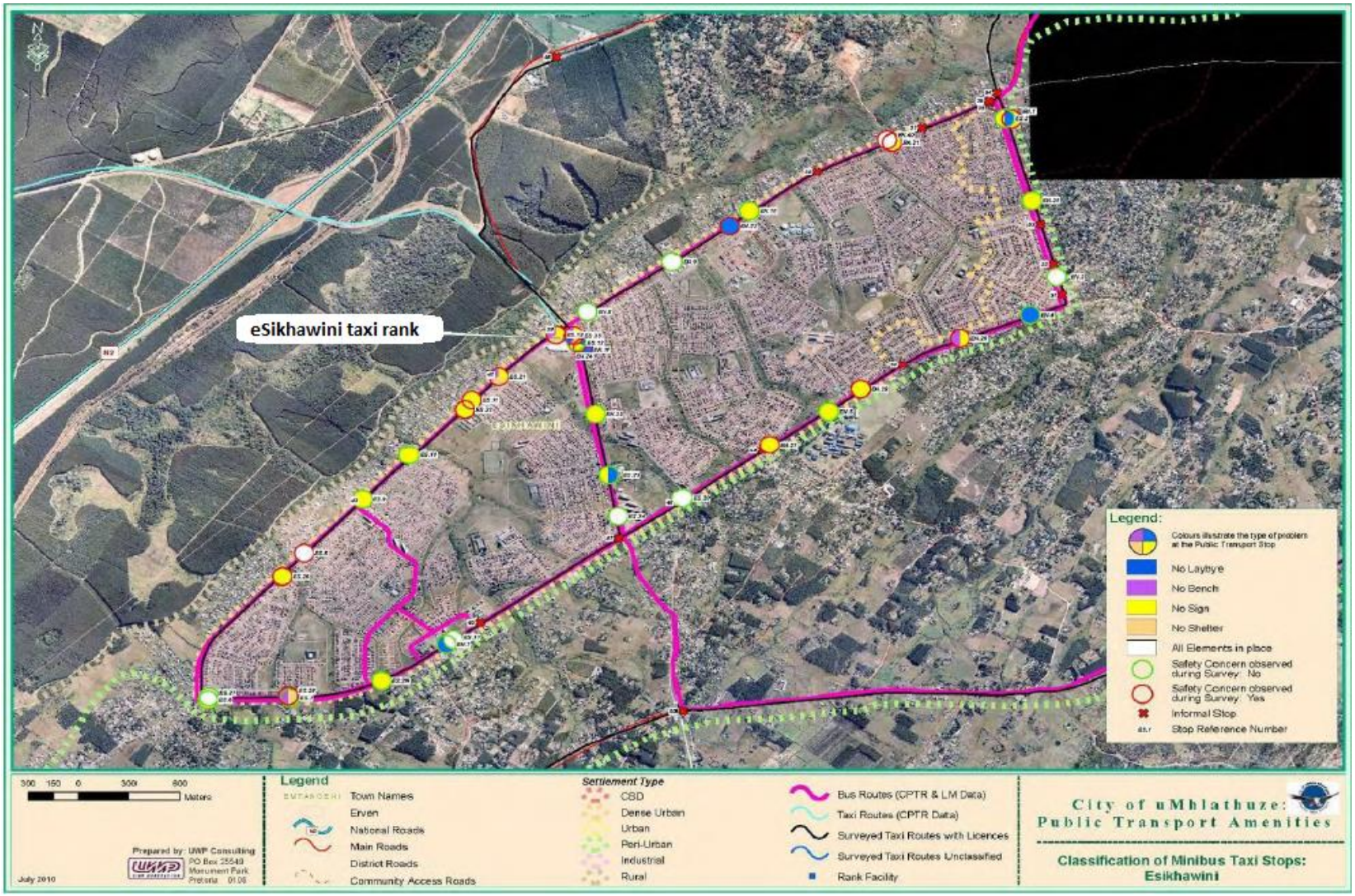


Source: *(City of uMhlathuze Public Transport Amenities Study: Public Transport Stop Assessment and Improvements Report, 2010)*

Figure 24: Status of public transport infrastructure in Ngwelezane

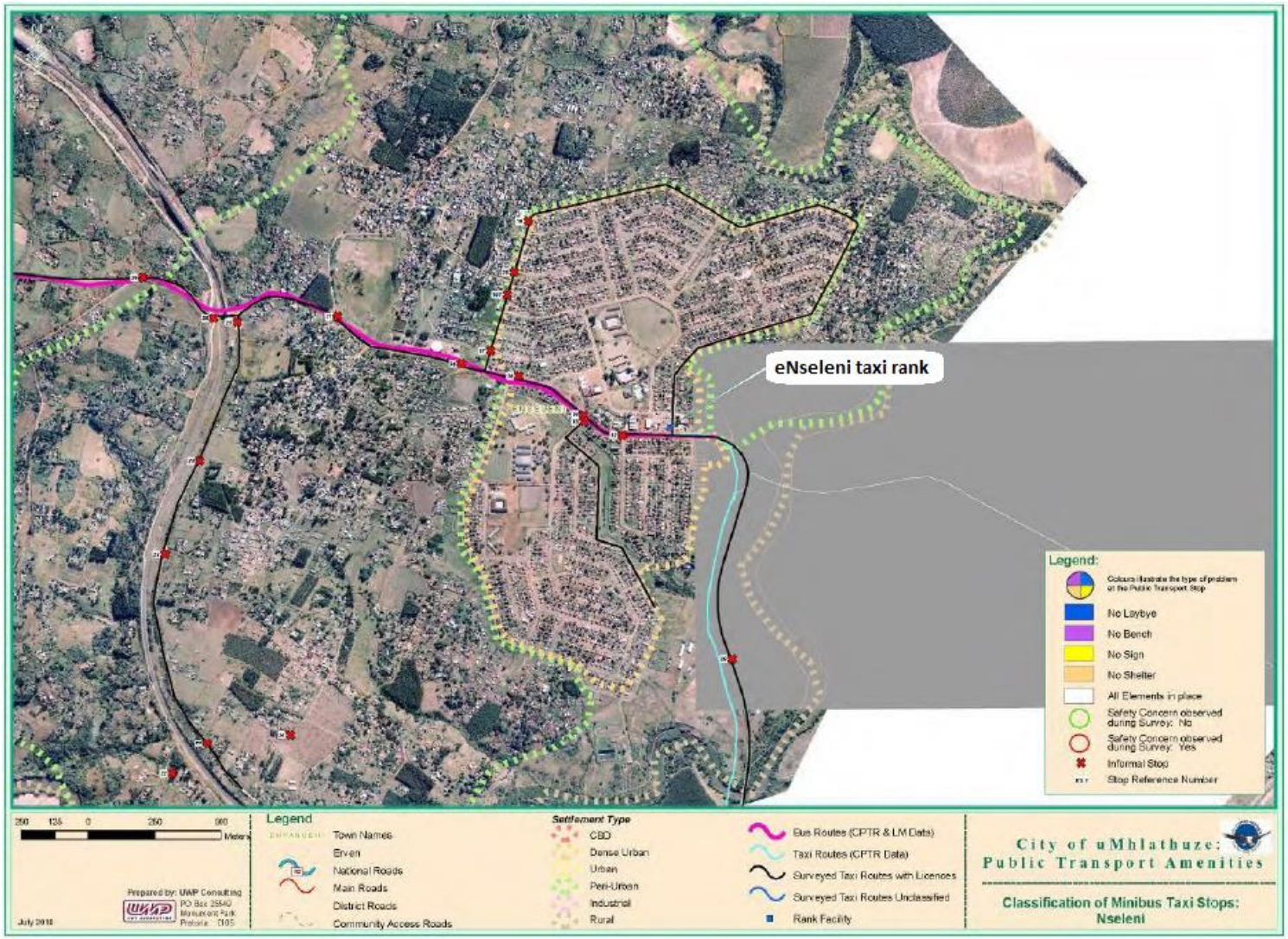
Source: *(City of uMhlathuze Public Transport Amenities Study: Public Transport Stop Assessment and Improvements Report, 2010)*

Figure 25: Status of public transport infrastructure in eSikhaleni formally known as (eSikhawini)



