

**CHALLENGES OF HOUSING AND TRANSPORT  
PLANNING INTEGRATION:  
A CASE STUDY OF KUILS RIVER, CAPE TOWN**

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Mini-dissertation submitted in partial fulfilment of the requirements  
in respect of the degree

**Master of Urban and Regional Planning**

in the

Department of Urban and Regional Planning

Faculty of Natural and Agricultural Sciences

at the

University of the Free State

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Supervisor: Dr Thulisile Mphambukeli

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## DECLARATIONS

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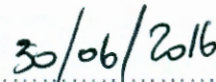
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The writing of this dissertation has been the most significant personal and academic challenge I ever had to face. It is with deepest gratitude that I would like to:

- First and foremost, thank my heavenly Father for providing me with the strength and perseverance to complete this Master's degree. It would not have been possible for me to complete this degree without the goodwill of my heavenly Father.
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This dissertation is dedicated to the loving memory of my father, Reginald ("Reggie") Alexander van den Heever. "You have successfully made me the person I have become today and you will always be fondly remembered."

I also dedicate this thesis to my adoring daughter, Riley Frantz, with the hope that she would one day recognise that education is a "weapon" to fight ignorance and a key to open doors of endless opportunities.

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## LIST OF ACRONYMS AND ABBREVIATIONS

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BRT	Bus Rapid Transit
CBD	Central Business District
COCT	City of Cape Town
DEADP	Department of Environmental and Development Planning
DoT	Department of Transport
IDP	Integrated Development Plan
IUDF	Integrated Development Framework
MRSC	Municipal Research and Services Center
NDP	National Development Plan
SALGA	South African Local Government Association
NMT	Non-motorised Transport
SPLUMA	Spatial Planning and Land Use Management Act
TDM	Transportation Demand Management
TOD	Transit-Oriented Development
UNESCO	United Nations Educational, Scientific and Cultural Organization



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## ABSTRACT

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This dissertation studies the perceptions and experiences of the implementing officials of the City of Cape Town, as well as residents living in Kuils River, regarding the integration of housing and transport planning in the study area. A background to City of Cape Town is provided, which highlights the organisation's key challenges experienced towards the integration of housing and transport planning. In addition, a background study of Kuils River, one of the northern suburbs of Cape Town, revealed key insights into the existing traffic situation challenges in Kuils River as the research study area. Kuils River is a low-density development area, dominated by private vehicle users and not very accessible to public transport users. The increasing residential developments put more pressure on the roads infrastructure and public transport demand.

The research findings related to the integration of housing and transport planning show that there are substantial benefits for cities that work towards such an approach. Data indicates that City of Cape Town officials are aware of the current traffic situation challenges in Kuils River and considerable efforts, such as the expansion of the heaviest congested roads, have been made by City of Cape Town to address the traffic congestion challenges within Kuils River. What also came through the interviews with residents is that the current traffic congestion situation in Kuils River is attributed to poor planning by City of Cape Town, and that the roads infrastructure is not keeping up with the increasing residential developments in the suburb. Most importantly, it was found that to travel by private transport is a personal choice made by the residents of Kuils River, due to inconvenience and unreliability of public transport.

Finally, the dissertation provides recommendations for City of Cape Town on how to move in the direction of an integrated housing and transport planning approach, specifically tailor-made to and focussed on the Kuils River suburb. If there is commitment from City of Cape Town to improve the current traffic congestion situation in Kuils River in the longer term, it is a requirement that these interventions for Kuils River be planned for and be reflected in the next revised Integrated Development Plan of City of Cape Town.



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## OPSOMMING

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Hierdie skripsie ondersoek die persepsies en ondervindings van die implementerings-beamptes van die Stad Kaapstad, sowel as die inwoners van Kuilsrivier, met betrekking tot die integrasie van behuising- en transportbeplanning in die studie-area. 'n Agtergrondstudie tot die Stad Kaapstad word verskaf wat die organisasie se sleuteluitdagings aangaande die integrasie van behuising- en transportbeplanning beklemtoon. Verder word 'n agtergrondstudie van die Kuilsrivier-woonbuurt, een van die noordelike voorstede van Kaapstad, verskaf, wat belangrike inligting onthul tot die huidige verkeersituasie in Kuilsrivier as die navorsingsgebied. Kuilsrivier is 'n laedigheid-ontwikkelingsarea, gedomineer deur privaat motorverbruikers, en is nie baie toeganklik vir verbruikers van publieke transport nie. Die toenemende residensiële ontwikkelings plaas meer druk op die padinfrastruktuur en vereistes vir publieke transport.

Die navorsingsbevindings aangaande die integrasie van behuising en transportbeplanning dui aan dat daar aansienlike voordele vir stede is wat streef na so 'n benadering. Data dui aan dat die beamptes van die Stad Kaapstad bewus is van die huidige uitdagings ten opsigte van verkeersopeenhopings in Kuilsrivier en redelike pogings word aangewend deur Stad Kaapstad om die verkeersopeenhopings binne Kuilsrivier aan te spreek, onder andere die ontwikkeling en uitbreiding van padinfrastruktuur. Wat ook deurgeskemer het deur die onderhoude met die inwoners, is dat die huidige verkeersopeenhopingsituasie in Kuilsrivier toegeskryf word aan swak beplanning deur die Stad Kaapstad en dat die padinfrastruktuur nie tred hou met die toenemende residensiële ontwikkelings in die woonbuurt nie. 'n Uiteers belangrike bevinding is dat privaat transport 'n persoonlike keuse is wat gemaak word deur die inwoners van Kuilsrivier, as gevolg van die ongerieflikheid en onbetroubaarheid van publieke transport.

Laastens, doen die skripsie voorstelle aan die hand vir die Stad Kaapstad oor hoe om in die rigting van 'n geïntegreerde behuising- en transportbeplanningbenadering te beweeg, wat spesifiek ontwerp en toegespits is op die Kuilsrivier-woonbuurt. As die Stad Kaapstad toegewyd is om die huidige verkeersopeenhopings in Kuilsrivier op die lang termyn aan te spreek, is dit 'n vereiste dat hierdie intervensies vir Kuilsrivier beplan en gereflekteer word in die volgende Geïntegreerde Ontwikkelingsplan van die Stad Kaapstad.



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# Chapter 1

## INTRODUCTION

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### 1.1 BACKGROUND AND PROBLEM STATEMENT

The integration of transport and housing is one of the major challenges faced by urban and regional planners in South African cities. Donaldson (2001:1) argues that due to the impact of the apartheid era on South African cities, politicians and urban planners are faced with the challenge of transforming highly fragmented, spatially segregated and dispersed cities. Taking up the task of restructuring and integrating racially divided cities thus poses significant spatial planning challenges.

Mammon (2005:4) opines that post-apartheid era challenges placed urban planners and politicians under enormous pressure to prioritise and rapidly deliver on critical basic services, such as housing and transport. In reality, these good intentions have been inadequately implemented. For instance, with the many legislative mandates and guidelines that will be discussed in Chapter 3, that clearly provide for the integration of urban development services, the integration of housing and transport planning still appears to be a challenge in Cape Town. This is emphasised by Smith's (2005:12) claim that the poor are still located far from major urban opportunities and transport continues to be expensive for them. Smith further argues that the integration of transport and housing are one of the major challenges faced by urban and regional planners in Cape Town.

The observations as highlighted above encouraged the researcher to investigate the challenges related to the integration of housing and transport planning in Cape Town, with specific focus on the current traffic congestion within the Kuils River suburb. This chapter starts with a brief background to the research study area, with the aim to present the objective and main focus of the research. The methodology embarked upon is introduced in this chapter and discussed in more detail in Chapter 4 of this dissertation and was chosen in an attempt to answer the research questions raised in the beginning of this research. Finally, a brief summary of the chapters is provided and key research terms defined to provide the reader with a rapid overview and clearer understanding of what is to be discussed later in this dissertation.

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## **1.2 THE AIM AND OBJECTIVES OF THE STUDY**

The overarching aim of this research is to examine the impact of housing and transport planning on the current traffic situation in Kuils River and how this can be improved through effective integration of these two disciplines. This will be achieved through the following objectives:

- i) To determine the impact of the traffic congestion on residents in Kuils River.
- ii) To determine the contributing factors to the current traffic situation in the Kuils River suburb.
- iii) To investigate how the integration of housing and transport planning can be improved in Kuils River.
- iv) To explore the implications for urban planning towards the integration of transport and housing planning strategies.

## **1.3 THE KEY RESEARCH QUESTION**

With the above objections in mind, the study seeks to answer the following main research question:

*How can the challenges of integration of housing and transport planning be effectively addressed to improve traffic congestion in Kuils River?*

### **1.3.1 Subsidiary research questions**

With the above research problem in mind, this study aspires to answer the following subsidiary research questions:

- i) How does the traffic congestion impact on residents in Kuils River?
- ii) What are the contributing factors to the current traffic situation in the Kuils River?
- iii) How can the integration of housing and transport be improved in Kuils River?
- iv) What are the implications for urban planning towards the integration of housing and transport planning strategies?

## **1.4 RATIONALE AND SIGNIFICANCE OF THE STUDY**

The primary concern that motivated this research topic is that the researcher lives in the Kuils River area where traffic congestion is severely experienced, especially during peak hours. The researcher, as a resident in the Kuils River suburb, has developed a strong awareness and interest in this particular area of research and was inspired to investigate the matter that might reveal interesting insights into the reasons for the existing situation in the study area. This interest appeared to be helpful in sustaining the researchers' own



motivation and perseverance over a long period of time and towards completion of the research. Although a considerable number of studies have been done by many authors on this subject matter as presented in Chapter 2, the impressions of the researcher is that much more could be researched on how the integration of transport and housing planning can influence and affect the functioning of a space.

## **1.5 WORKING HYPOTHESIS**

The challenges of integration of housing and transport planning have not been effectively addressed to improve traffic congestion in Kuils River.

## **1.6 METHODOLOGY AND RESEARCH DESIGN**

The research made use of empirical data in the form of a literature review and interview data collected. This entailed an exploratory study with the aim to fully explore the empirical data collected. The study was informed by secondary data collected through the utilisation of books, academic journals, newspaper articles and government sources. To substantiate the literature review, primary data was collected through an unstructured interview process with relevant municipal officials and residents living in the study area.

For the purpose of the primary data collection, a non-probability sampling technique was used, and respondents to conduct the unstructured interviews with were selected based on their knowledge and experience of the subject matter. The approach used in this technique, and most appropriate to this study, is purposive sampling, also referred to as expert or judgemental sampling, with the main objective to gain expert knowledge from a specific group of people for the research (Battaglia, 2008:524). According to Battaglia (2008:524), the experience and knowledge of selected respondents, who may be considered representative in their field of knowledge, is a key factor in the success of sample results.

The key respondents that were interviewed were practicing sector professionals within the City of Cape Town Metropolitan Municipality, from the main directorates Town and Regional Planning, Housing Development, and Transport Planning. The officials from these directorates were chosen to participate in the study due to their direct involvement and experience within the housing and transport planning fields. Residents living in the study area were also interviewed to reflect on challenges experienced that relate to the current traffic situation in the area and possible contributing factors thereto.

The aim of the qualitative data collected through the unstructured interviews was to gain a more detailed discussion of experiences of the relevant subject matter. Woods (2006:3) describes qualitative research as a methodology used to understand perspectives, beliefs,



ideas and experiences in real situations and to comprehend the course of events and why things happen the way they happen. This research methodology is thus a descriptive form of research (Senekal, 2014:12), and is used to ensure that data and analysis will reflect thoroughly what is really happening. Qualitative data collected through the responses obtained from the unstructured interviews were analysed and collated, and the information obtained was used to supplement the soundness of the case study information. This was done by cross-referencing interview data obtained with information from the literature review and existing legislation and plans.

For this reason and in an attempt to answer the research questions, the research design was undertaken in the form of a case study, adopting a qualitative research approach. According to Kumar (2011:123), in the case study design approach it is assumed that a single case being studied is representative of a certain type of cases, and as a result, can provide insight into a situation that is prevalent in the group the case is drawn from. It is of immense relevance if the researcher wants to explore and gain a holistic understanding of a situation, group or community. In this design approach, a non-random sample is selected to gather as much information as possible to the situation in its totality (Kumar, 2011:123).

## **1.7 THE LIMITATIONS OF THE RESEARCH**

The research was limited by the lack of previous research undertaken on traffic congestion challenges in Kuils River as the study area. The study was also limited by the accessibility of documentation and maps of proposed future developments within the Kuils River area. The accessibility and availability of municipal officials to be interviewed was also an important factor in the limitation of the research.

## **1.8 BACKGROUND AND INTRODUCTION TO KUILS RIVER**

Kuils River suburb, situated in the City of Cape Town within the Western Cape Province, will be utilised as a practical case study to address the above-mentioned research aim and objectives. A short background to the key challenges experienced within Kuils River will be provided. By doing so, it will highlight and reveal some key insights to the existing situation in the Kuils River suburb as the study area of the research.

### **1.8.1 Kuils River suburb**

The Kuils River suburb is no exception to the challenges related to the integration of housing and transport planning and will be used as a practical case study. The current traffic situation in the study area, Kuils River suburb, will further highlight the traffic challenges experienced



within Cape Town. The motivation for the case study is thus to contextualise the current traffic congestion situation in Kuils River and determine the contributing factors thereto.

The primary concern that motivated the research topic is that the researcher lives in the Kuils River suburb where traffic congestion is severely experienced, especially during peak hours, and was inspired to investigate the matter. The research might reveal interesting insights into the reasons for the existing situation in the area.

The population or households residing in the area will be the study object from which the research data will be collected. The means or measuring instrument that will be used to collect data will be through unstructured interviews related to the topic with 15 residents living in the study area.