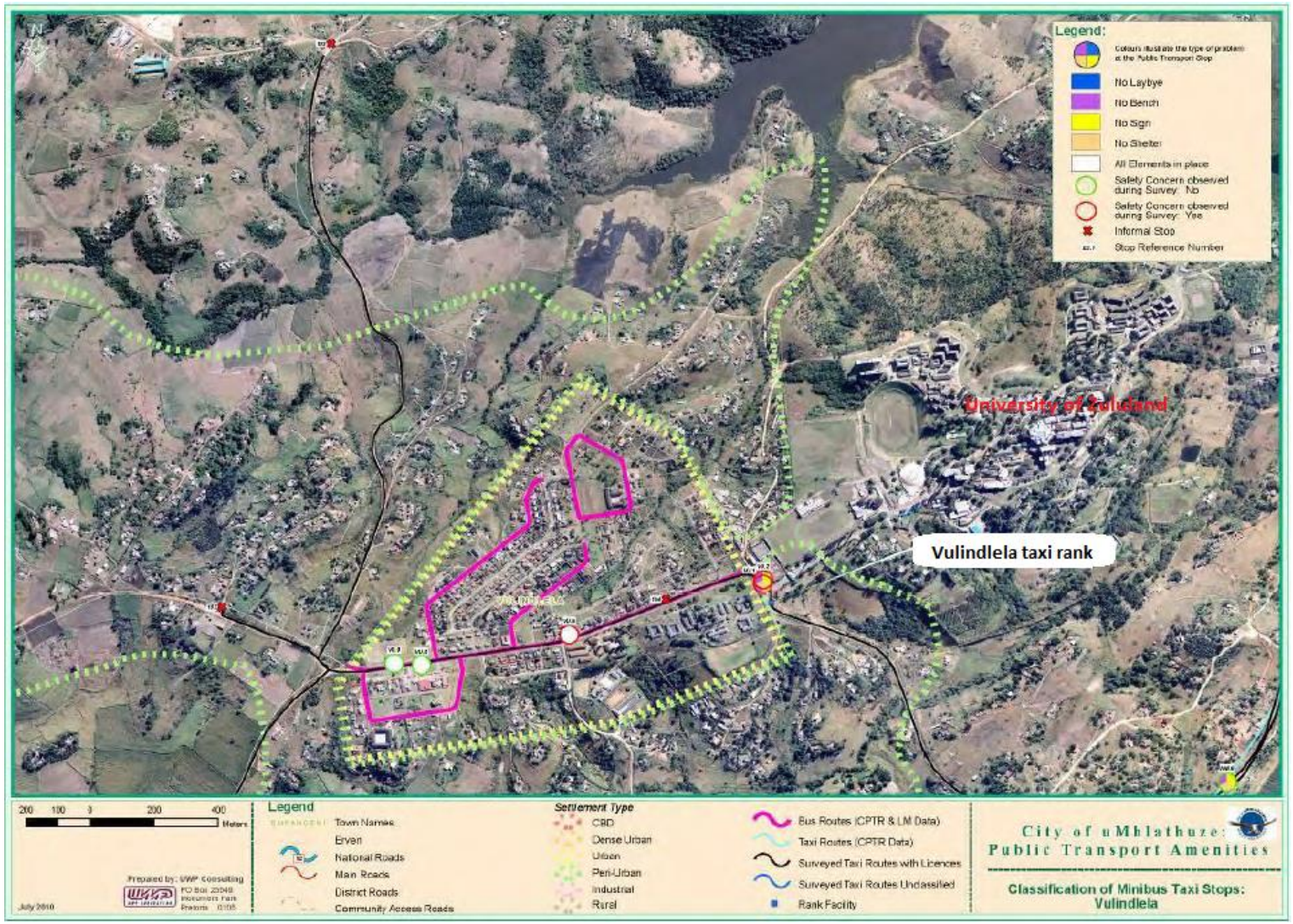
Source: *(City of uMhlathuze Public Transport Amenities Study: Public Transport Stop Assessment and Improvements Report, 2010)*

Figure 26: Status of public transport infrastructure in eNseleni



Source: *(City of uMhlathuze Public Transport Amenities Study: Public Transport Stop Assessment and Improvements Report, 2010)*

Figure 27: Status of public transport infrastructure in Vulindlela



Source: *(City of uMhlathuze Public Transport Amenities Study: Public Transport Stop Assessment and Improvements Report, 2010)*

4.2.4 Transport strategies put forward by the municipality and district municipality

4.2.4.1 uThungulu Public Transport Plan

As the Planning Authority, under *the National Land Transport Transition Act (No. 22 of 2000)* (NLTTA) and the *National Land Transportation Act, (No. 5 of 2009)* (NLTA) uThungulu District Municipality is responsible for the development of transport strategies and plans for the entire region. This involves the development of the *uThungulu Public Transport Plan (PTP)* to identify strategies to deal with the need for effective public transportation and which will satisfy the needs of the current and future population of the entire district. The vision of the plan encompasses the "development of a safe, efficient and accessible transport system to the community of uThungulu that provides basic mobility to services and that will add to sustainable development and poverty alleviation" *(uThungulu District Municipality Transport Plan: Review of Public Transport Plan (PTP), 2010:7)*. To achieve the vision of the plan, these issues need to be addressed:

- Accessibility to public transportation for all;
- The ability to access economic centres;
- Development and maintenance of transport routes and facilities; and
- Ensuring efficient public transportation in urban and rural areas

In the uThungulu District Municipality's IDP it is highlighted that there is a need to improve rural and urban road networks to ensure improved linkages between settlements, nodes and municipal centres. Hence the strategy to ensure this is to implement rural and urban transport services and infrastructure strategy. The strategy needs to promote effective and efficient public transportation systems linked to multi-modal facilities and to improve transportation linkages to nodes. These strategies will enable the district municipality to fulfil its vision as "An economically viable district with effective infrastructure that supports job creation through economic growth, rural development and promoting of our heritage" *(uThungulu District Municipality: Integrated Development Plan 2012/13-2016/17 2nd Review 2014/15, 2014:21)*.

4.2.4.2 uMhlathuze Local Municipality IDP: Vision and policy directive

The vision of the municipality states that it aims to be "The Port City [of uMhlathuze] offering improved quality of life for all its citizens through sustainable Development" (*uMhlathuze Local Municipality: Final Interated Development Plan Review 2015/2016, 2015:16)*. The vision of uMhlathuze Local Municipal is linked to the goals that the district municipality has for the uThungulu region, but also to the view that the municipality sees itself as a future city (metro)

within KwaZulu-Natal, hence the series of plans developed speak to attaining this goal which involves:

- Provision of public transport facilities and infrastructure in the rural and urban areas;
- Promoting economic growth by the successful delivery of capital infrastructure projects;
- Promoting economic growth by providing skills empowerment to the unemployed;
- Promoting economic growth by providing employment opportunities for Women and Youth; and
- Developing a Comprehensive Integrated Transport Plan (CITP) for uMhlathuze.

It is the responsibility of the municipality to cater to the needs and issues prevalent in society, according to Chapter 5 section 26 of the *Municipal Systems Act (No. 32 of 2000*) and to see to the development of an IDP, which is a strategic five-year development plan for the municipality. Hence, the development of adequate public transportation, routes and public transport facilities has far-reaching consequences for the people of the municipality and economic development within uMhlathuze going forward.

4.2.4.3 Spatial Development Framework

The Spatial Development Framework is the strategic development directive established from the IDP of uMhlathuze and the process in developing the development plan for the municipality. The strategies established in the Municipality's IDP are put in a spatial context with the development of the SDF. The MSA details the following goals for a SDF:

- Strategic guidance on the location and nature of development;
- Set out basic guidelines for land-use management;
- Discourage low-density urban sprawl;
- Generate social and economic opportunities;
- Promote access to opportunities; and
- Maximize resource efficiency by: (1) protecting sensitive environments, (2) protecting productive agricultural land and (3) enhancing the regional identity and character.

(uMhlathuze Local Municipality: (Draft) Spatial Devlopment Framework Review 2013/2014, 2014:7).

The strategies that have been brought forward in the municipality SDF are the same as the ones highlighted in the IDP regarding public transportation and overall development. Hence the focus is to develop ideals that any development should embody. As stated in the SDF, the role public transport facilities plays in enhancing urban efficiency should not be overlooked as it integrates a variety of land-uses. Additionally, integrated communities need to be developed to the point where access to efficient public transport is possible. Furthermore, future development should not just satisfy current, but also future needs of the Municipality.

Development should encourage a sense of community by providing transport corridors that speak to integrating neighbourhoods, also open space systems that are accompanied by mixed-use development. Hence better accessibility promotes economic growth as it is the catalyst in economic development *(uMhlathuze Local Municipality: (Draft) Spatial Devlopment Framework Review 2013/2014, 2014).*

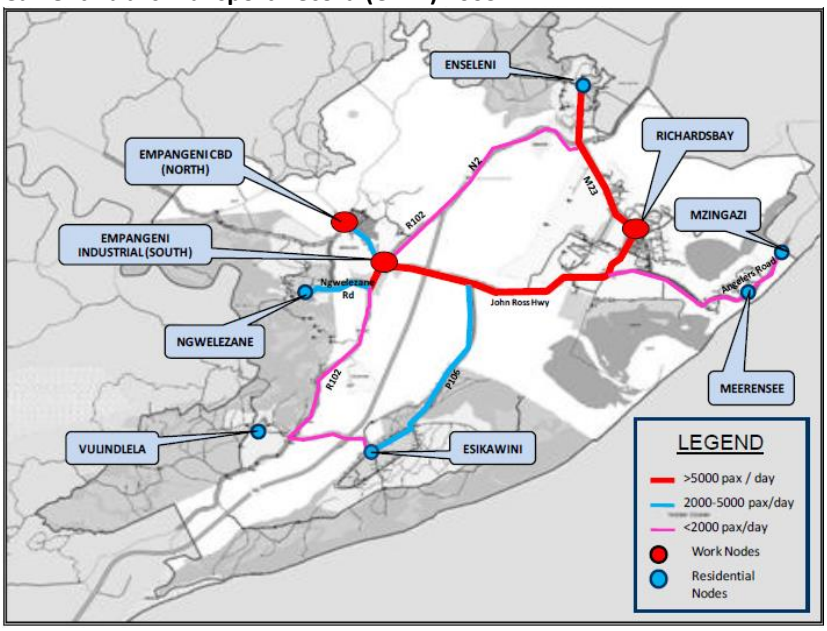
4.2.5 The role minibus taxis play within the municipality and the infrastructure they make use of

Minibus taxis are an important mode of transportation and provide an essential service to the public of uMhlathuze. They are accessible to people due to their flexible nature of operation and tend to operate in areas where no formal mode of transportation is designated. With the growing need for accessible, reliable and efficient public transportation, the minibus taxi could alleviate the transportation problems faced by uMhlathuze Local Municipality with proper investment and by developing the industry to reach its full potential. In addition, this should take precedence over other initiatives due to the fact that it is the only mode capable of addressing the needs of the fragmented spatial structure of the municipality. Moreover, the minibus taxi could help to bridge the socio-economic gap established during the colonial and apartheid eras in South Africa. The minibus taxi industry provides access for learners living far away from schools who would otherwise drop out due to the distance between education facilities and their homes. In addition it caters for those seeking employment and access to other opportunities and facilities in commercial centres. It should be mentioned that the high dropout rate is not only due to distances between home and educational facilities, it is just one of many reasons.

As it stands, the minibus taxi industry is the most productive mode of transport right across the municipality. From a national perspective, this mode of transport is overlooked, but undertakes majority of the public transport trips on a daily bases. The potential it has and the difference the industry could make is taken lightly. The minibus taxi industry presents a solution which has been in existence for a long time. The core of the infrastructure required to implement an efficient and accessible mode of transport is already in existence, but needs to be improved to cater for the present and future transport needs of the municipality. In (figure 6, p.46) above, the impact and ripple effect of an efficient mode of transport is demonstrated. Coppola and Papa (2013) Smith et al. (2012) Venter and Cross (2011) Preston and Rajé (2007) and Verster (2003) comment on the importance of mobility and accessibility, and the profound impact these concepts have on an individual and a community as a whole in addressing social exclusion and other social ills.

Looking at (figure 28), a number of trips between residential nodes (eNseleni and Esikhaleni) to either economic centres, Richards Bay or Empangeni, between peak hours as well as the economic nodes are shown. Public transportation is at the centre of the travel needs of the public during peak hours. Moreover, with a public transport system that is accessible to all in areas that face a number of transport issues in the municipality, this would vastly increase mobility for all.

Figure 28: Daily volume of public transport passenger extracted from Current Public Transport Record (CPTR) 2003



Source: (*City of uMhlathuze Public Transport Amenities Study: Public Transport Stop Assessment and Improvements Report, 2010*)

4.3 Summary of the chapter

The difficulties confronted by uMhlathuze Local Municipality centred on public transportation are not unique to the municipality, as this is the case in many municipal areas across South Africa. Access to efficient public transport should not be limited to major cities in South Africa, but should be enjoyed by all. Municipalities like uMhlathuze should experience the same privileges enjoyed by others. Given the spatial makeup of South African cities, towns and rural areas efficient public transportation is needed to offset the setback standing in the way of many individuals.

A public transport system that operates appropriately will aid in addressing the social ills attributed to the decisions of the past which still affect many in post-1994 South Africa. Everyone should benefit equally from efficient public transportation regardless of where they are located. Hence uMhlathuze Local Municipality needs to identify better ways to deal with the wrongs of the past and to plan for the future, particularly as regards the role public transportation will play in the whole process.

Chapter 5: Data Presentation and Analysis

5.1 Introduction

The aim of the study was to evaluate the possibility of an efficient and accessible public transport system, which will improve mobility and lead to addressing the social ills that are caused by the lack of or inefficient public transport and shortfalls that are the result of apartheid spatial engineering. The following chapter presents the data that qualifies the statements made in chapter 1 and the rest of the dissertation, particularly the hypothesis. The hypothesis of the study attest that public transportation has been a problem in this country and it could be argued that it was never planned properly. The transport plans that the government is currently implementing for major cities in the country do not cater to the needs of small or rural municipalities and, by not doing something now, the future transport needs of small municipalities will not change and people will still be affected by inefficient public transportation or lack thereof.

The study attempted to identify the minibus taxi industry's role in alleviating the problems associated with public transportation within the Municipality. Identifying the taxi industry as a possible mode for the future will see the implementation of a cost effective system that would not put strain on the Municipality financially. In providing for the need, consideration must be given to the size of the Municipality spatially, and the size and dispersion of the population. Public transportation is a major problem, affecting people of this Municipality and the country at large. The ones most hit by ineffective public transportation are the poor, who live distances from work and centres of economic activity. In addition, this contributes to the socio-economic shortfalls experienced by the vulnerable individuals of the Municipality. Mobility, accessibility and efficiency of public transport are essential to reverse the effects of apartheid spatial engineering. The broad themes highlighted that express the current situation are, mobility and accessibility, efficiency, social exclusion and socio-economic sustainability. These themes express the shortfalls of public transportation and the spatial structure of the Municipality, but they also highlight related social problems.

The findings and analysis in the research presents both quantitative and qualitative data in this chapter. The first section looks at the efficiency of the public transport operation and dynamics between driver and passenger, determining whether there is reason to change. The second section identifies the views of the respondents to the issues of accessibility and mobility in relation to what is expressed in published material. The third section looks at socio-economic sustainability and, much like the second section, analyses the views of the respondents in relation to what is mentioned in existing published material. The last section

looks at the effects of social exclusion, particularly the effects of apartheid's spatial engineering on the spatial landscape of the Municipality. In addition, what the respondents have to say regarding this issue and how public transport could be used as a catalyst for change are examined.

5.2 Public transport conditions: their influences and impact

Public transportation in the country is affected by a vast number of factors; notably the manner in which the physical terrain has been planned historically and development that has reinforced the inequality of old political dispensation. This not only affects how these transport systems function, but how they impact on the lives of the people who occupy these spaces. Public transportation plays an important role in providing assistance to ensure that people keep up with the required pace of modern society. In the same vein, an ineffective or inefficient public transport system affects one's ability to be a productive member of society. The ideal would be that public transportation and land-use is planned with a mind-set which considers who makes use of it and what their needs are. The goal is to make the lives of commuters easier through efficient and effective public transportation. The themes that speak to the problems articulated are as follows: mobility and accessibility, efficiency, social exclusion and socio-economic sustainability.

5.2.1 Efficiency of the taxi industry: evaluating current operation and gaps in transformation

5.2.1.1 The level of efficiency of the minibus taxi industry

Transport efficiency refers to the ability to move from one location to other with relative ease within a certain timeframe, also taking into consideration the operational factors that make up the overall performance the mode of the transport system undertakes to reach a set destination (Li et al., 2013; Sami et al., 2013). As stated by Costa et al., (1997) "similar to any social service, efficiency and performance measures in public transport are necessary to monitor progress toward a result or goal" (cited in Abreha, 2007:11). In this case, observing how quickly the number of minibus taxis move out of the taxi rank from the time they became stationary waiting for passengers to enter before departure, provides one kind of measure.

The table below represents the number of minibus taxi on the selected routes, the cost of travel and the distance from starting point to destination. The data represent the number of minibus taxis counted on the days in question. In addition, the average in (graphs 3-6) below represents the movement of minibus taxis for each selected route over the period during which the study was conducted, as they depart the taxi rank during peak and off-peak times.

The author noted that it was a challenge to keep track of all the minibus taxis that run on the routes selected, as stated by respondent 2: "…take for example eSikhawini, according to our data, it has got 180 taxis, taxis with valid operating licences, if you go the eSikhawini there is about 600 taxis" *(Respondent 2, Public Transport Facilities and Operations Coordination Manager, 2015)*. These taxis represent those with and without valid operating licences. It is hard to keep track of the exact number of minibus taxis and therefore the recorded figures only represent the number of taxis counted on the days in question. Table 14 below indicates the taxi fare for the selected routes, hence indicated the cost of travel for routes monitored. Passengers have no control over when and how taxi fares increase. Taxi owners in collaboration with the taxi associations dictate the prices, which is depended on market pressures (inflation, cost of fuel etc.).

Table 14: Travelling to and from Richards Bay Plaza (taxi rank)

	Aquadene/ Brackenham	eNseleni	Mandlanzini	eSikhaleni	Empangeni
Number of taxis	12	25	23	30	33
Cost of travelling	R9	R10	R10	R14	R14
Distance	5.6km	11km	7.7km	27km	16km
Time	7 minutes	13 minutes	11 minutes	23 minutes	16 minutes

Source: Author, 2015

As illustrated in the (tables 15-20) below, minibus taxi operation is irregular. On certain days, depending on the location and the routes you are headed in, the wait is relatively short during peak time and during off-peak time (midday) the wait is much longer overall on some routes. In one instance, the wait could be relatively short, regardless of peak or off-peak times. Currently, minibus taxis are performing below 50% capacity, considering the number of minibus taxis stationary at the Richards Bay Plaza for each of the selected shorter routes on average, considering the overall operational time wasted, as well what is reflected in (graphs 3 and 4) below. This is far below their potential and discourages many from making use of public transportation in some instances. The goal is to encourage more people to make use of public transportation, hence the need to improve the manner in which minibus taxis operate. This would create a level of consistency in between peak and off-peak times. Furthermore, unlike other modes of transport that offer improved efficiency, with minibus taxis, most of the infrastructure needed is already in place, and it is cost-effective to implement across the board and not in select areas only.

The one thing that deters many from making use of minibus taxis is the long wait with no guarantee of one ever reaching a public transport stop within a certain time-frame. Hence, determining a suitable timeframe for local routes would not only improve efficiency, but would encourage more people to make use of public transportation in the long run. The

municipality's long-term vision is for uMhlathuze to offer "improved quality of life for all its citizens through sustainable development" *(uMhlathuze Local Municipality: Final Interated Development Plan Review 2015/2016, 2015:16)*.

Public transportation is an essential part of fulfilling the vision set by the Municipality considering its spatial structure. Improving public transportation would have far-reaching consequences for the municipality long-term that would benefit all located within the Municipal boundary, particularly by removing the physical stumbling-blocks inherited from the past. By simply changing the manner in which the minibus taxis operate, through moving continuously around from stop to stop on the different routes, much could be done to improve the situation, in addition, ensuring that, at any time of the day, while minibus taxis are still operational, commuters can expect a minibus taxi to reach a public transport stop within a particular time frame along minibus taxi routes.