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### 1.8.1.1 Locational setting

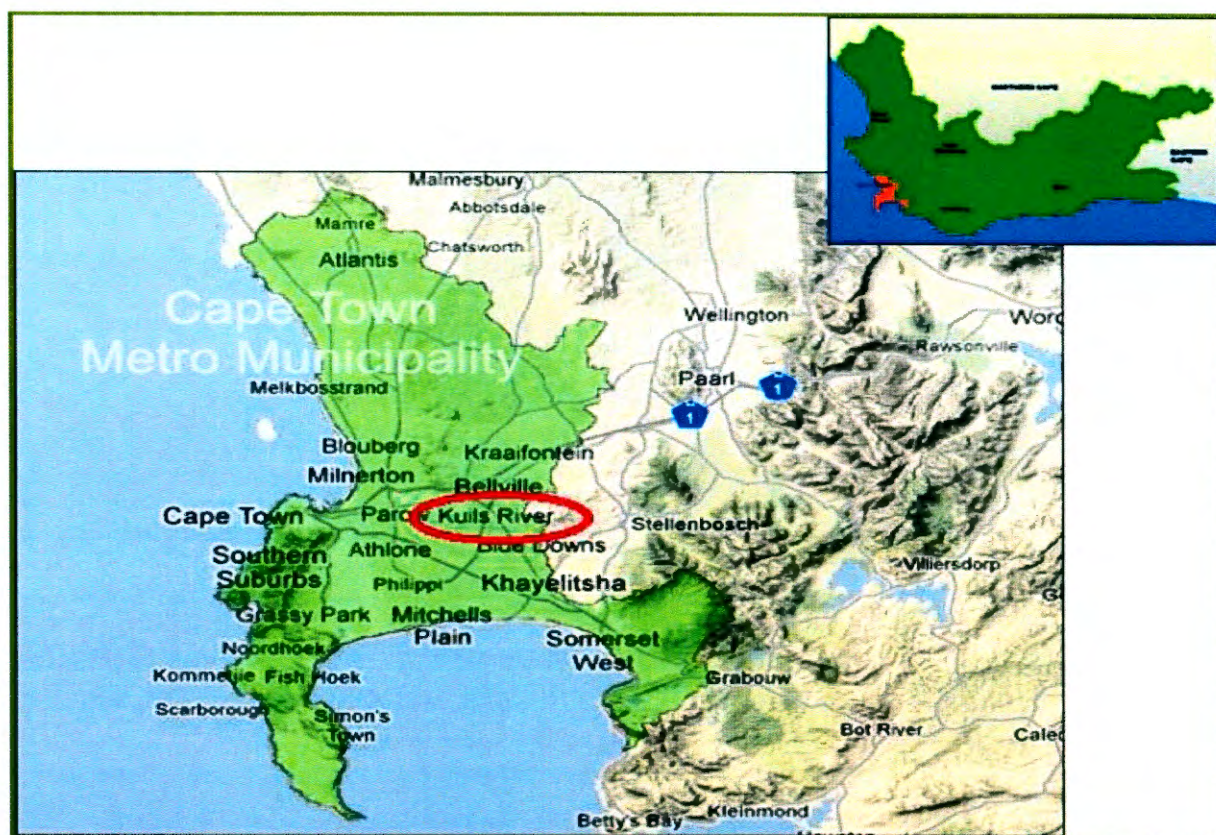
The study area is situated within the Western Cape Province (see Figure 1.1) and is a northern suburb of the City of Cape Town (Figure 1.2). The suburb, with its unique smallholding and farming appeal, has grown in popularity due to its close proximity to the Cape Town Central Business District (CBD) and other popular tourism attractions, such as Century City, Ratanga Junction and the wine routes and farms of the Cape Winelands, whilst also experiencing the opportunity to live away from the buzz of the city life.



Source: Google Maps

Figure 1.1: Locality map of Kuils River suburb within the Western Cape





Source: Western Cape Government (2015).

*Figure 1.2: Map locating Kuils River within the City of Cape Town Metro Municipality*

### 1.8.1.2 Existing developments

In the past few years, a number of significant housing developments have been seen in the study area. A wide selection of houses was and is still being built in the area, from double-storey homes on large plots to smaller homes in security estates.

The area is also predominantly residential, with the majority of housing being formal (78.6%) and is occupied by low-, middle- to high-income population groups. Major commercial nodes are located in the area and the industrial sites influence the character of the area negatively. The businesses in the area have also grown significantly to keep up with the growing population in the area.

### 1.8.1.3 Movement systems

Due to a lot of traffic moving out of Kuils River on Amandel and Langverwacht Road to Cape Town, Stellenbosch and nearby suburbs, it causes major traffic congestions during peak hours. In the same way, the Van Riebeeck (Kuils River highway) and Nooiensfontein Roads in Kuils River are equally problematic, especially as it connects to other major networks. The



severe traffic congestion in the area, especially at peak periods, puts the road services infrastructure under severe strain. Figure 1.3 illustrates these highly congested roads, namely Amandel, Langverwacht, Van Riebeeck and Nooiensfontein Roads.



Source: Obtained from Western Cape Government.

**Figure 1.3: Roads in Kuils River experiencing the severest traffic congestion**



The assumption is that the escalating residential developments in the Kuils River suburb contributed to the heavy traffic congestion in the area. Due to the heavy traffic congestion, it appears that the area is unable to handle all the inner and surrounding developments. According to the *Tygerburger* (30 March 2015), more than 2 000 residents in Kuils River has signed a petition to prompt the City of Cape Town to take action in addressing the daily traffic gridlock in the area, as residents are increasingly considering to move out of the area.

The heavy traffic congestion in the area remains, despite the fact that the majority of residents in the area make use of public transport services, which is also most of the time not reliable. The head of traffic in Kuils River was quoted in the *Tygerburger* of 25 February 2015 stating that “[t]he reality is that development in the area has grown tremendously but that the infrastructure has not kept up with the development”.

Except for the railway station in Kuils River, which is the most popular form of public transport used by residents, the second most common transport modes are mini-taxis and bus services. It is estimated that 55% of commuters are walking to the station, whereas 26% makes use of public transport services to get to the station. This confirms the spatial imbalance in the city, where the majority of people are the poorer communities that are placed further from main economic activities and thus have to walk longer distances, whilst the higher income residents can afford to live closer to the economic nodes (Wentley & Hitge, 2013:20-23). Thus, the effective integration of housing and transport planning is not achieved when there is still a large volume of commuters that have to walk long distances from their homes to reach central activity points.

Kuils River is considered an economic opportunity zone with clusters of shops, restaurants, offices, banks, hospitals and clinics, parking, and public transport interchanges. Land in Kuils River for future development is in abundance, with high property prices due to its more rural setting. The CBD is an existing economic node, characterised by a mix and clustering of commercial and business activities with associated employment opportunities and higher-order services.

Most established houses is low-density development dominated by private vehicle users, as the distance of new residential developments is increasingly further away from the suburb’s public transport railway station. Due to the rising residential developments, more people are travelling to the area seeking job opportunities, which is putting further pressure on the public transport demand.



#### **1.8.1.4 Accessibility**

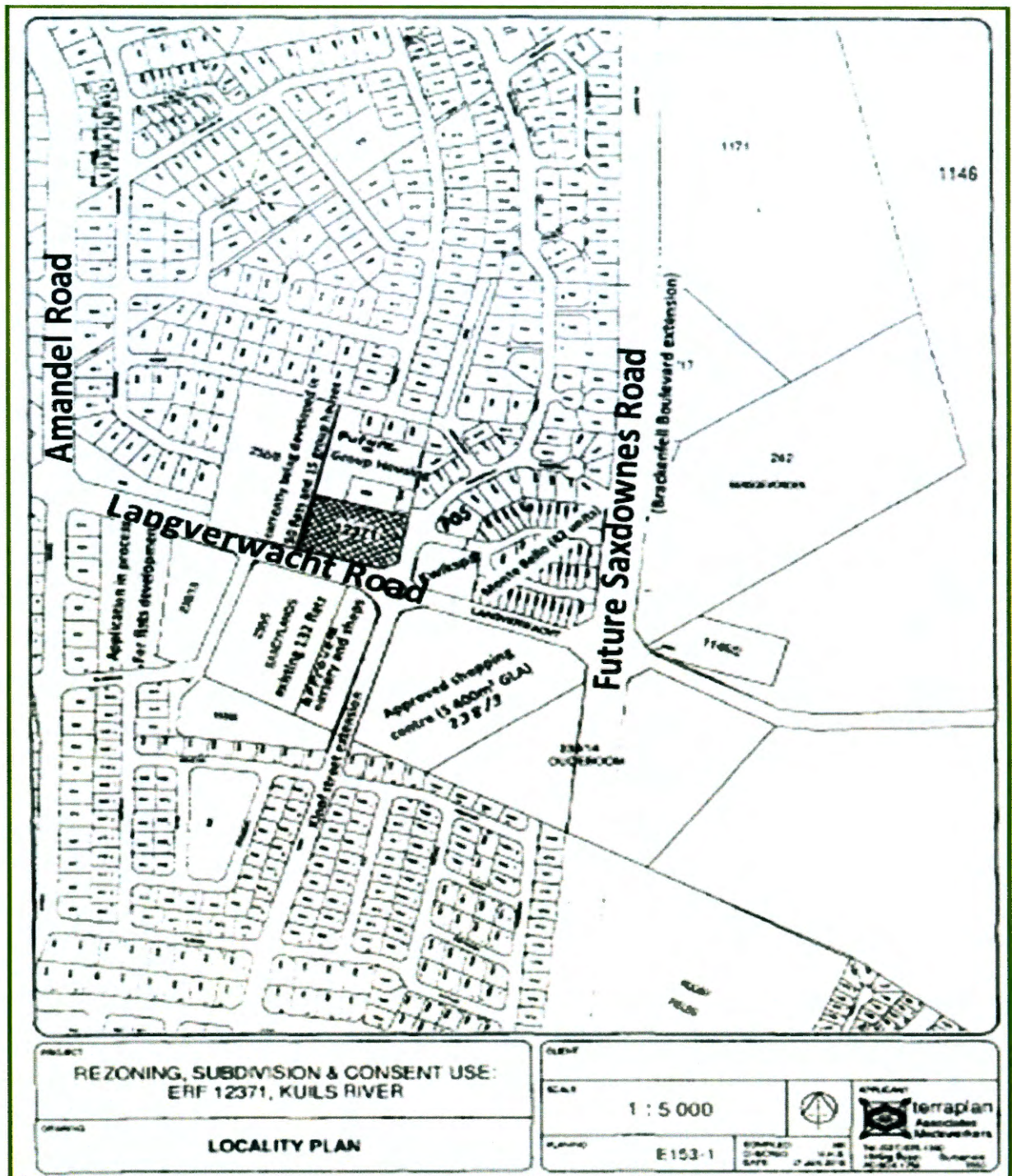
Kuils River suburb is conveniently located close to the Van Riebeeck provincial main road and Stellenbosch arterial road. It offers accessibility from the suburbs' main road onto the Stellenbosch arterial road, with high visibility to the passing traffic and easy accessibility to the surrounding areas. It is similarly easily accessible from the R300 that links both the N1 and N2 freeways to the suburb. With the suburb's link to the Stellenbosch arterial, the by-passer commuter is rewarded with beautiful sceneries on their way to Stellenbosch. Physically, the suburb presents a world-class atmosphere with immaculate landscaping; and is developed in the context of its cultural and physical surroundings.

#### **1.8.1.5 Current and proposed road developments**

The anger and frustration of residents raised in newspapers might have found some light at the end the traffic tunnel, as a motion to address the critical traffic congestion problems and insufficient road infrastructure in Kuils River was reviewed and considered by the City of Cape Town on 16 April 2014. This resulted in a budget allocation of R20 million by the City of Cape Town towards the upgrade of Amandel Road and future development of Saxdownes Road, which will be developed in conjunction with the developer's funding who is erecting residential properties that need access to the road. Upgrading to the Langverwacht Road is also in the pipeline for the suburb.

This transport investment project forms part of the City of Cape Town's key interventions to address congestion in the greater Kuils River area, due to a study conducted that revealed Kuils River as one of the areas in Cape Town that needed to be prioritised. The municipality commenced with the upgrading of Amandel Road in early 2015 by making provision for dual lanes, which will ultimately increase road capacity and improve the flow of traffic. This project also includes the upgrade of existing, and development of new robot signals at road intersections. The development of the Saxdownes Road as illustrated by Figure 1.4 will bring immediate relief to both Amandel and Langverwacht Roads that will result in residents near to the future road development to use Saxdownes Road as exit or entry point from or to Kuils River.





Source: City of Cape Town, Annexure B (2012).

Figure 1.4: Map indicating the future development of Saxdownes Road

### 1.8.1.6 Demographics

According to the 2011 census, Kuils River has a population of 69 500 and 19 000 households, with an average household size of 3.7 (Statistics SA, 2011). The majority of residents live in formal housing and have access to basic sanitation services and electricity.



Only 8% of residents live in informal dwellings, with a small percentage not having access to basic services.

Kuils River has an unemployment rate of only 12.7%, compared to the 87% of residents being employed. Most of the residents in the area are well-educated, with 61% of the population having a Grade 12 and higher education. It is thus clear that based on the Census statistics of 2011 as reflected in Figure 1.5 below, Kuils River suburb can be viewed as an affluent area in Cape Town, with the majority of residents falling in the high- to middle-income groups.

- The population is predominantly Coloured (58%), White (20%) and Black (19%).
- 61% have completed Grade 12 and higher.
- 87% of residents are employed.
- 27% of households earn a monthly income of R3200 and less.
- 92% of households live in formal dwellings.
- 99% of households have access to piped water.
- 97% of households have access to flush toilets.
- 99% of households have refuse removal once a week.
- 99% of households have access to electricity.

Source: Statistics South Africa (2011:2)

*Figure 1.5: Kuils River Suburb Census 2011 results*

## **1.8.2 The City of Cape Town**

In the Integrated Human Settlements Five-year Strategic Plan of the City of Cape Town (COCT, 2013a:12) it is stated that as a dynamic metropolitan municipality as shown by Figure 1.2, the City of Cape Town has developed a more comprehensive approach towards focusing on integrated, people-centred and sustainable housing development. With urbanisation being an inevitable challenge in the City of Cape Town metropolitan area, this



approach entails a primary focus to address the challenge of aligning housing provision with transport planning (COCT, 2013a:121). Hence, in the City of Cape Town's Integrated Transport Plan (COCT, 2013b:121), the improvement of transport infrastructure and public transport in particular, is prioritised as a measure to address and minimise traffic congestion problems in Cape Town. The aim is to transform urban areas, which continue to reflect apartheid spatial planning patterns, thereby improving urban and regional planning and service delivery. It is thus an important objective for the City of Cape Town to become more insightful about the spatial location of developments proposed within their jurisdiction (COCT, 2013a:18).

According to Seth Maqetula, executive director in Human Settlements of the City of Cape Town, they are committed to integrated housing developments and people should thus not only benefit from having homes, but also have access to economic and social opportunities that is needed to enhance their quality of life (COCT, 2013a:13). If it is the need of the majority of the population not to possess a vehicle, then the critical objective of an integrated transport and housing policy should be to integrate housing / land use and transport network systems in such a way that it allows for the leading of a full life without the need to own a vehicle.

Since the year 2000, there have been significant developments in government-led public transport systems in South Africa, most notably in Johannesburg and Cape Town with the implementation of a phase roll-out Bus Rapid Transit (BRT) system. The ultimate aim of the new Cape Town based transit system is to phase out current public transport operators to be formalised, included and merged into what is called the My Citi BRT system (Schalekamp & Behrens, 2013:185).

The My Citi BRT system will ultimately replace all existing unscheduled taxis and scheduled bus services. It is, however, important to note that rapid urban growth is typical of Cape Town and the insistence on the formalisation of the existing paratransit may negatively affect commuters, because the formal MyCiti buses might not be able to keep up with the demand (Schalekamp & Behrens, 2013:189). Currently, the level of public transport services in Cape Town is ineffective and does not meet the needs of the users. The services are limited and fragmented with unreliable travel times and minimum safety and security (Muanganidze & Del Mistro, 2012:632).