Table 15: Monitoring the movement of minibus taxis from the Richards Bay Plaza (taxi rank)

Day: Monday 10 August	**Time over 2 hours for both peak and off-peak traffic**							
Location/Route:	**Peak time 30 minute intervals (morning: 7:00-9:00)**				**Off-peak time 30 minute intervals (afternoon: 12:00-14:00)**			
	7:00-7:30	**7:30-8:00**	**8:00-8:30**	**8:30-9:00**	**12:00-12:30**	**12:30-13:00**	**13:00-13:30**	**13:30-14:00**
Aquadene/Brackenham	2	1	1	0	1	0	1	1
Mandlanzini	1	3	2	2	1	0	2	1
eNseleni	3	1	2	0	2	1	2	1
eSikhaleni	2	1	0	2	0	2	1	3
Empangeni	3	0	2	3	2	0	2	1

Source: Author, 2015

Table 16: Monitoring the movement of minibus taxis from the Richards Bay Plaza (taxi rank)

Day: Wednesday 12 August	**Time over 2 hours for both peak and off-peak traffic**							
Location/Route:	**Peak time 30 minute intervals (morning: 7:00-9:00)**				**Off-peak time 30 minute intervals (afternoon: 12:00-14:00)**			
	7:00-7:30	**7:30-8:00**	**8:00-8:30**	**8:30-9:00**	**12:00-12:30**	**12:30-13:00**	**13:00-13:30**	**13:30-14:00**
Aquadene/Brackenham	1	1	0	1	1	0	0	1
Mandlanzini	3	2	1	0	2	1	2	2
eNseleni	2	3	2	1	3	2	1	1
eSikhaleni	1	2	3	2	0	0	2	2
Empangeni	4	1	3	1	2	0	0	2

Source: Author, 2015

Table 17: Monitoring the movement of minibus taxis from the Richards Bay Plaza (taxi rank)

Day: Friday 14 August	Time over 2 hours for both peak and off-peak traffic							
Location/Route:	Peak time 30 minute intervals (morning: 7:00-9:00)				Off-peak time 30 minute intervals (afternoon: 12:00-14:00)			
	7:00-7:30	7:30-8:00	8:00-8:30	8:30-9:00	12:00-12:30	12:30-13:00	13:00-13:30	13:30-14:00
Aquadene/Brackenham	1	1	1	1	2	0	1	1
Mandlanzini	2	1	3	0	2	1	3	2
eNseleni	0	3	3	2	1	0	1	1
eSikhaleni	4	2	2	1	0	2	1	1
Empangeni	2	3	0	2	1	2	1	3

Source: Author, 2015

Table 18: Monitoring the movement of minibus taxis from the Richards Bay Plaza (taxi rank)

Day: Monday 24 August	Time over 2 hours for both peak and off-peak traffic							
Location/Route:	Peak time 30 minute intervals (morning: 7:00-9:00)				Off-peak time 30 minute intervals (afternoon: 12:00-14:00)			
	7:00-7:30	7:30-8:00	8:00-8:30	8:30-9:00	12:00-12:30	12:30-13:00	13:00-13:30	13:30-14:00
Aquadene/Brackenham	0	1	1	0	1	1	1	1
Mandlanzini	1	3	0	2	3	1	1	3
eNseleni	4	3	2	2	0	2	1	2
eSikhaleni	1	4	2	1	2	1	0	2
Empangeni	1	3	2	2	2	0	1	2

Source: Author, 2015

Table 19: Monitoring the movement of minibus taxis from the Richards Bay Plaza (taxi rank)

Day: Wednesday 26 August	Time over 2 hours for both peak and off-peak traffic							
Location/Route:	Peak time 30 minute intervals (morning: 7:00-9:00)				Off-peak time 30 minute intervals (afternoon: 12:00-14:00)			
	7:00-7:30	7:30-8:00	8:00-8:30	8:30-9:00	12:00-12:30	12:30-13:00	13:00-13:30	13:30-14:00
Aquadene/Brackenham	1	1	1	0	2	1	1	0
Mandlanzini	3	2	1	1	3	0	2	2
eNseleni	2	2	0	1	1	3	0	2
eSikhaleni	3	0	2	2	1	2	0	1
Empangeni	3	2	2	1	0	1	1	1

Source: Author, 2015

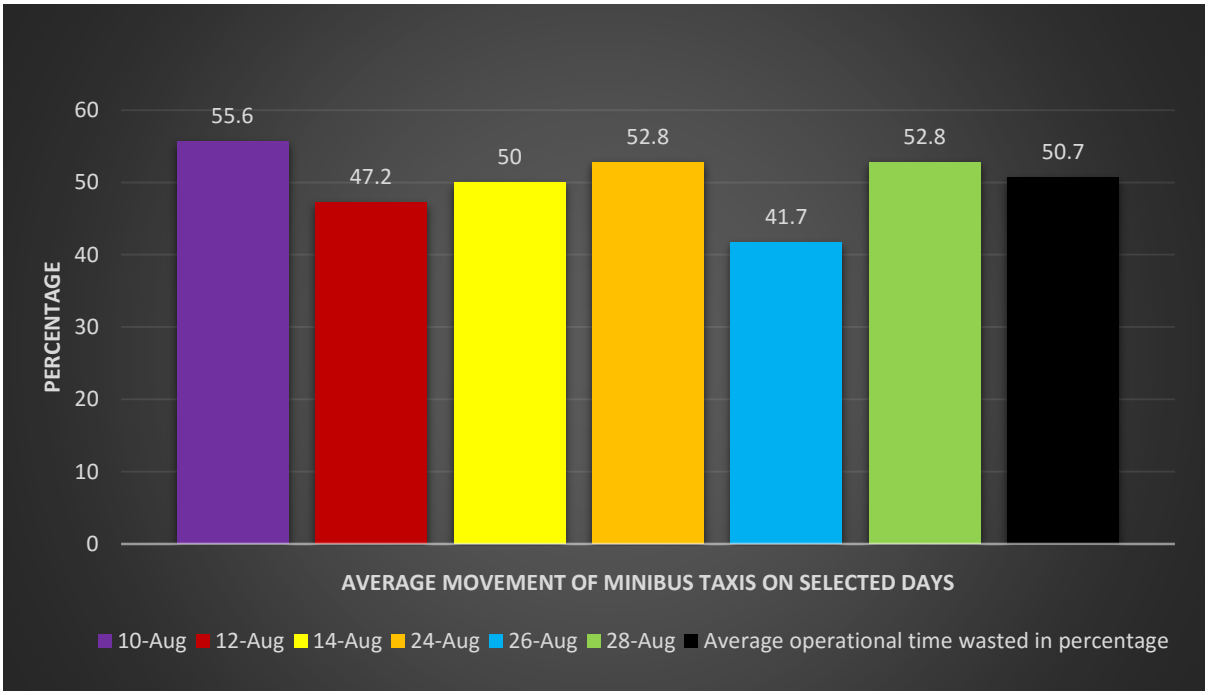
Table 20: Monitoring the movement of minibus taxis from the Richards Bay Plaza (taxi rank)

Day: Friday 28 August	Time over 2 hours for both peak and off-peak traffic							
Location/Route:	Peak time 30 minute intervals (morning: 7:00-9:00)				Off-peak time 30 minute intervals (afternoon: 12:00-14:00)			
	7:00-7:30	7:30-8:00	8:00-8:30	8:30-9:00	12:00-12:30	12:30-13:00	13:00-13:30	13:30-14:00
Aquadene/Brackenham	0	2	1	1	1	2	0	0
Mandlanzini	4	1	1	2	0	2	2	2
eNseleni	1	5	0	1	2	1	2	2
eSikhaleni	0	3	3	1	1	1	2	1
Empangeni	3	0	1	2	1	0	2	1

Source: Author, 2015

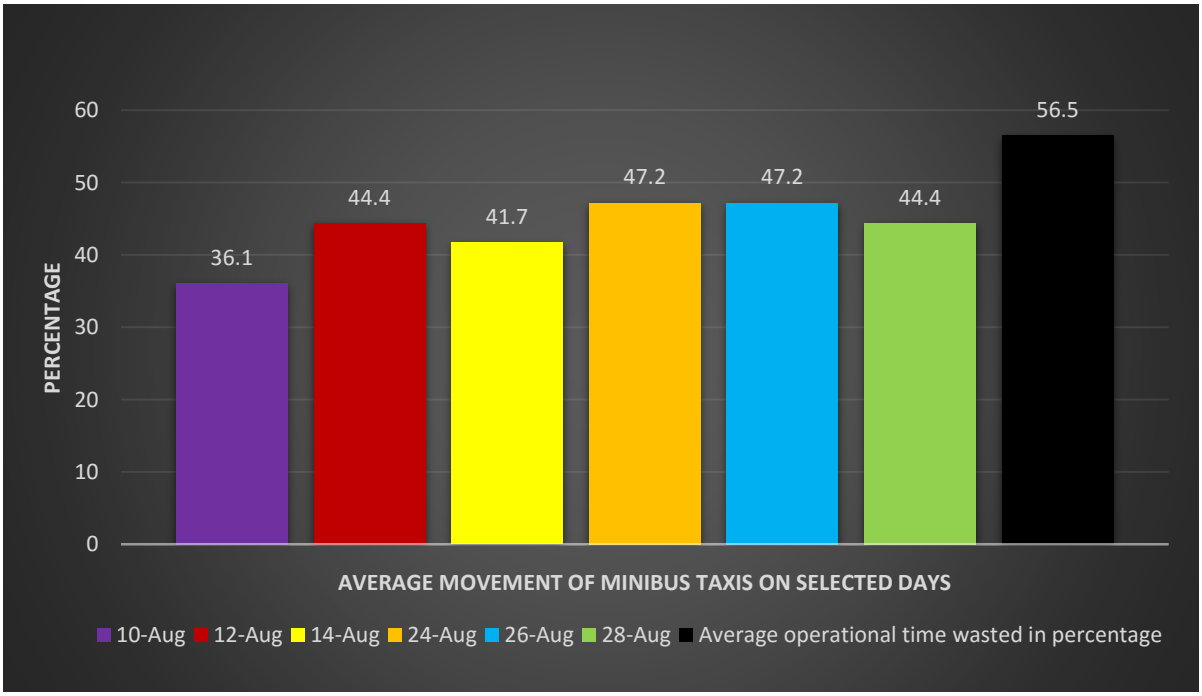
The ideal would be that, for distances between 0-13km, the required time for it to take a minibus taxi to depart the taxi rank should be 10 minutes. For distances between (14-30km), it should take a minibus taxi 15 minutes to depart the taxi rank, regardless of whether the minibus taxi is filled to capacity or not for any distance. Given the departure times of both shorter (0-13km) and longer (14-30km) distances, over a two hour period, minibus taxis should have completed 36 trips in the short distances (0-13km). In addition, minibus taxis should have completed 16 trips on the longer distances (14-30km), only focusing on the routes surveyed for both distances respectively. Thus, as seen in (graphs 3 and 4) below, for shorter distances (0-13km), on average, the minibus taxi is performing below 50% of operational capacity considering the average operational time wasted (missed opportunities in minibus taxi operation) overall (50.7% and 56.7%) during peak and off-peak time respectively. On the longer distances there is an improvement where, during peak time, the average operational time wasted is 6.3% as seen in (graph 5) below. Furthermore, during off-peak time the average operational time wasted is 35.4% as seen in (graph 6) below. Hence minibus taxis perform better over the longer distances (14-30km) than they do over the shorter distances (0-13km).