The implementation of the BRT-based system with the objective to incorporating existing formal bus and paratransit services in Cape Town was drawn from transit-oriented development (TOD) successes in North and South America, Asia and Europe. It may seem overly optimistic, but cities in other developing countries, such as Curitiba in Brazil, that



invested in extra lanes for long buses, and Bogotá in Columbia that introduced significant restrictions in private vehicle use, made enormous progress in dealing with transport difficulties, through fundamental deviations in their transport policies. However, what may work in one country may not necessarily be workable in another, thus appropriate differences in the background of cities need to be taken into consideration. The BRT system appears not to be working to its full potential and appropriate measures are to be considered to justify its benefits to commuters, such as accessibility, affordability and quality of services. The BRT case studies considered by the City of Cape Town need to be tailor-made to work within a South African environment, especially considering our social and political circumstances (Muanganidze & Del Mistro, 2012:632- 643). Herala (2003:92) argues that to integrate housing and transport planning in a sustainable way, would involve much more than improved provision of public transport, but also walking and cycle paths.

The reality is that there is now a greater than before investment in public transport, motivated by changes in housing, jobs and concern of economic impacts that result in over-reliance on motor vehicles for transport. It is important to recognise that private mobility will continue to be an important form of transport, but that a better sense of balance is pursued in urban transport, accessibility and housing. Thus institutional transformation within the City of Cape Town would involve making sure that the politicians and municipal officials have the adequate practical awareness to enable them to manage economic, spatial and integrated mechanisms of change in urban and regional planning. Furthermore, it would entail protecting the political obligations to citizens and to incorporate these into a more holistic municipal framework that prioritises the issues raised by communities, aspiring to equity and an integrated and inclusive city (COCT, 2013b:123).

## 1.9 DEFINITIONS OF KEY TERMS

The following key technical terms are briefly defined for clarification purposes and, where relevant, will be further unpacked in the study. All concepts are referenced from Bickford, (2013) and Suzuki, Cervero and Luchi (2013:xix):

- ◇ **Bus rapid transit (BRT):** High-quality bus services that operate on specially designated lanes for exclusive right of way on roads. It often includes bus stations rather than stops where passengers pay before boarding.
- ◇ **Mixed-use development:** A form of development that includes various land uses in close proximity to each other, such as housing, recreation and commercial.
- ◇ **Non-motorised transport (NMT):** Refers to any type of carbon-free form of mobility through increased physical activity, limited financial and non-renewable energy



resources, such as bicycling and walking and presents the most affordable, flexible and sustainable form of solution to mobility.

- ◇ **Pedestrian-friendly:** A development design, with the aim to improve the pedestrian's experience of accessibility, connectivity and pathways to amenities and as a result improving the efficiency of walking.
- ◇ **Transit-Oriented Development (TOD):** This refers to mixed-use, pedestrian friendly and compact development around transit stations to promote non-motorised and public transport travelling, resulting in more people accessing various activities without the usage of private vehicles.
- ◇ **Transportation Demand Management (TDM):** Reduce the demand for travel through incentive policy measures that would typically involve an increase in already high parking costs and taxes to encourage non-motorised and public transport transit. This measurement tool is used to predict the extent of private transport practices in an attempt to alleviate traffic congestion.
- ◇ **High density development:** In the context of this study, it refers to multiple floor building designs, as well as less built-up and outspreading open spaces that reduce the cost of providing and extending urban infrastructure investments.

## 1.10 THE CHAPTER OUTLINE

### **Chapter 1: Introduction**

This chapter is the introductory part of the research proposal and includes the identification of gaps in the research and motivation for the study. The chapter comprises of the problem statement and question; secondary research questions; and the aim and objectives of the research. The last parts of the chapter consist of an outline of the dissertation chapters and a conclusion to the study.

### **Chapter 2: Conceptual research framework and literature review**

In this chapter, research was done of available academic literature on the subject matter. A broad analysis of the topic is provided, followed by a more focused approach of the impacts of housing and transport on each other, with the aim to contextualise the current traffic situation in the study area. An attempt is made to discuss relevant international case studies related to the integration of housing and transport planning and to ultimately understand the global experiences and challenges thereto.



### **Chapter 3: Legislation and policies**

The fundamental objective of this chapter is to focus on the legislation and policies that govern and influence the integration of housing and transport planning in the Western Cape. Other spatial legislation applicable to the subject matter was also explored.

### **Chapter 4: Research methodology**

This chapter describes the methodology that was used to achieve the objectives of the research. It describes in detail the methods and instruments used to collect and analyse the research data.

### **Chapter 5: Research findings and discussions**

Empirical evidence is provided in this chapter, which was collected by conducting interviews with relevant municipal officials and residents from the study area, to determine their opinions on the growing traffic congestion in the study area, as well as discussing any challenges experienced. The interview results will then be presented; studied and interpreted.

### **Chapter 6: Recommendations and conclusion**

This chapter is the concluding part of this dissertation and recommendations and concluding observations were made, based on outcomes of the interpretations made in Chapter 5.



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## Chapter 2

# CONCEPTUAL RESEARCH FRAMEWORK AND LITERATURE REVIEW

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### 2.1 INTRODUCTION

Chapter 2 presents a literature review relevant to housing and transport planning. Though the literature covers a comprehensive and wide variety of topics, this review is focussing on and exploring only four main themes that consistently emerged throughout the literature studied. The four themes are housing, transport, planning, and integration, which are presented in diverse contexts, with the primary focus on their application to the integration of housing and transport planning.

In South African municipalities, comprehensive Integrated Development Plans (IDPs) are developed to guide both housing and transport planning decisions and to provide a framework for infrastructure developments. In contrast with past technical and physical planning approaches, this planning framework promotes integrated and participatory development. While elements of urban planning are consistent with the IDP as a framework, it provides a platform for continuous debate over appropriate forms of integrated urban spatial planning (Todes, Karam, Klug & Malaza, 2010:414-416). With some of the reviewed literature referring to various challenges and barriers towards the integration of housing and transport planning, the study is then drawing upon international case studies and TOD, as part of the solution towards the integration of housing and transport planning. For possible solutions to these challenges and barriers, the objective of this chapter is that criteria be derived from the literature on TOD to address the traffic congestion challenges currently experienced by residents in the case study area.

### 2.2 HOUSING

Housing is defined by Chaudhuri (2004:200) as a product and process that provides shelter and security and is maintaining the socio-economic well-being of individuals or households. Similarly, it is argued by Newton (2012:1-2) that based on people's situations in a physical space they can get access to scarce resources, and spatial movement thus becomes a significant indication of a community's socio-economic well-being. This is reinforced by Van Wyk (2009:18) who defines housing as a mechanism used in South Africa for political



stability and socio-economic prosperity, which requires various resources and services in order to maintain and sustain quality living environments for citizens.

In the South African Housing Act, 107 of 1997, housing is described as both a process and product of human efforts to provide adequate shelter that fulfils a basic human need to the well-being of citizens. Housing is also viewed as a key sector in the national economy and is ultimately a vital part of integrated development planning. In his 2009 budget speech, the South African Minister of Human Settlements, Tokyo Sexwale, emphasised this by explaining that housing is not just about the building of houses, but that it also about the transformation of residential areas and building communities, by providing them with closer access to economic opportunities and social amenities.

From the above point of view, housing as a concept can be considered as having four components, namely (i) the physical structure and design; (ii) the household and socio-economic aspects of the housing structure; (iii) the neighbourhood and immediate physical surroundings of the house; and (iv) the town and environmental and socio-economic ranges of services (Chaudhuri, 2004:200). Therefore, housing must be viewed as not just the assembly of walls and roofs, but as a complex process with various components (see Figure 2.1) that must provide safe access and affordable services to diverse socio-economic groups (Beltrão & Kessler, 2013:2-12).



Source: Beltrão and Kessler (2013:14)

*Figure 2.1: Housing components*



## 2.2.1 Housing development

The development of housing is a dynamic process and the basis of all urban development. It is the concern and priority of both government and citizens, due to its high levels of investment in infrastructure. For any housing approach, whether it is government or private, both physical planning for development consideration and institutional components, such as enforcing development controls and political will, is setting the framework for effective management of a housing development (Beltrão & Kessler, 2013:10-12).

Based on the above, key characteristics for effective housing development are its design, construction and location towards more mixed-use developments. For a housing development to be viable, it is required to be constructed adjacent to good quality public transport, preferably accessible to economic or employment opportunities. In terms of housing construction, there is a move towards greater value and higher residential densities to promote social activities (Winston, 2010:320). In terms of the social aspect, the provision of open spaces and recreational facilities are important factors in the development of housing. For economic accessibility in housing, the location of land for development and high housing density are important considerations (Yakob, Yusof & Hamdan, 2015:581). High densities are generally associated with shorter travelling distances; improved public transport and enhanced likelihood for walking and cycling (Ndebele & Ogra, 2014:454). Environmental considerations will involve the application for land during the planning phase and its significant impacts on the location of a housing development (Yakob et al., 2015:581). Other key characteristics for sustainable housing are its design, construction and location towards more mixed-use developments (Winston, 2010:320).

There are various forms of housing development, such as greenfield, infill and redevelopment of houses that support the TOD approach. According to Beltrão and Kessler (2013:13-14), these types of housing developments serve the following functions and purpose:

- (i) All limit urban sprawl.
- (ii) Maximises the use of existing public transport infrastructure.
- (iii) Contributes to increased densification of cities that encourage investment in infrastructure and economic activities.
- (iv) Encourages innovation that builds on community participation and growth of housing infrastructure.
- (v) Contributes significantly to higher densities, sustainable public transport and effective urban growth.



- (vi) Improves accessibility and allows residents to be situated in close proximity of socio-economic facilities and opportunities.

With the above in mind, when planning for housing development sites and its location, vital factors to consider in designing a residential neighbourhood, are the following: (i) if the development is mixed land use; (ii) interconnected and easy accessible to public transport; (iii) quality of the houses; (iv) higher densities and affordability; and (v) access to open space and safety and security (Yakob et al, 2015:585-586). Hence, planning for a housing development should be concerned with how it might affect the community within a neighbourhood in terms of accessibility, safety and well-being.

### **2.2.2 Fundamental housing development principles**

A housing framework must consider various principles informed by urban planning and development. Some fundamental guiding principles for housing development to build communities by providing a sense of place, are identified by Beltrão and Kessler (2013:2) as the following: (i) a wide array of socio-economic infrastructure, services and opportunities; (ii) affordable housing options and types; and (iii) convenient movement of people and goods.

To accomplish a sense of place or the building of 'Complete Communities', a North American concept implemented through the creation of building places to live, work and shop, specific urban planning principles must be followed that promote diversity. Suzuki et al. (2013:175) define diversity as a mix of different land uses, a variety of houses and accessibility to transport options. Key principles for building 'Complete Communities' are to ensure that the urban design is (i) sustainable and resilient; (ii) creating a mix of complementary land uses; (iii) inclusive and active community involvement; (iv) providing access to food and local economic initiatives that is influenced globally and *vice versa*; and (v) an integrated transport system (Beltrão & Kessler, 2013:10-12).

### **2.2.3 Challenges and issues to consider in housing development**

The problems with the development of housing arise when developers are not interested in building low-cost housing, due to its low profit gain, which ultimately affects affordability. Adding to this, is the shortage in availability of land and the increase in land price that also affects the provision of open spaces in neighbourhoods. According to Yakob et al. (2015:583-584), these problems are related to compliance to planning control and guidelines, which developers at some point refused to comply with due to the lack of enforcement by state authorities. Non-compliance to planning policies may thus affect quality



of life of the housing development's residents in terms of social, economic and environmental features.

In contrast to low cost housing, lower densities lead to problems of overconsumption of land, dependency on private transport and extended travelling distances. Hence, it is the growing travelling distance between where people are living and their work places that need to be addressed through the integration of housing and transport planning (Winston, 2010:326-328). However, there are various important challenges that need to be addressed for integration to take place, such as the lack of conceptual understanding of TOD or sustainable housing; negative attitudes towards higher density houses and socialising; inadequate communication and collaboration between housing and transport planning and other divisions within municipalities (Pucher, Korattyswaropam, Mittal and Itteyaran, 2005:187).

## **2.3 TRANSPORT**

Transport is identified by Litman (2014:2) as a vital role-player in the achievement of liveable and sustainable cities when compiling integrated plans and strategies. According to Ankner (2005:270), transport can be defined as the thread that connects people, businesses and communities. Transport is also described as a system of moving goods, people and services within communities, the country or region and even to destinations around the globe (Municipal Research and Services Center [MRSC], 2009:17).

Therefore, transport is referred to as a cooperative process that involves all people that utilises the transport system through proactive participation, which includes various stages, namely: (i) monitoring of the current situation; (ii) forecasting of urban growth; (iii) identification and assessments of current and future transport challenges and impact; (iv) development of short- and long-term plans and mitigation strategies; and (v) securing sufficient funding for plans (UNESCO, 2007:3). Robust and active planning thus maximises the benefits of a transportation system to ensure effective flow and movement of people (Ankner, 2005:270).

Hence, transport plays a crucial role in societal life and is said to be one of the key functions of accessibility to goods and services in societies. It is argued by Fletcher, Garasky and Nielsen (2005:324) that access to consistent transport enhances economic outcomes, and households without private vehicles are more probable to experience hardships. Leuenberger, Bartle and Chen (2014:1) support the latter, by stating that transportation is not just about roads and highways, but also connects people and communities to opportunities. On the contrary, the United States Department of Transport Report of 2010



highlighted the shortfalls of the transportation system, by alluding to its environmental impacts in the long run (cited by Garceau, Atkinson-Palombo, Garrick, Outlaw, McChill, & Ahangari, 2013:44).

### **2.3.1 Transport planning**

The importance of transport planning lies in the fact that it allows people access to activities and with the population always increasing, the demand for transportation also increases (Farahani, Miandoabchi, Szeto & Rashidi, 2013:1). Traffic is more and more concentrated on roads, which leads to other transport related issues, such as congestion and noise and air pollution that is caused by every single vehicle using the transport network system and causing delays to other vehicles on the road (Lennan, 2001:51).

Transportation has become a particularly important factor in the long-term planning of land use for liveable communities. Past transport planning decisions were not necessarily based on interrelationships and diverse needs of communities. Most decisions instead focussed on building road infrastructure, which was usually linked to issues such as traffic congestion and not on the communities' vision for the future (MRSC, 2009:117). Many of the transportation functions, as is still currently the case, are divided amongst various spheres of government, which does not necessarily add to a seamless and efficient system.

### **2.3.2 Challenges and issues to consider in transport planning**

It was found in South Africa that 76% of South African households do not have access to train services and a further 38% do not have access to bus services. It became clear that minibus taxis are of great significance in the South African transport planning context. Another finding was that only 9% of South African people have no nearby public transport available (Department of Transport [RSA DoT], 2003:1).

Therefore, an issue to be considered in transport planning is the vital role that transportation plays in the accessibility and quality of life of individuals, as well as shaping economic activities within a community or neighbourhood (Talen, 2002:258). In addition, the issue of rising land prices impacts on transport planning causing unplanned market responses and many cities and suburbs growing denser. Hence, more and more emphasis has been placed on transport planning in shaping a city's economic growth patterns and influencing the prosperity and livelihoods of communities (Farahani et al., 2013:1).

Another issue to consider in transport planning is the changes in travel demands, which do not necessarily transpire into specific travel behaviour, without the necessary planning to support it. Hence, change in travel behaviour can only be realised if the required



infrastructure, such as crosswalks, sidewalks, bike parking and bike lanes are available within a neighbourhood to make traffic congestion less severe (Litman, 2014:17; Prozzi, 2009:2).

Thus, a less aggravating and more cost-effective direction for transport planning requires inter-connectivity to improve the mobility of people and goods (Ankner, 2005:275). The shift in direction would not only focus on addressing traffic congestion issues, but rather have a strategy that focusses more on the travel demand and needs emanating from the various transportation modes (Litman, 2015b:31).

Over the past few years, most cities and communities have been looking for a new and innovative solution to address the increased urban congestion and pollution through the provision of more efficient and effective modern transportation options. Many options were considered and weighed against the impact it may have, for example by adding more highways is very costly and even disruptive to the environment. Subsequently, the bus transit option was considered as an essential transportation service and has gained increased popularity around the world, but its impact was also considered to be slow and unreliable (Cervero & Kang, 2011:102).

Still, the BRT system is viewed worldwide as one of the most innovative approaches to modern transportation, with similar features as the rail transit system, such as a dedicated right of way; limited stops with fast travelling between stops; communication and safety systems; and rapid loading and unloading on platforms (Cervero & Kang, 2011:2). Today it is evident that more and more cities, which include Curitiba in Brazil, Bogotá in Colombia, Guangzhou in China, are implementing the BRT as a modern public transportation system to increase mobility of people and relieve traffic congestion. BRT is also used by cities such as Ottawa in Canada and Curitiba as a more cost-effective alternative to urban rail investments. On the other hand, cities such as Seoul in South Korea, Mexico City, and Bangkok in Thailand invested in BRT to complement existing urban rail systems (Cervero, 2013:4).

The congestion on roads led to the growing realisation that the use of freight transport is vital to the overall objectives of the urban transport systems. One of the objectives is to achieve a shift from road to more rail freight through interventions, such as strategically located multimodal transport facilities and the implementation of incentives. As a result, trucking, warehousing, and air freight activities have become key economic drivers, with increasing competition amongst major freight and distribution hubs and ports, in order to meet the demand for speedy delivery (Hesse & Rodrigue, 2004:172-178). However, with few developing countries planning for freight movement, it becomes a challenge committing to



the increase in infrastructure maintenance, due to heavy trucks inflicting road damages (UN-HABITAT, 2013:9).

The NMT mode (especially cycling and walking) is increasingly being viewed by developing countries as an important mode of public transport for local short distance trips. NMT has the potential to grow and ways are being looked at on how to improve its integration in the overall transport system. It is an affordable alternative to costly taxi mini-buses and poor quality bus services. However, the absence of suitable regulatory frameworks is hampering the optimisation of its potential. The bicycle as an NMT mode is actively used in the developed countries and integrated into the overall transport system, especially in European countries (Rahman D'Este & Bunker, 2010:3-8; UN-HABITAT, 2013:7; Vuchic, 2005:32).

In view of the above, modal integration is an essential requirement for accessibility and involves a combination of more than one transport mode. It is described by Curtis and James (2004:297; see also UN-HABITAT, 2013:35) as the coordination of transport infrastructure services (formal and informal) and spatial configuration that enables a unified and seamless linkage between transport networks. Yet, the modal integration model is still not given high priority in developing countries.

Consequently, the above-mentioned service gap and lack of affordable and accessible public transport has led to the increase of informal taxi operations in most developing countries, which can lead to the traffic congestion becoming even worse. An encouraging trend, nevertheless, is the introduction of the BRT and the light rail and tram systems in African cities that generate substantial benefits to travellers. Hence, this conventional form of public transport is increasingly being replaced by the more universal and less affordable paratransit and NMT transport mode (UN-HABITAT, 2013:7).

### **2.3.3 What is transit-oriented development?**

The concept of TOD was ultimately codified by Peter Calthorpe in the late 1980s, when it became a feature of modern planning in the United States of America and has been generally defined as a mixed-use community that lives near to transit services and thus with less dependency on vehicles and travelling (Carlton, 2009:1). It is further stated by Carlton (2009:1) that TODs can also be viewed as a potential solution to provide real alternatives to addressing traffic congestion.

Subsequently, Wilkinson (2006:224) then builds the concept of TOD around general features, such as that a neighbourhood should be centred around a bus and railway station within easy walking distance. The main attribute of a TOD neighbourhood is moderate to high-density residential developments in close proximity to major public transport centres



and activities and its mixed land use patterns designed for easy access to social and economic opportunities by means of walking and cycling (Wilkinson, 2006:225). According to Olaru, Smith and Taplin (2011:220), TODs have an open road network with extensive pedestrian and cycling movements, which is occasionally linked to traffic calming measures.

The TOD transport system is described by Ndebele and Ogra (2014:454) as fundamentally mixed-use, high density, residential and commercial developments, within walking distance of major transport nodes and activity centres, with the aim to reduce motor vehicle usage and promote walking and cycling. TOD sites with denser residential developments are inclined to better mixed-use activities and an improved pedestrian connectivity and social engaging activities. Lessons from TOD neighbourhoods also suggest that TODs provide a strong opportunity for participation in vehicle sharing, due to connectivity to transit stations and supportive public infrastructure (Cervero & Arrington, 2008:12-16).

On the other hand, Curtis (2008:105-107) has a conflicting view of the TOD concept and argues that the approach is promoted by transport planners, whilst considering the road network, but does not directly address necessities for an integrated road transit system for freight and vehicle travelling. He further argues that the relationship between towns and neighbourhoods is rarely considered in a TOD system. He views a 'Network City' as significant in its approach and consideration of the regional system as a whole and its capability in being retro-fitted to existing and new urban development.

Implementing the 'Network City' strategy will require a new and transformed design of cities and traffic modelling and management. The intent of the "Network City" is to maximise traffic efficiency and requires that housing and transport planners define the density of a housing development in relation to the capacity of public transport. The aim is to provide high quality pedestrian and cycling networks at focal transport points close to homes, with greater frequency of public transport between transit points along access roads; and vehicle and freight regional movement outside of transit points. This provides for a strong reasoning and motivation for particular proposed development locations and densities. This approach will thus demand a change to the existing planning skills and practise (Curtis, 2008:108-110).

#### **2.3.4 Fundamental transit-oriented development principles**

It is of great importance that each TOD neighbourhood be designed to fit the characteristics of its surroundings and to take into consideration certain constraints. Despite the fact that each neighbourhood must be unique, fundamental principles are proposed by Suzuki et al. (2013:12) to be considered in a TOD neighbourhood design, namely:



- (i) The walking scale should be planned and limited to 200 ha, making it easier for residents to move around on foot or cycle.
- (ii) It should have a centre where a mix of land uses is provided and anchored by a central transit station, which is the main gathering place within the area.
- (iii) Streets should be a well-integrated quality network that is safe through provision of footpath lighting and attractive public places for people to move around.
- (iv) Characterised by diversity and considerable density with a sufficient size and minimum target of 10 000 residents.
- (v) It is a place where people can live, work and play; depending on the location and services used, a small public transport hub must be positioned at or near the central transit station, adding to the centre's commercial vibrancy and sustainability and providing opportunity for fast and efficient travelling.
- (vi) Streets (not more than one lane in each direction) should be designed to ensure that the traffic speed is low, generally less than 40 km per hour, providing priority to buses, safe for pedestrian movement and crossing, but also adequate for vehicle movement due to assortment of access routes within a TOD.
- (vii) The levels of vehicle parking should be low and provision thereof should be flexible depending on the types of housing available, and non-residential parking should preferably be public paid parking, a combination of on- and off-street units, shared by all users based on demand.
- (viii) As a common rule, off-street public parking should be located on roads approaching the TOD neighbourhood centre and the outside boundaries of the centre to ensure optimal pedestrian movement and improve sustainability of businesses.
- (ix) Considerably greater levels of bicycle parking should be provided in a secure area; at least one parking per 10 residential units.
- (x) A high level of accessibility should be provided in all directions and consideration should be given to barriers during planning of the development to avoid limited access within the neighbourhood.

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Three key principles in the development of TOD neighbourhoods were also identified by Beltrão and Kessler (2013:2) for consideration during planning, namely: (i) efficient infrastructure services and movement of both people and goods; (ii) convenient accessibility to sustainable resilient services and economic opportunities; and (iii) mixed and compatible land uses. The development of a strong TOD network supports the outlined principles. As land use management is an integral part of urban planning to deliver on sustainable and resilient economic growth, with the transport system being the economic basis on which land use and housing developments depend on (Beltrão & Kessler, 2013:2).



### **2.3.5 The benefits associated with transit-oriented development**

The dominant TOD perspectives are that it reduces private vehicle travelling and promotes sustainable transport modes. It is a neighbourhood design concept that is characterised by its diversity in land use forms (mix of residential and socio-economic opportunities); moderate to high residential densities; well-connected road networks; and high rate of regular public transport stations or stops (Shatu & Kamruzzaman, 2014:61). The most significant characteristic of TOD neighbourhood developments is that it is within walking distance from major transit stations (Carlton, 2009:1).

In addition to enhancing reduced private transport travelling, other benefits associated with TOD neighbourhoods are maximisation of pedestrian connectivity and improved access to socio-economic opportunities and activities; greater physical activity and health due to encouraging walking and cycling; higher land values and property investment returns; and increased level of residents' satisfaction in neighbourhoods (Shatu & Kamruzzaman, 2014:62-68). It is thus concluded that TOD is a supportive mechanism in the promotion of sustainable travel behaviour.

TOD also assists in managing economic growth, promoting quality of life, while addressing environmental challenges to reduce its impacts, and encouraging densification. In addition, TOD also improves public safety and mobility; reduce travel and household expenditure; and create opportunities for affordable and accessible housing (Beltrão & Kessler, 2013:3; Wilkinson, 2006:225).

It is important to note that although the TOD approach is about a variety of land uses, it puts emphasis on that not just one land use should dominate. This means not just residential and business land uses, but also social and educational land uses, which create opportunities for communities to live, work and travel within a TOD neighbourhood. The benefits of such a neighbourhood are revealed where residents typically use public transport twice as likely as in non-TOD areas (Falconer & Richardson, 2010:2-4).

### **2.3.6 The transit-oriented development approach**

The integration of transport and housing planning is central to the TOD process, with the vision for new developments to be located where services can be accessible through walking, cycling, and public transport (Ndebele & Ogra, 2014:454). This integration of services is the key strategy of a TOD plan and viewed as the most critical means to reduce urban sprawl and traffic congestion challenges (Loukaito-Sideris, 2010:49; Olaru et al., 2011:220-221).



When considering the present urban challenges and issues at hand; a more strategic and sustainable approach to housing and transport planning is of significant importance. Hence, it is argued by Cervero and Arrington (2008:3) that to reduce traffic congestion, housing developments should be near major transport stations and stops that can result in shorter travelling distances and neighbourhood retail shops within walking distance. The TOD methodology is such an approach and its main focus is to guide and control higher density development that provides access to public transport as a viable alternative means of movement to privatised vehicles and to significantly reduce residents' need for the use thereof (Vuchic, 2005:39). Denser housing developments around public transport systems provide higher volumes of passengers and are thus vital for a financially sustainable public transport system (Bickford, 2013:9).

The dense mixed-use environments as a consequence of TOD developments result in people increasingly being able to access nearby services faster and without usage of private vehicles. A strong element in the development of TOD strategies is NMT modes (Bickford, 2013:9). There is a growing focus on NMT modes in cities globally, due to its flexibility and affordability compared to traditional planning approaches adopted in developing countries that are often still neglecting this mode of transport (Bickford, 2013:10). The TOD approach is viewed by Falconer and Richardson (2010:2) as secured by a rail or bus transit station, where there is less dependency on vehicles and thus providing communities the opportunity to travel by various transport modes, which ultimately result in less traffic generation.

The most dominant role of the TOD approach is to serve as an attractive alternative and competitive transport mode to those who own private vehicles, but choose it based on cost and convenience. Its most common feature is to carry a large volume of people in and around medium-sized to large cities and due to its high capacity makes fewer demands on the environment, compared to one person per trip per vehicle (Vuchic, 2005:39). TOD is increasingly being recognised globally as a viable transport system to spatially influence urban growth (UN-HABITAT, 2013:93).

### **2.3.7 Implementation of transit-oriented development projects: Challenges and concerns**

The following key challenges associated with the implementation of TOD projects were identified by Maboza (2014:11) and Beltrão and Kessler (2013:6):

- (i) It is found to be a slow process; planners' and developers' objectives for a TOD might not be the same.



- (i) Transport infrastructure and land/housing development is often difficult to integrate and is vulnerable to political powers.
- (ii) The coordination of the various stakeholders is also very challenging.
- (iii) Residents resist higher density developments promoted by TOD.
- (iv) The perception by the private sector is that rail TOD developments provide more long-term investment benefits than bus routes.
- (v) Some TOD initiatives fail due to unrealistic market expectations and a decline in the property and transport markets.

In addition, Loukaito-Sideris (2010:64) categorises the different TOD project encounters into four types of challenges, namely: (i) procedural, that hamper the development process causing delays and money; (ii) economic, that include the rising land cost and mixed-use construction cost; (iii) cultural, relating to a negative perception of higher densities by communities; and (iv) environmental, that involves the noise from nearby transit stations. He further states that to address these challenges, there are nevertheless numeral factors that seem to work in the favour of TOD development at certain municipalities that are increasingly showing a willingness to promote TODs. There is also a growing concern for anti-sprawl that attempts to focus on strategic urban development and an enabling environment encouraged by legislation promoting TODs.

However, despite the express intentions of legislative frameworks towards integrated development planning, the planning frameworks evolve in separate streams and institutional frameworks conducive to such integration have not been developed. Therefore, professional practices remain divergent and operate in silo's, which obstructs a fully integrated housing and transport planning approach (Wilkinson, 2006:227).

Consequently, the growing traffic congestion and transportation concerns have also increasingly placed pressure on the need for an alternative standard of living. As a result, developers' mindsets have changed with the growing market towards TOD neighbourhoods (Loukaito-Sideris, 2010:64).