Graph 3: Average percentage minibus taxi performance during peak time: 0-13km



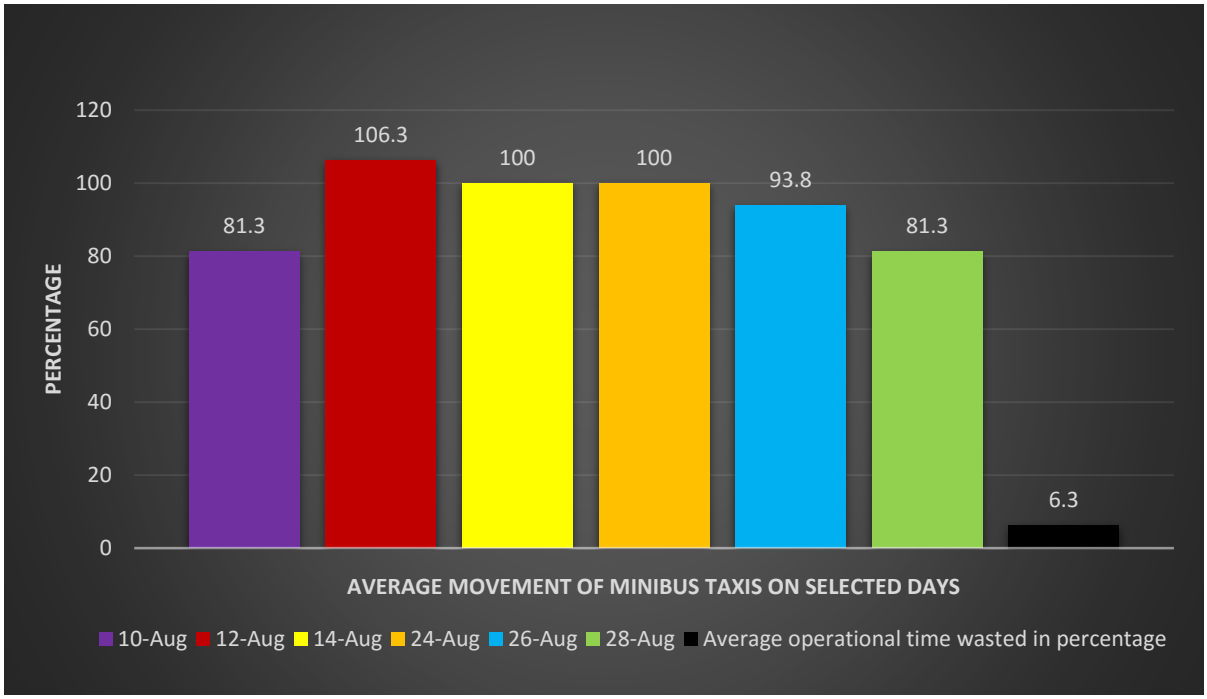
Source: Author, 2015

Graph 4: The average minibus taxi performance during off-peak time: 0-13km



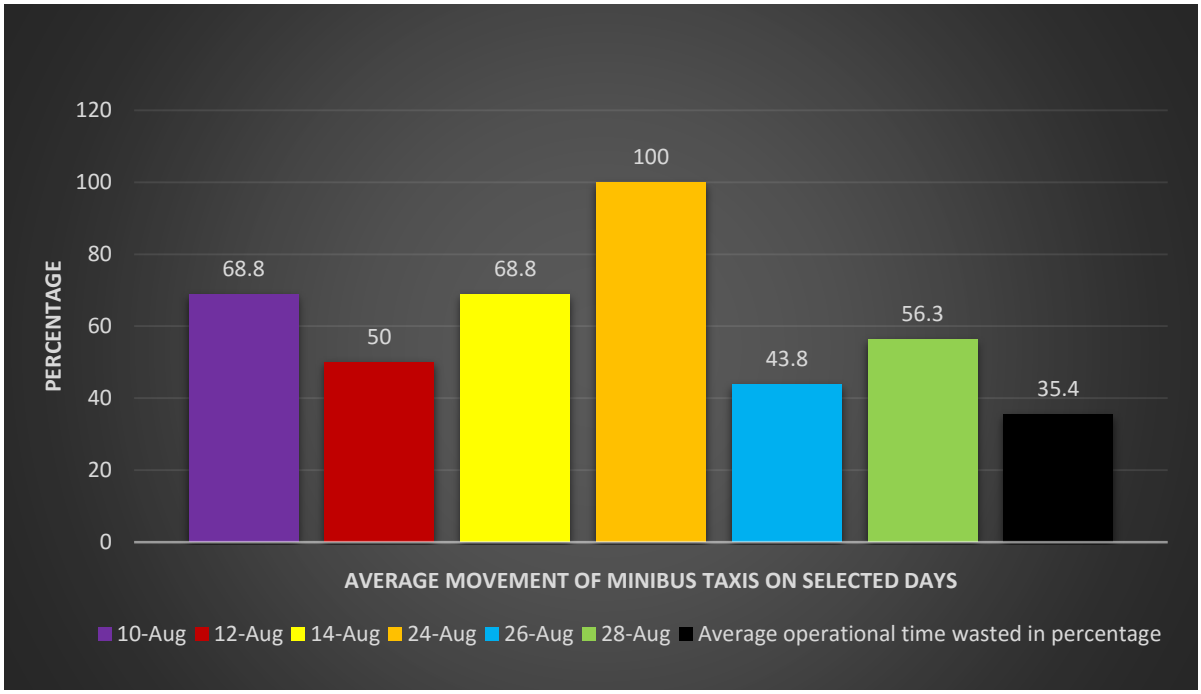
Source: Author, 2015

Graph 5: Average minibus taxi performance during peak time 14-30km



Source: Author, 2015

Graph 6: Average minibus taxi performance during off-peak time 14-30km



Source: Author, 2015

5.2.1.2 Observations from a social perspective: How people feel whilst travelling in minibus taxis on selected routes

❖ **Richards Bay Plaza: to eSikhaleni (eSikhawini taxi rank) mid-afternoon**

From what the author could gather while observing the passengers' and driver's behaviour on our way to eSikhaleni, no one had any problem in communicating with the driver and *vice-versa* the driver with the passengers. Passengers mentioned their desired stop along the way and there were no issues observed. The same goes with collecting the money from each passenger after departing the taxi rank (cost of travel). In probing further, many felt safe and comfortable during the course of the journey and accessibility was not an issue observed. Many complained about how inefficient minibus taxis operate during off-peak times highlighting that it takes longer to go from one point to the next as the minibus taxi takes longer to fill up. This was deemed a problem if commuters are in a rush. Please refer to appendix 2, (table 22, p.124) for data on observation; (figure 29) below provides the data for the eSikhawini taxi rank, the final stop between Richards Bay and eSikhaleni.

Figure 29: eSikhawini taxi rank

Source: Author, 2015

❖ **Richards Bay: to Empangeni (B-rank) morning**

From what the author could gather while observing the passengers' and driver's behaviour on our way to Empangeni, communication with the driver was not pleasant. As we approached a stop that passengers had mentioned ahead of time to the driver, he tried to overtake a truck ahead of the minibus taxi and almost caused an accident, as a result of which

he missed a stop in the process. The minibus taxi driver's actions not only placed the lives of the passengers in danger, but those of the other road users as well, considering this was during the peak time rush in the morning. In addition, he refused to return to the stop, but just carried on to the next stop. The passengers who had needed to get off at the previous stop had to find their own way back and this did not sit well with the people in question. There was a breakdown in communication between the driver and passengers observed from that point onwards.

The majority of the passengers did not feel safe considering a near accident, and some felt uncomfortable due to sitting on seats that were either broken, or did not provide enough leg room for taller passengers, since it was an older minibus taxi model 'Siyaya'. During the course of the journey, many deemed the minibus taxi as accessible to them. In addition, safety issues aside, the majority thought the minibus taxi was efficient. It filled up relatively quickly and passengers arrived at their destination within a reasonable timeframe. Please refer to appendix 2, (table 21, p.124) for data on observation; (figure 30) below illustrates the stop at which the author disembarked. The minibus taxi continued until it reached the CBD.

Figure 30: Empangeni Taxi rank (B-rank)

Source: Author, 2015

❖ **Richards Bay Plaza: eNseleni (taxi rank) mid-afternoon**

From what the author could gather while observing the passengers' and driver's behaviour on our way to eNseleni, communication between the driver and passengers was good. Passengers mentioned their desired stop along the way and there were no issues observed.

The same goes for collecting the money from each passenger before departing the taxi rank (cost of travel). In probing further, many felt safe and comfortable during the course of the journey and they made the distinction between the older 'Siyaya' and 'iNyathi' models and the newer minibus taxi 'Quantum' model. Passengers found the minibus taxis to be reasonably accessible and efficient. Considering that it was mid-afternoon, the wait for the taxi to fill up was relatively short on this occasion. Please refer to appendix 2, (table 25, p.125) for data on observation; (figure 31) illustrates the final destination on the trip from Richards Bay Plaza to the eNseleni taxi rank.