### **2.3.8 Implementation of transit-oriented development projects: Key elements towards successful transit-oriented development implementation**

TOD developments can be potentially useful in the spatial transformation and the improvement of public transport in South African cities. However, according to Wilkinson (2006:231), the question still remains on how the TOD systems need to be adapted to the South African situation for its full potential to be realised. According to Suzuki et al. (2013:36), a one-size-fits-all approach to the planning and design of TOD is not practical,



particularly where rapidly growing cities in developing countries are concerned. Instead, these cities should develop TOD strategies that correspond to their local circumstances.

Three important lessons were learned from TOD developments in developing countries. Collaboration is identified by Maboza (2014:12) as one of the first key prerequisites for creating vibrant cities with sustainable housing and transit nodes. Secondly, transport planning should be integrated with housing, rather than just alignment of plans. Finally, the costs of the different aspects of development must be shared by both the developer and the municipality.

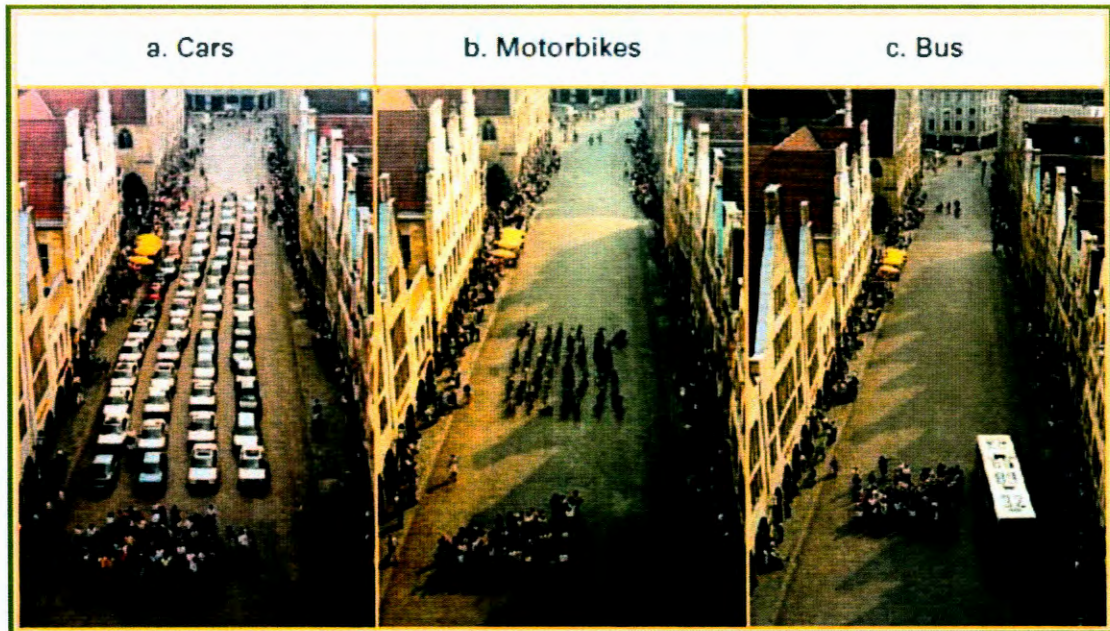
As the objective of TOD is often to develop greater residential densities near transit stations, it is argued by Maboza (2014:11) that TOD residential developments are mainly influenced by the financial obligations of municipalities and their preference of earning substantial revenue from commercial developments. Hence, high density housing development near transit stations may not always be the desired kind of development for both developers and municipalities. While this might be the case, there are various factors influencing the development of TODs, such as locational dynamics; destination and existing nature of a transit station; and travel patterns or behaviour of passengers throughout the day (Suzuki et al., 2013:156).

The idea of place-making is a fundamental concept in the development of TOD neighbourhoods, where people can live, shape and set their social and recreational activities within a space (Ndebele & Ogra, 2014:456). The question raised by the researcher is: *“How can transport planning be improved to include future housing in a city?”* An important reflection is that urban transport policies should be formulated in consideration of other transport related issues that would promote and enforce the use of public transport. Schemes to restrict private vehicle usage have been successfully implemented in countries such as China and Singapore to assist in the mitigation of traffic congestion and enhance quality of life.

Suzuki et al. (2013) and other academics such as Cevero (2005) and Berteloni (2005), argue that the promotion of TOD is particularly important in the approach of reducing traffic congestion. Hence, they argue that the BRT system should be given special attention as this form of mass transit is less costly and can meet the traffic demand of medium-sized cities. Experiences from countries, such as the Netherlands and Singapore reveal that planning for railway transit stations must be performed carefully and selectively. See Figure 2.2 for an illustration of the impact of a BRT system on traffic congestion.



TOD can become even more efficient when it is combined with Transportation Demand Management (TDM) methods, which purpose is to transform the demand for travel and ultimately decrease traffic congestion (Suzuki et al., 2013:36). TDM is defined by Ndebele and Ogra (2014:455) as any mechanism that reduces motor vehicle travelling. According to Zhao, Triantis, Teodorović & Edara (2008:584), these demand strategies require the need for sharing of vehicles; improved public transport; and eradicating the need for travel.



Source: Suzuki et al. (2013:35)

*Figure 2.2: Urban space taken up by cars, motorbikes and buses*

Furthermore, such demand strategies will include the modification of physical urban infrastructure and incentive schemes that influence user transport cost. Mechanisms for the demand strategies will also include traffic calming infrastructure designs and land use mixing to shorten travel distances. It is believed by Ndebele and Ogra (2014:455), Suzuki et al. (2013:36) and Zhao et al. (2008:584) that the joining of TOD and TDM methods can encourage public transport usage and ultimately reduce levels of private transport travelling.

## **2.4 PLANNING**

From the eighteenth to twentieth century, planning has been criticised for being too dominant and prescriptive, and according to Turner (1998:50), planners had to acquire new knowledge, skills, ideas and values. The planning scope was affected by the changing dominant political ideologies, such as the 9/11 bombing in New York and the Iraq war. Hence, planning had to reform to reflect tangible realities of changes in the spatial planning focus and becoming a key function in policy integration by providing spatial expressions of policies across sectors (Healy, 1994:50).



Central to the above changing political ideologies, was the growing expectation that planning must put a greater emphasis on an integrated planning approach. This integrated approach includes a holistic approach towards social, economic and environmental issues and seeking ways in preserving resources and develop densification policies. The densification policies typically entail a combination of higher residential densities, more mixed land use that decreases the demand for transport and greater coordination between land use and transport. The aim of these policies is to preserve land from development and to address dependence on transport as a way to reduce pollution levels and energy demands (Haugton & Counsell, 2004:139).

## 2.5 INTEGRATION

The concept of integration has different meanings in a South African context with a spatial, social, economic and institutional component. According to Albrechts (2006:1153), integration from an institutional perspective is about collaboration, coordination and the building of relationships across sectors and policy development, teasing out causal global and local change. Furthermore, integration is described by Kitchin and Ovens (2008:51) from a spatial and socio-economic view, as increasing accessibility to social amenities and economic opportunities, and ideally providing improved housing opportunities and an increased sense of place in a city. This means that the marginalised, associated with the lower income people in South Africa, have access to opportunities urban spatially, economically and institutionally and does not necessarily mean that the rich and the poor are mixing socially or live in harmonious existence.

Linked to the above, integration rather means that all people have access to socio-economic infrastructure and opportunities and their sense of security is met by the city within which they live (Kitchin & Ovens, 2008:52). Fischer, Smith and Sykes (2013:7) illustrated four components that determine effective integration, namely:

- (i) Substantive integration that implies that different disciplines follow the same principles and objectives.
- (ii) Procedural and methodological integration, which suggests that resources and information can be shared to lead to comparable results for different sectors.
- (iii) Administrative integration that involves the inclusion of different levels or tiers of government administration.
- (iv) Sectoral integration, which refers to the similarities and different approaches of different sectoral partners that are working together.



## 2.6 INTEGRATION OF HOUSING AND TRANSPORT PLANNING: A GLOBAL AND LOCAL PERSPECTIVE

Authors, such as Bickford (2013), Brömmelstraat and Bertolini (2008), Daniels (2007), Fischer et al. (2013), Herala (2003), Mammon (2005), Pucher et al. (2005), Qureshi and Huapu (2007), Suzuki et al. (2013), Winston (2010), Yigitcanlar, Sipe, Evans and Pitot (2007), and Zhu et al. (2004) argue that important housing and transport integration challenges experienced globally and locally, are identified as the following: high housing prices and accessibility; demographic factors; changes in lifestyle shifting; housing demand or lifestyle choices and housing preferences; access to jobs by private vehicle and public transport; the future of car-based cities; and approaches to TOD.

Based on the above, there might be implications for policy approaches with the objective of bringing jobs and homes closer together. Working towards such a policy objective, it is vital to recognise in the planning thereof that there are various reasons why people may not choose jobs closer to their homes (Daniels, 2007:1). It is argued by Winston (2010:320) and Pucher et al. (2005:186), that with limited affordable housing, available buyers might settle for cheaper housing further away from the city or on the outskirts of the city. In the case where a public transport system is not well-integrated, people will then be required to travel long distances to their work.

However, by not implementing policies towards integration of housing and transport planning may mean that urban development worldwide is taking place without considering sustainable ecological, social and economic factors. By encouraging an integrated dynamic link between transport and housing systems will help to promote socio-economic benefits and sustainability of developments (Qureshi & Huapu, 2007:315). The latter is supported by Bickford (2013:8) and Suzuki et al. (2013:3) who argue that the integration of housing and transport planning is an encouraging means of reversing urban sprawl and vehicle dependency and making developing countries more sustainable.

To encourage the integration of housing with transport planning there are basic requirements that should be considered. Herala (2003:92) advocates that the following basic criteria be considered in an integrated approach towards development:

- (i) How the demand for private transport usage can be decreased.
- (ii) Alternative approaches to transport should be developed.
- (iii) Resolve unsustainable housing and transport development patterns to reduce travel demand and traffic congestion. This can be an effective way to reduce



travelling cost, prevent fragmentation and provide opportunities for alternative and more economical transport modes.

Furthermore, multiple transport modes are promoted by Qureshi and Huapu (2007:316) who state that two important criteria be considered and determined in the planning and development thereof, namely: (i) a balance between economic opportunities and residential locations; and (ii) the connection of local transport centres with large capacity transit systems as optimal modes. Therefore, in the case of Karachi in Pakistan, the coordination and integration of the rail and road transport system was essential in the success of its overall multiple transport system.

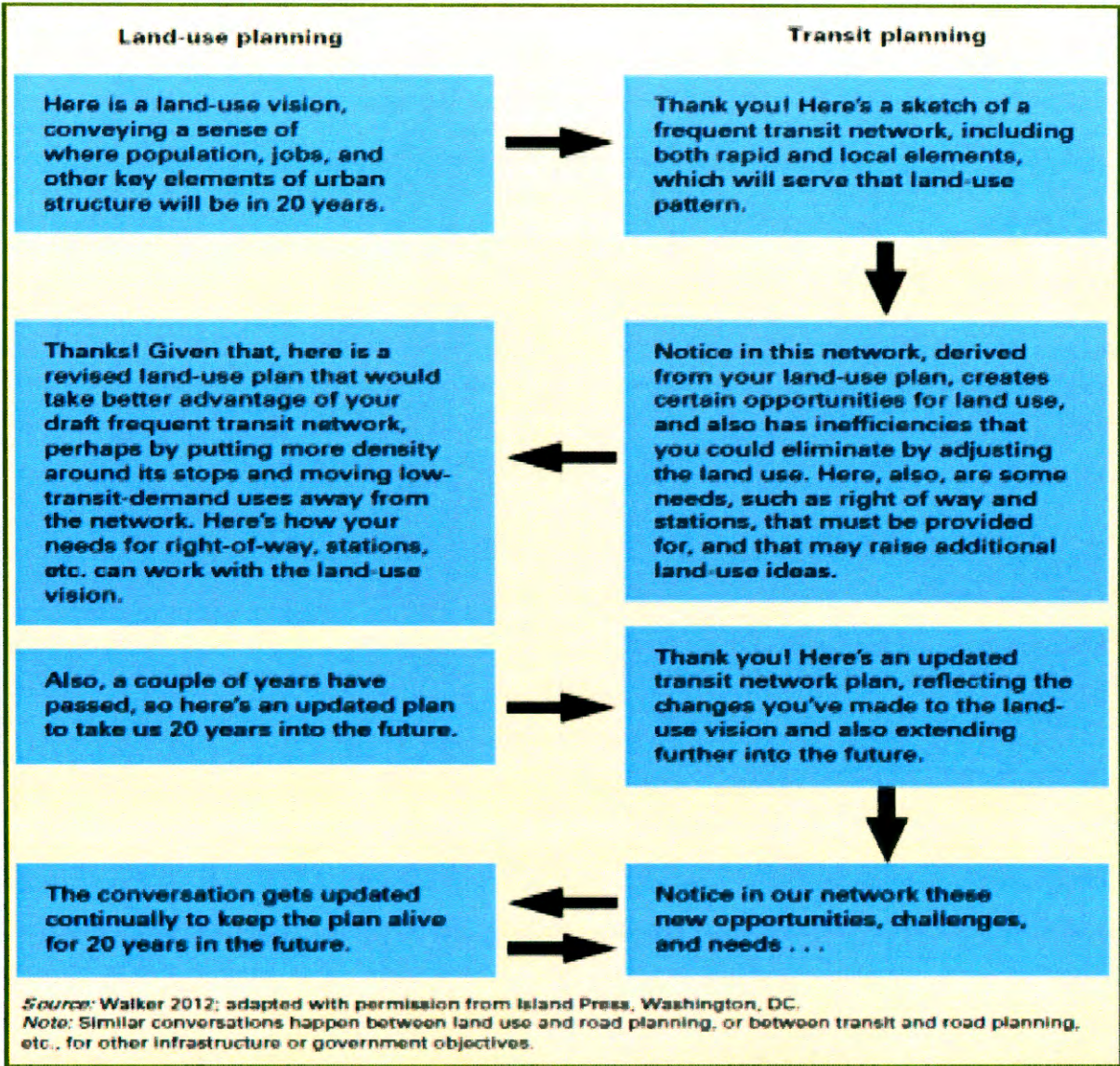
Hence, collaborative planning and decision-making are seen as pertinent in the pursuit of effective integration, because of its approach of interaction between different sectors (see Figure 2.3) and the inclusion of a wide range of stakeholders (Fischer et al., 2013:2). The collaborative urban planning approach involves a supportive and networked government structure with a holistic methodology based on collective decision-making and realisation of policies (Fainstein, 2010:124). It is also argued by Muller (2006:12) that to understand the role of collaborative processes in municipal planning, it is necessary to look at flexible and dynamic business and community partnerships, integrated with existing urban planning processes.

Therefore, urban planning forms the foundation for all proposed developments and is the framework that must integrate the transport and housing sector to ensure a holistic, resilient and sustainable city (Beltrão & Kessler, 2013:2). Watson (2009:2256) views urban planning as a mechanism used by government to spatially define population and territories, with the issue of power inextricably linked to it. The particular position on power referred to is the persistent manipulation of citizens by government and the strong resistance to change, which can lead to marginalisation rather than inclusion. On the other hand, urban planning is defined by Campbell and Marshall (1999:15) as a process of making choices and interpretations about places, people or communities, as a result of changes and variations in the population, locality, economy and environment. Friedman and Hudson (1974:5) further describe planning as a way of thinking primarily about socio-economic problems oriented towards future policy goals.

Best practices in cities with successful urban planning are illustrated as cities that promote integration through provision of successful transportation of people and goods by offering mobility and accessibility to housing for all (Fischer et al., 2013:5). Moreover, good governance, decent infrastructure and a healthy urban environment are also some of the important urban planning components of a prosperous city.



Furthermore, a city can never be thriving and resilient without having neighbourhoods that are dense, transit enabled, interconnected, pedestrian friendly and liveable (Beltrão & Kessler, 2013:3-4). Therefore, the relationship between housing and transport planning is key in determining the creation of places (Fischer et al., 2013:2). The main reason for this may be the uniqueness of each sector's approach, with transport planning taking a more direct and technical approach compared to the *ad hoc* and flexible land use planning approach, thus making the integration and coordination of transport and housing more challenging (Suzuki et al., 2013:39).



Source: Suzuki et al. (2013:16)

Figure 2.3: Healthy conversation between transit and land-use planning officials



### **2.6.1 The importance of land use planning**

Land use planning seems to be a key component in the context of integrated housing and transport planning and development. The increasing population growth in urban areas puts pressure on the demand for housing, and related infrastructure services keep increasing. Therefore, the scarcity of available land can result in poor provision of community facilities and recreational areas within housing developments (Yakob et al., 2015:579).

Hence, the definition of land use planning is synonymous with the land development process (Bikam & Chakwizira, 2014:144). Land use planning refers to a decision-making process by which socio-economic activities should be placed within a particular territory (Samper, 2012:1). This process mostly involves the control of zoning or rezoning of land to accommodate specific and different types of development, i.e. formal and less formal township establishments; building; and subdivision and consolidation of land (Van Wyk, 2012:31). It also involves the decision-making processes and procedures for land use applications requesting changing of land use (Van Wyk, 2012:57). The principal of future land use regulations and decision-making is to balance the various sectoral benefits in a particular location against the overall development objectives of a locality. This will ensure that implementation will happen in support of sustainable development by building decision-making on relevant land use information and in this way reflect the spatial impacts on the land, as well as the people (Enemark, 2007:10-11).

Since transport enables people to access various activities, the demand for transport is determined by the type and location of housing development in relation to major recreational facilities and areas with economic opportunities (Mtantato, 2011:203). On the other hand, where cities have a growing housing delivery demand and limited land resource, efficient land use is especially important (Litman, 2015a:12). Hence, it is crucial that transport and housing development be undertaken with consideration of the wider context of land use patterns.

For reasons as stated above, it is important that land use planning is done effectively as it controls where houses and major socio-economic facilities are located. It also determines how far communities have to travel from their houses or neighbourhood to access these activities and facilities and ultimately the travelling cost. The liveability of a house is dependent on the accessibility and availability of social amenities, while also providing safe, affordable and reliable public transport to travel from home to work and to other activities (Mtantato, 2011:203).



## **2.6.2 Accessibility**

Accessibility is described by Zhu, Liu and Yeow (2004:133) as the easiness of how economic activities can be reached from a particular locality by way of a specific transport network, typically measured in terms of cost, time and travelling distance. It is further stated that accessibility can be used as a measure to assess housing needs by putting emphasis on accessibility to transportation and socio-economic opportunities.

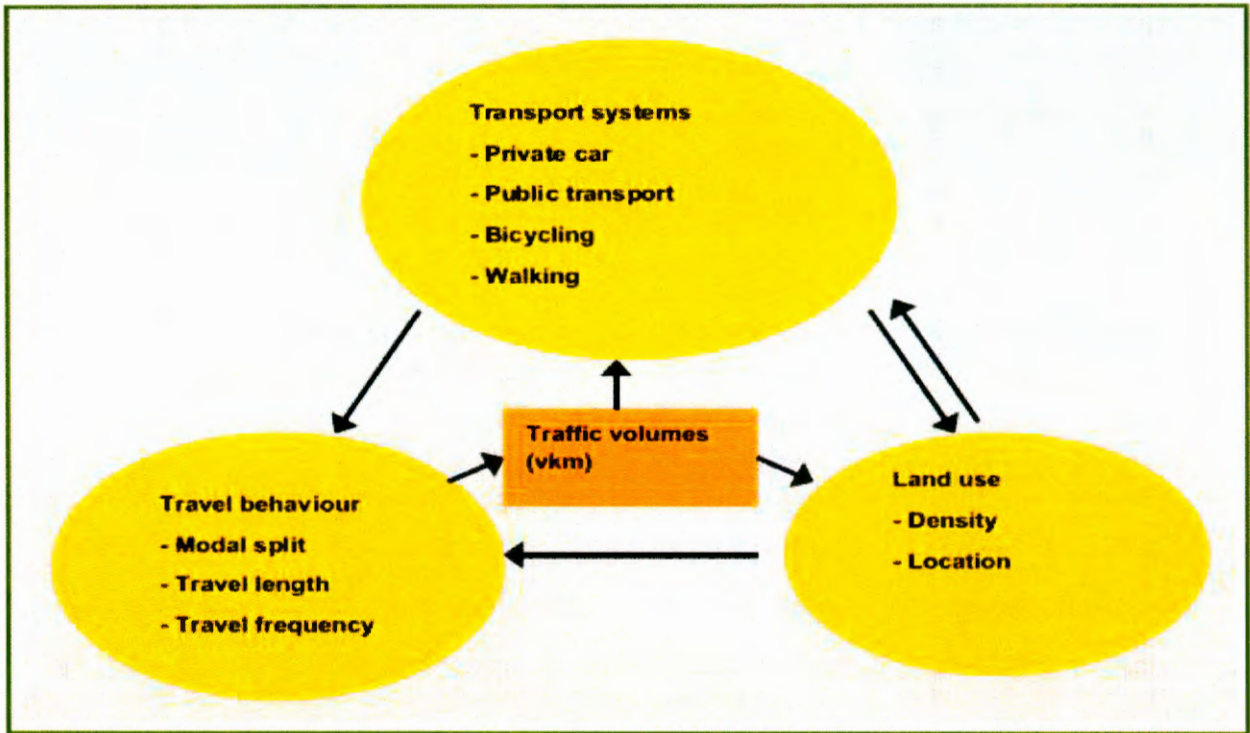
Litman (2015b:3) refers to accessibility as the ease of people reaching opportunities, whether its services, activities, goods or a location. Instead of only focusing on providing movement of people and goods, transport planning also influences a city's local growth patterns, which in turn influence access to land by means of economic activity (Farahani et al., 2013: 1). Hence, according to Litman (2015b:3), accessibility can be viewed from various perspectives, such as a particular location, group or activity. For example, a particular location may be accessible by vehicle only, but not for public transport or NMT modes and is thus suitable for certain types of economic activities only.

Given the above, and to reach a realistic level of reasonable and fair access required for transport networks, several aspects of accessibility must be considered for planning purposes, namely (i) access to economic and social opportunities; (ii) distribution of transport impacts; (iii) reliability of public transport; (iv) travel options; (v) links with policies; and (vi) influences of future developments. Therefore, due to the complexity of accessible developments, accessibility is becoming more and more indispensable in thorough decision-making for sustainable housing and transport planning (Yigitcanlar et al., 2007:1-3).

## **2.6.3 Impact on travel volumes and traffic behaviour**

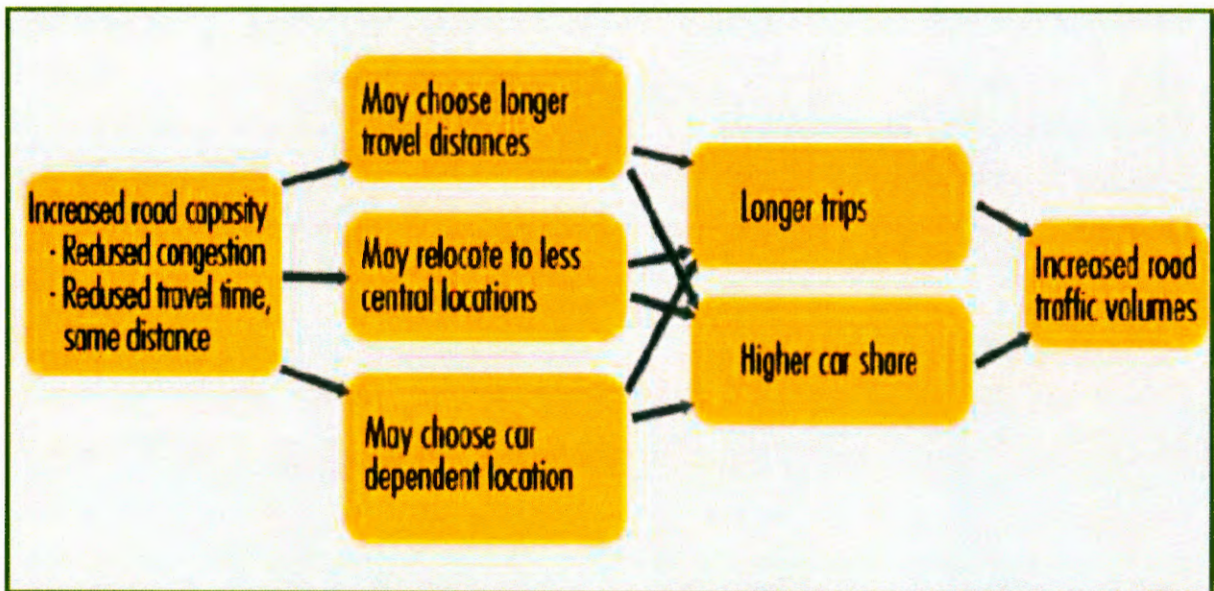
The primary theoretical approach taken by Tennoy (2012:102) is that transport and land-use for housing developments, road traffic volumes and travel performance are interrelated in a complex and dynamic way as illustrated in Figure 2.4. The volume of traffic on roads is a characteristic of the travel behaviour of a community as shown by Figure 2.5, which in turn is affected by transport and land use systems that is also equally affected by travel behaviour and traffic volumes (Naess, 2007:155). Thus, as illustrated in both figures, any changes in one system, will affect the other system.





Source: Tennoy (2010:217)

*Figure 2.4: Complex relationship between land use, transport systems, travel performance and road traffic volumes*



Source: Tennoy (2012:95)

*Figure 2.5: Travel behaviour of a community*

Given the above illustrations and the major challenges still experienced in South African cities, Tennoy (2010:217) makes the argument that transport and housing development is continuously implemented in such a way that it allows urban traffic volumes to increase, which implies that there is indeed a gap between the objectives of reducing traffic volumes and what is really being implemented. It is also the view of Qureshi and Huapu (2007:315)



that the modern approach to traffic congestion, such as efforts to widening of roads and “elevated express ways” is unlikely to ease traffic congestion in the long run, because it is not linked to sustainable housing and transport planning needs of the non-vehicle owning majority. If alternative roads are developed, it will further contribute to traffic congestion, which impacts on their travel behaviour, because commuters will choose the shorter and faster route (Olaru et al., 2011:109). Therefore, the only way in reducing traffic congestion and total travelling time is to develop fast and efficient public transport services that provide commuters with a choice and compete with the private vehicle. Thus, access to good public transport services will increase the usage of public transport (Tennoy, 2012:89).

Similarly, it is argued by Olaru et al. (2011:89), who by means of various case studies found that reduced road capacity resulted in less private vehicle usage and traffic volumes. If, for instance, a new alternative route is built that involves an increase in road capacity in order to lead traffic away from the roads out of Cape Town, it can cause the traffic volumes to grow. Only when the road capacity is reduced on other corresponding roads will it positively affect the traffic volume (Olaru et al., 2011:109). Parking fees are also viewed as an important mechanism of the transport system, due to its effect on the usage of vehicles and found to ultimately result in a reduction in traffic volumes (Litman, 2015b:36).

There appears to be rather a common agreement that in order to reduce traffic volumes, there needs to be a shift towards strategies that influence vehicle usage or towards less vehicle usage. According to Tennoy (2010:216-217) this can be achieved through the following broad approaches: (i) avoiding urban sprawl by encouraging land use planning and development with the objective to reduce vehicle usage; (ii) improving public transport systems through efficient services; (iii) developing and improving on conditions for non-motorized public transport (sidewalks and bicycle lanes for especially cycling and walking) and (iv) creating awareness for dense land use and traffic regulations to impose restrictions on vehicle traffic and to reduce traffic speed.

Therefore, the overall density in a city is an important mechanism to shorten vehicle and public transport trips. Density is described by Ndebele and Ogra (2014:454) as a high concentration of opportunities, dwelling, households or people per given area with the main objective to reduce vehicle use and traffic volumes in a city. With growing traffic congestion and continued urban development, it is critical that the interactive effects of housing and transportation be analysed and the different patterns of housing development that result in changes in travel performance, be evaluated (Pucher et al., 2005:17).

Even so, to reduce traffic volumes, will require transformation in the planning of housing and transport systems towards reframing the two disciplines into a more coordinated and



integrated approach. According to Tennoy (2010:221), this integrated approach may however, pose new challenges, such as traditional professional planning values and objectives must be let go of and may require new knowledge and skills towards an improved understanding of urban dynamics that impact on traffic volumes and travel behaviour (Tennoy, 2010:221).

Transformation is essential, as it is a common fact that land use defines people's travel behaviour and the transport system. Therefore, the quality of the public transport system for multimodal choices is an important factor, because it affects people's preferences, choice of destination, frequency of travelling and ultimately the traffic volumes (Woldeamanuel & Cyganski, 2011:2). For this reason, relative changes to the transport system quality can be a main mechanism affecting travel patterns and traffic volumes. As a result, it is important to bear in mind that a TOD neighbourhood shapes travel patterns, not only because of its accessibility, but also due to the selection of residential locations that service a communities' transport choices and needs (Olaru et al., 2011:221).

It is obvious that because a multimodal transit system serves a variety of choices and means of transportation, it is capable of serving different purposes and, therefore, is critical to the successful management of an effective and efficient transport network system (Campbell, Ward & Stewart, 2005:7). The practical application of an effective transport system is to balance its negative and positive effects. This would require stressing the importance of accessibility rather than emphasising the need for increase in personal mobility. The multimodal system will also involve the integration of housing and transport planning in order to ease the time and need for travelling through mixed land use development near public transport facilities to ultimately encourage cycling and walking. Therefore, a planning strategy must accommodate and aim for an improved housing and transport network system that is capable in providing accessibility in a sustainable way. The integration of housing and transport planning lies at the heart of such a strategy with the aim to achieve a mutually dependent network, linked with a high quality public transport system (Curtis, 2008:104-105).