Figure 31: eNseleni taxi rank

Source: Author, 2015

❖ **Richards Bay Plaza: to Aquadene/Brackenham mid-afternoon**

From what the author could gather while observing the passengers' and driver's behaviour on our way to Aquadene/Brackenham, communication between driver and passengers was relatively good. Passengers mentioned their desired stop along the way and the driver made the necessary stops, but tensions grew as some passenger tried to cheat the driver by not paying their fare (cost of travel) after departing the taxi rank. The majority of the passengers felt safe, but not comfortable, during the course of the journey as it was undertaken using the older minibus taxi model 'Siyaya'. Passenger found the minibus taxis reasonably accessible, but due to the long wait, they were deemed inefficient. Please refer to appendix

2, (table 23, p.124) for data on observation; (figure 32) illustrates the start of the journey from Richards Bay Plaza taxi rank.

Figure 32: Richards Bay Plaza taxi rank

Source: Author, 2015

❖ **Richards Bay Plaza: to Mandlanzini mid-afternoon**

From what the author could gather while observing the passengers' and driver's behaviour on our way to Mandlanzini, communication between the driver and passengers was relatively good. Passengers mentioned their desired stop along the way and the driver made the necessary stops and there were not any problems when collecting each passenger's fare. The same cannot be said when the driver refused to lower the volume of the sound system; some could not stand the loud music and others did not mind it. The majority of the passengers felt safe and comfortable during the course of the journey as it was undertaken using the newer minibus taxi model 'Quantum'. Passengers found the minibus taxis to be accessible and efficient. The wait for the taxi to fill up was relatively short on this occasion. Please refer to appendix 2, (table 24, p.125) for data on observation; (figure 33) illustrates the start of the journey from Richards Bay Plaza taxi rank.

Figure 33: Richards Bay Plaza taxi rank

Source: Author, 2015

Overall, from the five different routes on which observation was undertaken, the popular view was that minibus taxis are accessible and efficient. Apart from isolated incidents regarding miscommunication between driver and passengers, bad driving and a lack of comfort, the majority view was that safety and comfort while travelling was not a problem. As mentioned previously, access, mobility and public transport efficiency plays an important role in ensuring a functioning society, economically and socially. The inverse effect of the lack of mobility and accessibility to public transportation further excludes those residing in the hinterlands (Smith et al., 2012; Levinson, 1998). Furthermore, with exclusionary style planning still visible in the South African city/town urban landscape and rural areas, particularly areas designated for black occupancy by the apartheid regime, these are still affected locally by lack of adequate mobility and accessibility (Vanderschuren and Galaria, 2003; Christopher, 1990). Hence the call for sustainable mobility and accessibility, with efficient public transportation to counter the adverse effects of spatial planning (Miranda and Rodrigues da Silva, 2012).

5.2.2 Accessibility and mobility of public transportation: implications for the public at large

5.2.2.1 Plans/strategies in place to improve mobility and access to public transportation

As highlighted in the literature presented in previous chapters of the dissertation, the lack of mobility, accessibility, social exclusion and socio-economic sustainability are affected negatively by inefficient or ineffective public transport systems (Vella-Brodrick and Stanley, 2013; Sohail et al., 2006; Bertolini et al., 2005). Mobility and accessibility are the cornerstones that drive the ability of many poorer members of the municipality to achieve the goals of putting food on their respective families' tables on a daily basis, even more so for rural communities (Fredlund and Nash, 2007). Improvement in one's ability to access public transport enhances the chance of being exposed to resources and thus opportunities outside of one's immediate reach increase drastically.

The uThungulu District Municipality's Public Transport Plan strives to improve mobility and accessibility. The same goes for the *uMhlathuze Local Municipality's Integrated Development Plan* and *Spatial Development Framework* and a series of other plans or strategic documents developed by the municipality. It is believe that through densification, corridor development, infilling and mixed use development the movement of people in space will be improved and that this will allow people to access facilities and resources that were previously out of reach to them. Hence, the municipality's objective is to "to expand and maintain road infrastructure in order to improve access and promote Local Economic Development" *(uMhlathuze Local Municipality: Final Interated Development Plan Review 2015/2016, 2015:18)*. Furthermore,

this is achieved through the "provision of public transport facilities and infrastructure in the rural areas" strategy amongst others *(uMhlathuze Local Municipality: Final Interated Development Plan Review 2015/2016, 2015:18)*. As stated by respondent 3:

> The plan is to improve and upgrade or formalise the existing public transport infrastructure in areas where there aren't, like eNseleni and in others build them *(Respondent 3, Transport Infrastructure Planning Manager, 2015)*.

These facilities (ranks) ensure that people have access to public transportation, improving mobility and fostering greater inclusion, breaking down the barriers created to preserve the ways of the past. The municipality realises the need for access to public transportation in rural areas and 'townships'. Hence strides are made to improve mobility and accessibility to public transport, economic nodal points, other land-uses and recreational facilities, etc.

The uMhlathuze Local Municipality is currently in the process of putting in place a *Comprehensive Integrated Transport Plan (CITP*) to see a way forward for the taxi industry and public transportation in general. As respondent 3 states: "there is a CITP study we are conducting to see a way forward for the taxi industry and public transportation in general" *(Respondent 3, Transport Infrastructure Planning Manager, 2015).* The outcome of the plan/study will determine what measures need to be employed to deal with public transportation in future. In addition, the aim will be to improve the modes of public transport currently functioning in the municipality. The intended goal is to create a culture that embraces the use of public transportation. The country and uMhlathuze have a long way to go to fulfil the public transport goals set at national level by the Department of Transport.

5.2.2.2 Mobility and access to public transport currently with reflections from the past

The municipality is striving to achieve universal access to public transportation for all, regardless of location, to right the wrongs of the past that saw the exclusion of the majority of the population from essential resources and services. It was noted that, in some parts of the municipality, accessing public transport is relatively easy and in others this is not the case, particularly in some of the 'townships' within the municipality. Respondent 2 notes that:

> Townships and rural areas were isolated from the core economic activity, the movement in between townships was very bad. The townships were very far from where the CBD is, this was done purposefully. A person who is living at eSikhawini for example, he can't go from eSikhawini straight to Ngwelezane, when you want to meet socialise or move in between you have to go to the town (CBD), all these other

townships do not have a straight connection *(Respondent 2, Public Transport Facilities and Operations Coordination Manager, 2015).*

Decisions made pre-1994 are having a negative impact on South African society in the present post-1994 period. The spatial structure of the towns and cities still reflect the ways of the past, but with the expectation of South Africans succeeding with transformation and other dynamics weighing many down at present. In uMhlathuze specifically, the manner in which transport and land-use planning is approached going forward will have a significant impact on access and mobility. Furthermore, not only looking at the public transportation aspect, transformation of transportation could be used to address many of the social ills confronted by the municipality and the country at large.

The goal should be to strive for universal access across the board which will improve mobility and overall accessibility. Minor changes will have a ripple effect in aiding other issues linked to the lack of mobility or access to public transportation. As stated by the following scholars, Coppola and Papa (2013) Smith et al. (2012) Venter and Cross (2011) Preston and Rajé (2007) and Verster (2003) mobility and accessibility has a profound impact on an individual and a community as a whole in promoting social inclusion and addressing social ills that are linked to the lack of or inefficient public transportation and inadequate land-use and transport planning.

5.2.3 Socio-economic sustainability: The social and economic benefits if improved transport systems are in place.

As previously stated, an improved public transport system can lead to self-sufficient individuals, ensuring that they become contributing members of society economically. In addition, access can be gained to potential employment and other economic opportunities. Socio-economic sustainability is directly impacted by one's ability to take part in the economy in some way or form (Litman and Burwell, 2006; Garrett and Taylor, 1999; Röling, 1997). Increasing access to public transport is key to addressing the issue of poverty in uMhlathuze and the country as a whole. Respondent 2 highlights that:

> Poverty and unemployment has been the source of all sorts of crime, people turn against each other for survival in these townships and rural areas. Townships and rural areas were isolated from the core economic activity … the movement in between townships is very bad *(Respondent 2, Public Transport Facilities and Operations Coordination Manager, 2015).*

Increased access will allow people, particularly in marginalised groups, to have more opportunities at their disposal, and not just to limit them to their immediate surroundings. Therefore, transport and land-use planning should be geared at sustaining individuals socially and economically. The inability to ensure this leads to social exclusion, be it physically, socially or economically, due to inefficient public transportation and the consequences of apartheid spatial planning. Without proper public transportation, the economic growth of an area is hindered, which has an adverse effect on the social fabric of society.

The social benefits of the taxi industry are numerous from the view of the respondent 2: "the taxi industry on their own socialise people in many ways, it is unfortunate not all their social responsibilities are not reported to us or have any such obligations" *(Respondent 2, Public Transport Facilities and Operations Coordination Manager, 2015).* The taxi industry in its way has the ability to bring people together. This was the case when the industry first materialised in the early 1900s (Khosa, 1998; Khosa, 1992). In the present day, this has not changed, in areas where there is no formalised mode of transportation, the minibus taxi industry takes it upon itself to fulfil this service to the people. Their actions help bridge the gap created by apartheid spatial planning, helping people to access economic opportunities, social facilities and to foster social capital and prolonging social networks which would have otherwise diminished overtime.

5.2.4 Social exclusion: The effects of apartheid planning on the spatial structure of the municipality contributing to social exclusion

It is well-documented in research and mentioned in the literature in the preceding chapters of this dissertation that apartheid spatial engineering/planning has caused a rift in South African society. This view is shared by the following scholars Todes (2006); Behrens (2004); Czeglédy (2004); Christopher (2001); Turok (2001) and many others. Apartheid special engineering continues to bedevil post-apartheid attempts to redress the situation, and it still hinders many from enjoying the same benefits due to their geographical location. Respondent 4 states that when one uses the term social exclusion it refers to the poorer members of society in most cases.