## **2.7 INTERNATIONAL CASE STUDIES TOWARDS INTERGRADED HOUSING AND TRANSPORT PLANNING**

Since Bogotá in Columbia and Ahmadabad in India are both developing countries with an increasing urban population rate similar to South Africa, these two cities were selected as case studies to inform the potential for TOD in the Kuils River suburb in Cape Town. Lessons can be drawn from its efforts towards the integration of housing and transport



planning, which is the main objective of a TOD system and its planning and design principles related to the implementation of the cities' BRT transit system.

### **2.7.1 Bogotá, Columbia**

The TransMilenio TOD system is a bus rapid transit (BRT) system in Bogotá, Columbia and one of the most globally significant cases towards the successful implementation of the integration of housing and transport system strategies. The success component of this developing country's TOD system is its focus on promoting public transport usage through providing access to the BRT system by means of NMT modes (Graham & Van Niekerk, 2014:75).

Historically, Bogotá has commonly experienced high levels of traffic congestion, due to mobility difficulties in high population density neighbourhoods. These neighbourhoods are located far away from economic opportunities, which created heavy transport demands. The current public transport services were of poor quality and did little to improve the overall urban crisis. Strong political leadership played an important part in the successful transformation of Bogotá, by displaying concern for citizens' social equity (Munoz-Raskin, 2010:72). As transportation services was seen as a key component in the daily lives and activities of the Bogotá people, an innovative transport plan to address these existing transport challenges was indeed required. The main rationalisation to implement the TransMilenio transit system was to reduce the travel time of commuters and thus to ease traffic congestion (Ferro, Behrens and Wilkinson, 2013:127).

Therefore, accessibility to the existing transport system in Bogotá was improved through exclusive lanes and decent integration of the express and feeder bus services within the new BRT system. Provision was also made for an extensive cycling and pedestrian road network that gain access to the overall BRT system (Graham & Van Niekerk, 2014:74-75). The transit system as a whole is unique for its interconnectivity between different modes of transport and allowing easy movement of commuters. Hence, it is dedicated to focussing on linking the different residential neighbourhoods on the periphery with main access roads and activity precincts (Ferro et al., 2013:127).

### **2.7.2 Ahmadabad, India**

Ahmedabad is the seventh largest city in India and accommodates over five million people, which are expected to grow significantly due to migrants flocking to the city for economic opportunities. Since transportation is a critical link in support of urban growth and sustainability and to address rapid growth in population and private vehicle strength, the



government took the initiative to invest in a BRT system (National Institute of Urban Affairs, 2011:25).

India's largest BRT transit network, namely Janmarg, was established in 2009 in Ahmedabad with the main intention to relieve the worsening traffic congestion in the city (Cervero, 2013:16). The goal of the project was for Ahmedabad to become an accessible city by redesigning the urban and transport structure for improved accessibility. The main objective was to improve reduction in the length of travelling and reduce vehicle dependency (Jaiswal, et al., 2012:61 and Suzuki et al., 2013:97).

The strategy used by the city to achieve its goals was to focus on the mobility of people and not vehicles; hence the transport system was called Janmarg, meaning *people's way*. This was based on the concept and consideration of the importance of people to be able to move around comfortably and efficiently; to feel safe and secure; to have choices in terms of affordability and types of transport in terms of bicycling, walking, railway, BRT or any other forms depending on their destination (Bajracharya, 2008:82).

The main reasons for the successful implementation of the BRT system in Ahmedabad was attributed to its efficient institutional structure that is linked to effective service quality and reduced cost of operational services, due to maximising on the advantages of public-private partnerships (Kost, 2009:9). This effective institutional structure ensured a strong public oversight that protected the interests of the communities and committed to no exclusive contracts, by compensating transport operators only for distance parameters covered and quality of service delivered. The system was implemented for the poor, as well as for the elite class of people (National Institute of Urban Affairs, 2011:39-48).

One of the city's main challenges was the provision of access to a safe and efficient NMT, such as cycling and pedestrian network systems through complimentary connecting roads to main BRT services. Parking for bicycles at BRT stations was not thought of at all with only a few pedestrian ways existing (Cervero, 2013:16).

### **2.7.3 Lessons learnt from Bogotá and Ahmadabad**

In both case studies, the primary motivation for their strategies was to alleviate traffic congestion in the cities. To achieve its objectives, both cities' key focus was to invest in people and not on means of transportation. Because both strategies focussed on people, the ultimate objective was to reduce the travelling time of communities and improve accessibility to promote public transport usage. Hence, it was also ensured that the people's social needs were met through the provision of public transport along with public spaces, which promoted a sense of place amongst citizens.



Both the developing countries have chosen to implement the BRT transport system, due to it being more cost-effective than other transit modes. Strong political leadership and efficient institutional capacity in both cities ensured effective governance to protect the interests of communities and by making sure that they actively participate to ensure a smooth process of the development. In both cases, public–private partnerships were established to reduce costs and to improve service delivery. It can thus be concluded that collaboration amongst various stakeholders formed an integral part of the development process in both cities.

What also set these cities apart from other developing countries is that they have ultimately and successfully implemented a holistic approach to transportation planning and service provision. However, Suzuki et al. (2013:8) argue that despite the success in improving overall movement and the integration of different transit modes, these two cities still have to explore the full potential benefits of integration of transport and housing planning. In both cases the BRT systems were only designed to meet the existing traffic demand, with no regard for future economic development and opportunities that might emerge. Hence, a final and vital lesson to learn from these case studies is that sufficient and effective planning should take place to ensure that the goals and objectives of the development is adhered to and to ultimately mitigate risks and undesirable outcomes. It can thus be accepted that without effective urban and regional planning and monitoring systems in place, it will be impossible for the development process to be successful.

## **2.8 IMPLICATIONS FOR URBAN AND REGIONAL PLANNING**

The adoption of TOD in urban planning emanated from urban challenges that include a growing motor vehicle usage; traffic congestion; pollution and insufficient access to public transport (Ndebele & Ogra, 2014:454). It is argued by Maboza (2014:10) that although TOD is a mechanism used for urban planning, it would be a mistake to separate it from transport planning. In his view, it can arguably also be used as an instrument to promote public transport usage rather than just for the design ideas of cities. Burke and Brown (2005:1) view TOD as an intervention for land use planning to potentially shorten travelling distances and move the shift away from private vehicle usage towards public transport and NMT. Therefore, Maboza (2014:11) argues that the TOD planning tool does not just belong to one discipline, but signifies an integrated approach for housing and transport planning.

### **2.8.1 Critical factors for successful transit-oriented development**

The integration of transport and urban planning practices, such as housing, is of critical importance, especially in South African cities such as Cape Town, characterised by its increasing socio-economic and segregated urban challenges. Given this characteristic, there



is a need to pursue TOD strategies to achieve more sustainable urban planning practices in Cape Town. According to Bickford (2013:2), this can be done by exploring incentives for mixed-used and higher density housing developments around accessible, effective and efficient public transport systems. Therefore, to ensure that the TOD neighbourhood developments are successfully implemented, the following important factors as listed below need to be considered in urban and regional planning, as suggested by Loukaito-Sideris (2010:65-66):

- (i) Public transport must be planned near people and activities. New developments must be attracted around it.
- (ii) Location is a critical factor and in close proximity to other facilities and existing activities.
- (iii) TODs must be pre-planned to be in a better position to attract developers and investors. Incentives and defined guidelines for TODs can assist in particular to ensure that the goals and vision of the city is followed.
- (iv) Reduce uncertainty by informing developers beforehand what is expected from them and what is expected from the city and reducing time and cost by streamlining the development process.
- (v) Educate the public about the potential benefits of TODs and involve them proactively in the early phases of the planning to formulate a shared vision.
- (vi) Urban design outlines and patterns considered must be of great quality, which is a key factor in making high density developments more acceptable and appealing to communities. Good architectural design is thus very important and must offer a variety of affordable housing options to those who cannot meet the expenses of single-family housing.
- (vii) Develop strong public-private partnerships to provide opportunities for joint planning and cost sharing to help reduce cost and to ensure proper implementation of facilities.
- (viii) Strive to achieve improved coordination amongst different entities that consist of high level representatives from different public sectors involved in the TOD development that can jointly help in developing a vision and setting goals that will promote the successful implementation of the development.
- (ix) Monitor the balance between incentives and requirements (carrots and sticks) of the development by weighing the potential and desirability of the development. It must not be too burdensome for developers and scare them away.
- (x) Recruit pedestrian oriented and transit friendly uses actively to generate foot traffic that makes it financially viable for commercial tenants to rent space in new TOD developments. It is thus vital for the public sector to play a role in attracting commercial



tenants by offering tax incentives or even subsidies for a certain period that support rental space to assist in the creation of desirable pedestrian oriented tenants.

- (xi) Find solutions for the parking dilemma by exploring and considering various approaches such as decoupling parking from housing developments and give residents the option of purchasing a house with or without parking; the potential of shared parking; and allowing developers to lease parking spaces in nearby areas.
- (xii) Finally, and most importantly, TODs for cities must be made more appealing by emphasising its benefits, such as less private vehicles on the road, replaced with a safe, reliable, convenient and affordable public transport system connected to neighbouring areas that reduce cost. TODs thus offer concentrated housing development near transportation, which makes possible the increase in the supply of housing and offers a choice in a convenient transport mode.

The below are only the most significant and simple key factors to bear in mind for successful implementation of TOD developments as recommended by (Beltrão & Kessler, 2013:5):

- (i) Develop a vision for the city considering TOD principles to implement the vision.
- (ii) Adopt medium-term planning with a timeframe of 5 to 10 years based on demand and available resources.
- (iii) Incorporate urban planning tools to avoid costly expansion through densification and redevelopment.
- (iv) Include special planning to create a sense of place that is pleasurable and interesting; encourage and adopt incentives for private developers.
- (v) Promote coordination amongst agencies, especially housing and transport planners and other infrastructure service providers.
- (vi) Adopt well-defined plans that ensure development follows procedures and regulations; encourage inner-city developments to its full potential before going for cheaper undeveloped land.
- (vii) Promote community partnerships through participatory planning.
- (viii) Understand the local property market.

## **2.9 CONCLUSION**

This chapter has emphasised that a paradigm shift is occurring in the affiliation between housing development, land use and transport planning. While the importance of the linkage between housing and transport planning is increasingly recognised, the move towards making this linkage practical in reality is not without its challenges. Furthermore, the chapter argued that global experiences indicate that visions are not rigid and are subject to change



as urban challenges and realities unfold. Therefore, in order to minimise the various urban challenges arising, such as poor accessibility to socio-economic opportunities, appropriate urban planning, is essential.

The most important factor that was revealed in this chapter was that the concept of TOD is supported when housing developments are integrated and promoted along transport systems, whilst at the same time taking in consideration universal key urban planning design and development factors. The integration of housing and transport planning is reinforced in policy documents and, if applied appropriately, it might catalyse the implementation of TOD.

In Chapter 3, a legislative and policy framework background in which the integration of housing and transport planning is positioned, will be provided that guides and influences housing and transport plans and implementation in South Africa. This chapter will be based upon the review of key legislation that enforces and provides the public and private sector the foundation to act upon the integration of sector plans.



**KEY LEGISLATION AND POLICIES RELATED TO INTEGRATED  
HOUSING AND TRANSPORT PLANNING IN SOUTH AFRICA**

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**3.1 INTRODUCTION**

In the last decade, integrated development planning has been promoted by policies and legislation in South Africa as a way to overcome the spatial legacies of apartheid in the country. The spatial legacy of apartheid planning experienced to varying degrees in each town or city in South Africa, not only reflects an unequal distribution of infrastructure and accessibility, but also the travelling distances between activities. Given this legacy, the cost of expanding, upgrading and the maintenance of inefficient infrastructure is exorbitantly high and has played a prominent role in the infrastructure service delivery challenges now faced by many South African cities.

Consequently, the living experiences of many urban residents are affected that are dependent upon the availability and accessibility of roads and amenities, such as schools and clinics and access to safe, convenient and affordable public transport for easy movement. Therefore, this interdependency of infrastructure services availability and accessibility requires the integration of housing and transport planning for effective infrastructure service delivery. However, the integration of transport and housing planning, according to Donaldson (2001:1), is constantly faced with various challenges, such as growing urbanisation that is increasing the demand for housing and transport, driven by the need of people to access opportunities and locations.

Based on the above, it is evident that the fundamental objective of Chapter 3 must be to explore specific implementation objectives of the current legislative framework related to the integration of transport and housing planning in South Africa. Furthermore, since the above-mentioned clearly points to the complex nature of the integration of land use patterns and supporting infrastructure, it is necessary that spatial planning legislation and its relationship to the integration of housing and transport planning also be explored.

**3.2 THE LEGAL FRAMEWORK FOR INTEGRATION OF HOUSING  
AND TRANSPORT PLANNING**

Shortly after the 1994 democratic election, the South African government in administration at the time, has developed primary housing, land use and transport legislation that was



inherent to the apartheid spatial legacy of South Africa. Considering the spatial injustices of the past and South Africa's transition into democracy, the country's supreme law, now known as the Constitution of the Republic of South Africa, 1996 (Act 108 of 1996) was amended with the objective to prevent unfair discrimination and to promote equality. Any other legislation in conflict with this supremacy is invalid.

To support the democratic vision of the Constitution of South Africa to promote equality and the integration of plans, the first land use, transport and housing legislation was developed soon thereafter, namely the Development Facilitation Act in 1995, the 1996 White Paper on National Transport Policy, followed by the Housing Act in 1997. However, the Constitution placed a responsibility on local government to facilitate the integration of housing and transport planning, but does not point to clear, specific and exclusive functions of local, provincial or national government. This has had a negative impact on municipal service delivery, as a system that allows differing interpretations that invariably compromises integrated development efforts.

More than a decade later, the most significant policy to directly start speaking to integrated development planning is the National Development Plan (NDP) of 2012, followed by the Spatial Planning and Land Use Management Act, Act 16 of 2013 (SPLUMA) that provided the long anticipated spatial vision for South Africa. In order to address the challenges faced by municipalities in relation to the integration of housing and transport planning, more recently the Integrated Urban Development Framework (IUDF) was developed that emanated from the challenges identified in the NDP. This Framework puts emphasis on active intergovernmental coordination and working in partnership with South African citizens and businesses to achieve the spatial objectives of the country.

Hence, the integrated spatial vision proposed by the NDP, is an important informant in the implementation of the existing legislation related to integrated transport and housing planning. The NDP is not a plan of government, but a vision about turning government plans and policies into action. The NDP's vision is intended as a reference point and guide for all stakeholders in order to promote transformed ideas and critical engagement on the future planning and development in South Africa. In addition, it provides a common agenda for private, public and civil society collaboration; help align government action and infrastructure investment decisions; and facilitate the necessary changes South Africa needs to adapt to the (rapidly) changing local and global urban challenges.