> When one uses a term like social exclusion one is really talking about low income people. The lower income groups need a competitive public transport system, we know the majority of low income groups stay far away from their places of work. Whether they work in the central city or in the industrial areas of the city/town, they are going to have a problem getting to work, they are naturally excluded from employment opportunities *(Respondent 4, Private Consultant/Academic, 2015)*.

Without adequate public transport provision, many are left excluded from being fully immersed in all facets of South African society. Therefore, one could argue that apartheid spatial engineering/planning still affects the physical landscape in the country, years after democracy. Respondent 2 highlights the fact that "apartheid established 'Black Townships' far flung from the CBD/central economic hub, which makes it difficult for 'blacks' to improve socially and economically" *(Respondent 2, Public Transport Facilities and Operations Coordination Manager, 2015)*. Therefore, without an appropriate public transport system to supplement the movement of people, they are excluded physically due to the spatial configuration of cities/towns. They are excluded economically due to the inability to access job opportunities, resources and financial institutions and the geographical isolation limits social interaction which breaks down the social fabric of society with the consequent loss of social capital.

To this day, people are still being pushed to the fringes of the city, increasing the pressure on the state to provide better access to resources, economic opportunities and social services etc. for these newly developed and existing remote communities (Lucas, 2012; Lucas, 2011). It is noted by respondent 2 that:

> Poverty and unemployment has been the source of all sorts of crime, people turn against each other for survival in these townships and rural areas. Townships and rural areas were isolated from the core economic activity. The township were very far from where the CBD is, this was done purposefully *(Respondent 2, Public Transport Facilities and Operations Coordination Manager, 2015).*

5.3 The significance of the theoretical framework on uMhlathuze Local Municipality

The models and theory expressed in (chapter 2) play an integral role from the author's perspective to best deal with the realities of many living in the municipality. For the dissertation and the municipality, models and theories present a way to analyse the problems linking transportation and the spatial structure of the municipality with perspectives that inform possible change.

5.3.1 The significance of collaborative planning for uMhlathuze Local Municipality

Collaborative planning is used as a tool to foster consensus between different stakeholders ensuring that conflict is avoided, through encouraging dialogue and applying an inclusionary planning approach. In addition, it sees to it that everyone is involved in the planning process, contributing to the discussion on public transport and the issues presented. Through the tools

that encourage public participation and community engagement, collaborative planning/ communicative rationality gives the power of speech to the voiceless. It also provides for better dialogue between all who are involved in the planning process. A number of plans put forward by the municipality failed because they were not able to secure the buy-in from the citizens within the Municipality and many other important stakeholders. The breakdown in communication between the taxi association and the organs of state is evident in the statement made by respondent 1:

> The problem we have is that government changes things without consulting us. There is no communication between the municipality and us. There is no understanding between us which leads to conflict. No communication between the municipality and us leads to taxi violence causing unnecessary deaths. If there was better communication, things would be different, but things are getting better *(Respondent 1, Richards Bay Taxi Association, 2015).*

A distinction between pre- and post-apartheid minibus taxi operating conditions was made by the panel sitting in the interview, with the view ultimately being expressed that conditions were better pre-1994 *(Respondent 1, Richards Bay Taxi Association, 2015).* Therefore, without proper dialogue between the different interest groups, problems will fester, leading to unwanted conflict that could be avoided.

As stated previously, the success of the taxi industry has wide-spread implications for the many municipalities in which the BRT would not be feasible. Working together will not only improve the industry, but the lives of ordinary people using minibus taxis as their mode of transportation. Change needs development that will not only change the government's outlook on the industry, but also the manner in which public transport in viewed in the country.

In light of the discussions with the official from the municipality and members of the taxi association, there seems to be a breakdown in communication. The views expressed by both parties are contradictory, where the one seems to have no problem with the relationship between the two parties, the other does not share the same sentiment. If change is to occur within the minibus taxi industry, from improving operations and changing the image people have of the minibus taxi industry public transport in general, all affected parties and those involved in planning need to work together. Moreover, the public, the municipality and the taxi association need to be working together to voice their grievances, if any, and to work towards finding a way forward that will satisfy all parties concerned. They need to open the

avenues of communication through meetings, public forums and they should involve as many people as possible in the process from the start.

5.3.2 The significance of residential location theory for uMhlathuze Local Municipality

The effects of apartheid spatial engineering have left many communities excluded from employment opportunities and social facilities that play an integral part in sustaining livelihoods. It has also caused a breakdown in social integration, deteriorating the social fabric of society, whilst the problems of the past still haunt us retarding progress both personally and professionally. As highlighted previously, mobility, accessibility and social exclusion is one of the problem that is attributed by past planning methods. Development post-1994 in the uMhlathuze Local Municipality still reflects the inequalities of the past, whether consciously or unintentionally maintained, but there is an effort being made to do away with the ways of the past.

The locations of traditional 'black townships' established during apartheid and peri-urban settlements are still significant distances away from the economic core of the municipality. Determining the ideal location for future development will not only help the shortcomings of past planning approaches in the country, but will benefit the very spaces created by the apartheid government. Residential location theory could be used to evaluate the current location of people and to determine the best suited location for individuals in the light of proposed economic development in future. This would be an appropriate tool for the determination of land-use and transport planning. The location would be selected in relation to where resources and opportunities are based and where the economic activities and amenities are located. If they need to be moved further away, what would be the best possible solution to the problem in terms of geographical space? Finding the ideal location could work against social exclusion.

5.3.3 The significance of a 'corridor city' for the uMhlathuze Local Municipality

Accessibility, mobility, social exclusion are issues that face many South African cities and small towns. How the municipality addresses the problem determines whether or not vulnerable groups are able to sustain a livelihood. As previously stated throughout the study, an efficient public transport system and effective infrastructure is of outmost importance to supplement the movement of many to access economic opportunities, social facilities and other land-uses. In addition, in turn it will reducing the impact attributed to apartheid spatial planning.

The 'Corridor city' concept presents an opportunity for the uMhlathuze Local Municipality to create an effective corridor between the nodes established currently and linkages within

these spaces as well. Furthermore, it is also beneficial in that the corridors will steer development and help restructure the municipality in its current state. The dormant spaces in between will see more infrastructural development taking place, changing the face of the municipality in steering economic activity closer to traditional 'black townships', peri-urban settlements and rural areas. In conjunction with the 'corridor city' concept, implementing a strategy like TOD, a strategy championed by the Department of Transport, will only benefit the uMhlathuze Local Municipality going forward.

5.4 Summary of the chapter

As seen in this chapter, public transportation within uMhlathuze, particularly the minibus taxi operation is somewhat efficient, depending on the route you are taking, the wait will vary. Overall, minibus taxis are performing below 50% of the potential performance, considering the distance and the time it takes to reach selected destinations. In some areas, accessibility and mobility is very poor, contributing to the social ills linked to an inefficient/ineffective public transport system as well as the lack of mobility and accessibility. Hence social exclusion is thus magnified, decreasing the chance of marginalised groups of sustaining a livelihood. With a breakdown in socio-economic sustainability comes a breakdown in social capital leading to the destruction of the social fabric of society.

Chapter 6: Conclusion and Recommendations

6.1 Introduction

Planning methods of the past is hindering South African society from reaching the heights intended with the turn of democracy and is viewed as the stumbling-block that prevents meaningful transformation. Unintended exclusion of many with the development that took place through the provision of housing and the failure to include the spaces designed by apartheid government with broader society. The government faces the challenge of integrating a society spatially and socially with that the provision of safe, efficient, accessible and affordable means of public transportation. Consequently, the present and future transport needs of the country, particularly for communities on the outskirts of the city, are in danger of not being met. This chapter is broken down into three sections; the first looks at the summary of findings and conclusion in relation to the objective, research question and hypothesis as it is set to evaluate to what extent the minibus (taxi) industry can improve mobility, accessibility and overall efficiency and how it affects the broader society, people who are deprived of effective public transportation and are affected by apartheid spatial engineering post 1994. The second makes note of the recommendations of the study and the last section identifies the lessons learnt from the study and possible areas of research in future. Improving public transportation is a necessity, not only for the current, but also for future generations, particularly considering the global environmental crisis that is currently taking place.

6.2 Summary of findings and conclusion

Public transportation in South Africa has a huge impact on many people's lives on a daily basis. The legacy of apartheid has caused segregated development which is still experienced, post-1994, in the urban landscape of South African cities. Public transportation should be viewed as a means to integrate dispersed settlement patterns, hence investing in and improving the current state of public transportation should be a priority. The conditions of the past are still present in South African society, despite much effort by the government to do away and minimise the effects of past spatial planning. The legacy of apartheid and other factors continues to be the stumbling-block that prevents any meaningful change from occurring in many communities in the country. The policies that the government implemented from 1994 onwards have been both positive and negative. Some perpetuated past inequalities, others weren't given sufficient time to deliver on promises made.

Based on the interviews conducted and on the literature, it is clear that public transportation is a problem in the country. As a result of the country's political past and the measures used in spatial planning in uMhlathuze, the level of access people enjoy, particularly groups living on the outskirts of the municipality, has negatively affected the public's ability to seek a reasonable livelihood (socio-economic sustainability), and it has negatively affected integration with the broader society and with that the ability to access economic activities or opportunities, places and amenities not in immediate reach (accessibility and social exclusion), and the capacity to move from one location to the next (mobility). The spatial structure of the South African cities and towns makes getting around very difficult without proper transport systems in place to facilitate the movement of people from place to place in the post-apartheid era.

The researcher has found that the majority of commuters prefer using minibus taxis as their mode of transport (*StatsSA, 2013*). They are said to be more accessible and reliable compared to other modes of transport available. They are flexible and operate in areas where there is no formal state mode of public transportation provided, and would operate in any new development or existing community if the demand arose. On the other hand, the level of efficiency encountered by the monitored routes in the municipality, both short (0-13km) and long (14-30km) distances leaves a lot to be desired.

With the world ever changing and new transport models, concepts or theories are developed to improve public transport operation. By adopting appropriate models, concepts or theories would create a space to better deal with the situation at hand. Furthermore, using those models, concepts or theories to improve the manner in which the minibus taxi industry operates will change the manner in which it is viewed and the stigma associated minibus taxi operation. How the situation is managed going forward will determine where this mode of transport stands in future or whether it would be pushed aside to make way for what many would deem an attractive modes of transport implemented in other parts of the world.

6.3 Recommendation

Moving forward, the government would need to focus on policy and should enact legislation that is more people-centred and grassroots led. This would provide an alternative to achieving transport goals set by the Department of Transport using other means of transport. Public transportation should address the transport needs of the current and future population of this country. There needs to be a holistic vision with regard to the transport plans put forward. Through improving the taxi industry, making it more efficient, accessible, reliable

and safe, this would play a part in dealing with the social ills associated with ineffective public transportation.

6.3.1 Public transport efficiency

For the industry to remain competitive in the future, the way in which the minibus taxi industry operates will need to change. Since the industry was introduced in the early 1900s it has not changed the manner in which it operates today. To address the problems voiced by the public, the industry needs to put the commuters' interests first, focusing on improving safety, efficiency and overall quality of service they offer. In improving efficiency, minibus taxis should move continuously, circulating along different routes, ensuring that, at a particular time, people can expect a taxi to stop within a reasonable timeframe. For distances between (1-13km), the required movement of taxis should be 10 min from the taxi rank, regardless of whether the taxi is filled to capacity or not. For distances between (14-30km), the required movement of taxis should be 15min from the taxi rank regardless of whether the vehicle is filled to capacity or not. Addressing the lack of mobility, accessibility and social exclusion, greater attention needs to be paid to adequate land-use and transport planning going forward together, to deal with the shortfalls of the spatial structure.

6.3.2 Socio-economic sustainability

Achieving socio-economic sustainability is a problem that needs serious attention. Public transport is the key to addressing many social issues faced by the public whether directly or indirectly. Hence, transport and land-use planning should be geared at sustaining individuals socially and economically, particularly marginalised groups considering the country's political past and the spatial disjuncture that it has caused.

To improve the relationship with the taxi industry and the municipality, firstly recognition must be given to the service they offer. Secondly investing in the minibus (taxi) industry physically with building the infrastructure needed and lastly and most importantly improving the lines of communication overall. Hence, the planning of anything concerned with public transportation should be a collaborative effort from all parties involved to achieve the best possible outcome. The municipality does not have the financial capacity and threshold needed to sustain transport plans implemented in some of the major cities in the country, hence improving existing transport systems would be cost effective and the benefits outweigh the risks. The success of the taxi industry has wide-spread implications for uMhlathuze and many other municipalities where BRT is not feasible. Working together will not only improve the industry, but the lives of ordinary people using minibus taxis as their mode of transportation and change the stigma associated with it.

6.3.3 Accessibility, mobility and social exclusion

The municipality would need to revisit how land-use and transport planning is carried out. There are still a number of people who do not have access to public transportation. Finding ways that will see those individuals gaining access to goods and services outside their immediate reach should be a key objective. Spatial planning, going forward, should not only favour the higher to middle-income individuals, but should address the needs of the poor. Models such as the corridor city, Transport-Orientated Development and Residential Location Theory should also be implemented in transport, spatial and land-use planning, to determine the best possible plan to locate people, services, amenities, economic and infrastructural development in space and research should be conducted on all the options before possible implementation. The ultimate aim would be to provide an efficient public transportation system for all.

To determine the extent of the exclusion experienced by individuals or whole communities, the Delbosc and Currie (2011a) classification of the various types of exclusion should be noted and acted upon.

- Physical exclusion: the physical nature of the transport system may create physical and psychological barriers to access by people with impaired mobility, hearing or sight.
- Geographical isolation: dispersed locations may limit the ability to carry out activities in the immediate area.
- Exclusion from facilities: the growing popularity of centralised shopping and services may result in areas with few facilities.
- Economic exclusion: problems with physical access and travel cost can limit the ability to find gainful employment

(Delbosc and Currie, 2011a:556).

6.4 Lessons learnt and areas for future research

The issues of the past have not been dealt with decisively, hence marginalised groups still suffer due to the wrongs of yesteryear. The study of public transportation is very vast, it cannot be limited to just studying the number of people that move from one point to the next. There are underlying issues that impact on whether any mode of transport would succeed or not, whether people would have access to it and whether they would make use of it. Finding new, innovative and cost-effective ways to encourage more individuals to make use of public transportation should be an area for future research. Smaller municipalities need to benefit from alternative transport models that would be just as efficient as those implemented in leading cities the world over and deliver similar results.

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Appendices

Appendix 1: Interview breakdown

Taxi association members

1. What are your views on the current condition of the taxi industry?
2. What is the future of the taxi industry in your opinion?
3. How have the operating conditions changed since 1994?
4. What role should the taxi industry play in the future in the country's transport sector?
5. How will you ensure passenger safety and efficiency going forward?
6. How is the relationship between the taxi industry and the municipality?

Municipal officials

1. What are your views on the current condition of the taxi industry?
2. What role is the municipality playing in improving local public transportation?
3. What plans are in place to address the issues surrounding lack of integration and accessibility of public transportation?
4. What role does the taxi industry play in the future of public transportation within the municipality in the short and long-term?
5. Is there an alternative/ improved transportation system that could be implemented to address the problems associated with inefficient public transportation within the municipality?
6. What efforts are being made to bridge the gap established due to the spatial structure of the municipality and access to public transport?
7. How do you view the relationship between the taxi industry and the municipality?

Transport professionals

1. What are your views on the current condition of the taxi industry?
2. What is the future of the taxi industry in your opinion?
3. Is there an alternative/ improved transport system that could be implemented to address the problems associated with inefficient public transportation within the municipality?
4. What plans are in place to address the issues surrounding lack of integration?
5. What efforts are being made to bridge the gap established due to the spatial structure of the municipality
6. What is the current and future role of taxis in an integrated transportation system?

Academics

1. What are your views/opinion on public transportation in the country?
2. What are your views/opinion on the integrated transport system?
3. What are your views on the current condition of the taxi industry?
4. How would you analyse the social exclusion linked to inefficiency or lack of public transportation?
5. How would you analyse the social exclusion linked to the apartheid landscape?
6. What is the role of the taxi industry in solving the transport problems in the country?

Appendix 2: Summarised observation of taxi operation on selected routes

Table 21: Observation of the dynamics between driver and passenger and overall operation on the route to Empangeni

Route/Location	Observation	Significance	Grading		
			A	B	C
Richards Bay (Bay Plaza to Empangeni (B -Rank)	Level of efficiency, getting from point A to B	To understand the level of frequency			
	How operator interacts with commuter and vice-versa?	To better understand the relationship, so that efficiency could be improved			
	How accessible are taxis to people?	To understand the gap in service delivery, areas for improvement			
	How comfortable are people while travelling?	To understand whether people are happy with the service they paying for or not.			
	Do people feel safe while travelling in the taxi?	This determines whether or not people would likely still to use taxis once they can afford to buy a car			

Table 22: Observation of the dynamics between driver and passenger and overall operation on the route to eSikhaleni

Route/Location	Observation	Significance	Grading		
			A	B	C
Richards Bay to eSikhaleni (taxi rank)	Level of efficiency, getting from point A to B	To understand the level of frequency			
	How operator interacts with commuter and vice-versa?	To better understand the relationship, so that efficiency could be improved			
	How accessible are taxis to the people?	To understand the gap in service delivery, areas for improvement			
	How comfortable are people while travelling?	To understand whether or not people are happy with the service they are paying for			
	Do people feel safe while travelling in the taxi?	It determines whether people would be likely still to use taxis once they can afford to buy a car			

Table 23: Observation of the dynamics between driver and passenger and overall operation on the route to Brackenham and Aquadene

Route/Location	Observation	Significance	Grading		
			A	B	C
Richards Bay (Bay Plaza) to Brackenham and Aquadene	Level of efficiency, getting from point A to B	To understand the level of frequency			
	How operator interacts with commuter and vice-versa	To better understand the relationship, so that efficiency could be improved			
	How accessible are taxis to people?	To understand the gap in service delivery, areas for improvement			
	How comfortable are people while travelling?	To understand whether or not people are happy with the service they are paying for			
	Do people feel safe while travelling in the taxi?	It determines whether or not people will still be likely to use taxis once they can afford to buy a car			

Table 24: Observation of the dynamics between driver and passenger and over-all operation on the route to Mandlanzini

Route/Location	Observation	Significance	Grading		
			A	B	C
Richards Bay (Bay Plaza) to Mandlanzini	Level of efficiency, getting from point A to B	To understand the level of frequency			
	How operator interacts with commuter and vice-versa	To better understand the relationship, so that efficiency can be improved			
	How accessible are taxis to people?	To understand the gap in service delivery, areas for improvement			
	How comfortable are people while travelling?	To understand whether or not people are happy with the service they are paying for			
	Do people feel safe while travelling in the taxi?	It determines whether or not people would be likely still to use taxis once they can afford to buy a car			

Table 25: Observation of the dynamics between driver and passenger and overall operation on route to eNseleni

Route/Location	Observation	Significance	Grading		
			A	B	C
Richards Bay (Bay Plaza) to eNseleni	Level of efficiency, getting from point A to B	To understand the level of frequency			
	How operator interacts with commuter and vice-versa	To better understand the relationship, so that efficiency could be improved			
	How accessible are taxis to people?	To understand the gap in service delivery, areas for improvement			
	How comfortable are people while travelling?	To understand whether or not people are happy with the service they are paying for			
	Do people feel safe while travelling in the taxi?	It determines whether or not people will be likely still to use taxis once they can afford to buy a car			