It is then against the above policy backdrop that the following pieces of legislation will be discussed in terms of how it can address the urban challenges by means of improved government implementation mechanisms as advised in the IUDF and as a result support the



achievement of the NDP's Chapter 8 vision for transformed settlements. Although there are a number of other policies and legislation related to the integration of housing and transport, for the purposes of this dissertation, only the following pieces of legislation are discussed:

- The Constitution of South Africa, Act 108 of 1996.
- The Housing White Paper of 1994.
- The Housing Act, Act 107 of 1997.
- The Social Housing Act, Act 16 of 2008.
- The White Paper on National Transport Policy of 1996.
- The National Land Transport Transition Act, Act 22 of 2000.
- The National Land Transport Act, Act 5 of 2009.
- The Development Facilitation Act, Act 67 of 1995.
- The Spatial Planning and Land Use Management Act, Act 16 of 2013.

### **3.2.1 The Constitution of South Africa, Act 108 of 1996**

The Bill of Rights contained in Chapter 2 of the 1996 Constitution of South Africa states under section 26 and section 24 that citizens have the rights to adequate housing and equal access to economic and social opportunities. Given the growing nature of infrastructure developments taking place in South Africa (Palmer et al., 2013:2), the constitutional rights of citizens are supported by the vision of the DoT, namely that transport planning and implementation be done in such a way that it does not harm the well-being of citizens. Actions to improve transport planning to the welfare of the citizens will include the promotion of public transport and improved land use planning to limit long walking distances (RSA DoT, 2015:16).

Housing rights and the concept of adequate housing as referred to in the Constitution can be applied to criteria such as location, affordability, accessibility and availability of services. For housing to be perceived as adequate, it must be located so as to make provision for accessibility to nearby employment opportunities and available social services and facilities. It is the responsibility of government to ensure that the cost of housing is affordable and compatible with income levels of citizens. When one or more of these criteria are not applied, one can say that housing is not adequate (South African Human Rights Commission, 2001:249-250).

In Chapter 3 of the Constitution, the principle of cooperative governance states that the three spheres of government, namely national, provincial and local government, cooperate and consult one another on common interests for joint development and planning. The 2015–2020 draft National Land Transport Strategic Framework of the DoT emphasises the



requirement for greater coordination and collaboration efforts amongst government entities for an integrated approach to transport and land use planning and implementation (RSA DoT, 2015:62).

To address the challenges of strengthening intergovernmental planning, the IUDF (South African Local Government Association [SALGA], 2014:38) advises that much stronger collaboration is needed between the three government spheres to achieve integrated planning coherently, in particular around infrastructure delivery. Hence, the IUDF opines that policies and legislation be amended where necessary to clarify planning functions; and mechanisms must be put in place to coordinate infrastructure development and investment across all three spheres of government. This is especially important to facilitate engagement with communities and businesses, to build and foster relations for collaborative planning. This will support the NDP's vision as set out in Chapter 8, through the strengthening of intergovernmental collaborations and coordination mechanisms.

### **3.2.2 Housing policies**

#### **3.2.2.1 The Housing White Paper of 1994**

Given the urgency of the housing need, the Housing White Paper focussed on delivering housing options to the previously disadvantaged as quickly as possible that resulted in an approach of quantity over quality and low service standards (Dawson & McLaren, 2014:18). To meet the ever-growing housing demand, government introduced measures to speed up the land release and servicing processes. Based on experiences gained from the implementation of the White Paper, it became clear to government that they should shift its focus from the erection of housing only to the establishment of sustainable human settlements (Department of Human Settlements, 2009:15).

The fundamental development principles of the 1994 Housing White paper provided the basis for current South African housing policy development and implementation, and thus remain relevant to achieve the housing vision. The vision for housing in South Africa is to encourage the development of housing with the ultimate objective to integrate communities socially and economically to provide them convenient access to social facilities and economic opportunities and to improve their quality of life (Department of Human Settlements, 2009:7-8).

To address the urban housing challenge, the government is urged by the IUDF to prioritise the finalisation of the envisaged Human Settlements White Paper for 2016 and beyond, to respond to current urban challenges, such as upgrading of informal settlements, backyard rentals and provision of basic infrastructure to new housing developments. As it has been



proven that government cannot meet the demand for housing alone, the IUDF thus advises government to establish partnerships with private developers in order to negotiate some level of affordable housing developments in well-located areas (SALGA, 2014:34). This approach supports the NDP's objective of clarifying and relentlessly pursuing the national vision of spatial development by sharpening the mechanisms to achieve the vision.

### **3.2.2.2 The Housing Act, Act 107 of 1997**

The Housing Act builds on the Housing White Paper and outlines the institutional framework for housing development. The objective of the Act is to ensure that housing development is based on the principle of integrated development planning as captured in section c (iii) of the Housing Act of 1997.

The Housing Act also prescribes that it should be ensured that housing development is high density, provides a wide choice and that it is affordable and sustainable. In order for types of housing development to be sustainable, it must be socially acceptable, economically feasible, technically viable and harmonious with the environment (Choguill, 2007:147). This should be the desired aims of any housing development policy.

To address the challenge of promoting housing densification and in order to provide various housing choices, the IUDF (SALGA, 2014:33) recommends that cities develop or use land use systems that make provision for the different housing types. The IUDF further suggests that to access available and well-located land for housing, it is important that intergovernmental collaboration is improved to achieve effective integrated planning, prioritisation and coordination, especially for long-term or future strategic socio-economic infrastructure projects, such as schools and clinics.

### **3.2.2.3 The Social Housing Act, Act 16 of 2008**

The main aim of the Act is to provide for and promote an environment that is sustainable for social housing (Department of Human Settlements, 2009:341). One of the objectives of the Social Housing Act is to provide houses closer to economic opportunities and transport by promoting medium to high density housing development close to social and economic facilities as reflected under section 2(1)(i) of the Act.

The South African Government has committed itself to the provision of sustainable human settlements that will improve the quality of life of all citizens', especially the marginalised. This is done through the provision of various housing subsidies and projects and programmes, such as the People's Housing Process, Breaking New Ground, Community



Residential Units and Integrated Residential Development (Department of Human Settlements: 2009:344).

With the majority of South Africans living in townships, the challenge remains to invest and provide access to basic infrastructure services and socio-economic opportunities and amenities. Hence, it is suggested by the IUDF (SALGA, 2014:33), that intergovernmental collaboration is vital to conform towards an integrated approach across spheres, in order to strengthen the quality of infrastructure service delivery to enhance residents' quality of life.

To respond to the objectives of the NDP in creating more functionally integrated, balanced and vibrant residential neighbourhoods, a good starting point according to the IUDF (SALGA, 2014:49) is that government start engaging on more focussed infrastructure investments, by linking townships with other economic activity hubs. To support the vision of integrated neighbourhoods, the IUDF highlights the importance of the strengthening intergovernmental relations to achieve the NDP's spatial development vision.

### **3.2.3 Transport policies**

#### **3.2.3.1 The White Paper on National Transport Policy of 1996**

The White Paper on National Transport Policy's vision is to provide a fully integrated transport system that operates effectively and efficiently and provide safe, cost-effective and reliable services to public transport users, whilst being socially, economically and environmentally sustainable (Department of Transport, 2015:11). The 1996 Transport Policy also highlighted the need for easy movement, coordination and accessibility of transport services (Luke & Heyns, 2013:7).

According to Schalekamp and Behrens (2010:372), the White Paper on National Transport Policy of 1996 was pro-public transport, and its goal is to achieve a ratio of 80:20 public to private transport. The National Transport Policy does not make specific reference to the integration of transport and land use, but advocates public transport to be responsive to demand and be focussed on the people.

#### **3.2.3.2 The National Land Transport Transition Act, Act 22 of 2000**

The purpose of this Act is to transform and restructure the national transport system with the primary objective to promote public transport that is integrated, effective, accessible, safe and affordable, and has limited environmental impact. The ultimate objective of the Act is focused on promoting effective and efficient integrated transport planning, and one of its guiding principles is the prerequisite for the integration of transport planning with land



development to enhance the effective functioning of cities through integrated plans, operations and services.

Clause 4(e) of the Act specifically states that public transport must be considered as a higher priority than private transport. Section (j) under the same clause emphasises the importance of transport planning to be integrated with related functions such as land use planning and development. Only the policy principles directly related to the integration of housing and transport planning, as well as promoting public transport, has been alluded to.

### **3.2.3.3 The National Land Transport Act, Act 5 of 2009**

This Act is intended to supplement the transformation and restructuring processes initiated by the Transition Act and giving effect to national policy, which is necessary for the protection of citizen rights and promotion of equal rights to services. This Act promotes an effective and efficient public transport system that is accessible and safe.

In terms of the National Land Transport Act, it is the duty of every municipality to develop an integrated transport plan to have better control of public transport services. Section 31 under Chapter 4 of the Act gives effect to this through the provision of guiding principles for integration and also recognises the importance of the integration of transport and land use planning processes within a municipality. Section 9 of this Act also prescribes that the members of cabinets influence this integration by ensuring that transport planning be linked with land use planning and related matters for effective integration and efficient transport services.

In order to address the challenge of improving and integrating public transport, it is advised by the IUDF (SALGA, 2014:27) that modal integration that also involves NMT be included in transport implementation plans of municipalities to assist businesses in making informed infrastructure investments decisions. Furthermore, according to the IUDF, these plans should include budgets for which indicators must be developed to monitor and measure the progress of implementation and utilisation of funding. This supports the NDP's objective for integrated transport and mobility, and measurable implementation of objectives.

## **3.2.4 Spatial policies**

### **3.2.4.1 Development Facilitation Act, Act 67 of 1995**

The Development Facilitation Act was developed in 1994 as an interim legislation for the democratic government to specifically intervene and address the spatial and land use management issues inherited from the apartheid government. The main purpose of the Act was to present measures to facilitate and expedite the implementation of land development



projects and for this purpose it introduced general guiding principles to be adhered to in the implementation of projects related to land in South Africa (The Presidency and Urban Landmark, 2010:9-10). Although sections of the Act were declared unconstitutional by the court, the general guiding principles as contained in section 3 of Chapter 1 of the Act are still considered valid.

The principles in Section 3(c) of the Development Facilitation Act promote integrated development and generally provide guidelines that are related to the need to optimise the proximity between residential and employment opportunities and to prevent urban sprawl. These principles require that well-located land be made available for mixed use or housing development; effective transport systems and services be put in place. For this improvement in planning to happen, there should be cooperation across all spheres of government.

As well-located land for development is often expensive, due to property being sold off at market value, the IUDF (SALGA, 2014:29) advises that intergovernmental relations and public partnerships be strengthened to facilitate active participation by strategic government and private land owners, during the planning process of municipalities. According to the IUDF, this will ensure that land deals are facilitated and negotiated that benefit both parties, but also providing land access to the urban residents. This gives effect to the NDP's objective of clarifying and relentlessly pursuing the national vision of spatial development by sharpening the mechanisms to achieve the vision.

#### **3.2.4.2 Spatial Planning and Land Use Management Act, Act 16 of 2013**

SPLUMA is a single piece of legislation that applies throughout all three spheres of government in South Africa and that can affect the decision-making of spatial planning and land use management applications on a local, provincial and national government level. No legislation may repeal this Act and any other planning mechanisms must be consistent with the Act.

The development principle of efficiency as contained in SPLUMA, specifically relates to the optimal use of existing resources and infrastructure, such as to promote higher compact and mixed use housing developments to improve transport accessibility, which ultimately results in lower travelling costs and overall energy use. The desired result for transport and housing/land use planning and development is to be achieved with the minimum utilisation of resources. Above all, to create a more integrated and sustainable city, there must be the political will at all levels of government to ensure that the adopted procedures are approved and implemented (Nel, 2011:3-4).

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To support the objective of the NDP for measurable implementation progress, the IUDF (SALGA, 2014:49) suggests that intergovernmental coordination mechanisms be put in place to support municipalities with the implementation of SPLUMA. The mechanisms will improve land use planning and delivery of low-income housing, with greater attention to well-located land for the location of housing projects.

### **3.3 CONCLUSION**

This chapter provided a broad framework for comparing and analysing the housing, land use and transport policies as they impact on the lives of Kuils River residents. It is evident that the Constitution, 1996 is committed in enacting legislation to address the injustices of the past, in order to address and eradicate all forms of inequalities, whether direct or indirect. The other pieces of legislation provided a greater insight into what constitutes integration.

After evaluating the legislation, it can be presumed that the overall implementation objectives of the integration of housing and transport planning can only be achieved through an inter-governmental system that warrants joint planning and implementation. It is, however, apparent in the challenges still experienced in the integration of housing and transport planning, that the effective implementation of the above-mentioned legislation still remains problematic.

Most of the issues and objectives highlighted in the legislation discussed were repeated in the NDP of 2012, which emphasises the need to invest and improve infrastructure delivery and sharpen the focus on achieving the integration of urban functions and services. In the case where policies promote mixed land use and higher density developments, TOD can be implemented to increase opportunities for mixed income and affordable housing developments.



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## Chapter 4

# RESEARCH METHODOLOGY

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### 4.1 INTRODUCTION

Chapter 4 describes the relevant research strategy and procedures that was adopted and followed to achieve the primary objective of the study. The aim of this chapter is to justify the manner and process that was followed to obtain the research data. In doing so, the research process constitutes the research methodology as the path to discovering the answers to the research questions (Brar, Jain & Singh, 2014:63).

### 4.2 METHODOLOGY

The methodology of research is not about the use of methods, but is rather a systematic approach of organising the underlying principles of a study area. It is thus about considering a certain logical sequence of choices, namely: (i) how to *structure* the research; (ii) what type of *information* and data to collect; (iii) how to *analyse* the information and data gathered; (iv) what theoretical stance to take; and (v) the additional things that may *impact on the* research. Overall, the methodology of research is described as a broad approach that is being used to plan and strategise the research and to support the data analysis. Methods, on the other hand, are viewed as the manner in which the data is collected. It is therefore vital that both the research methodology and method used be considered at the beginning of the research.

In view of the above, it important to specify that the methodology used for this study is the qualitative research approach as defined in Chapter 1 by Woods (2006:3). A common characteristic of the qualitative approach is that it is generally an in-depth description of a case study (Gast, 2010:10) and thus provides information and understanding of a case study which the quantitative methodology alone cannot provide. Since the qualitative research approach is descriptive in nature, it is useful in that it tells the researcher how and why things happen the way it happens, not necessarily how many times it happened. Thus it provides a better understanding of a situation, which cannot be counted. Therefore, the qualitative research methodology was chosen, because it is the most appropriate to the case study of this dissertation as it relates to the real world experiences of people. As a result, the researcher could gain a better understanding of the perspectives and experiences of the



selected key respondents' involvement and understanding of the existing situation in the case study area of this dissertation.

A case study is predominantly viewed as a qualitative approach to research a community, a group or an individual, which can be treated as one entity in itself. The single case selected for this research is providing insight into the current situation experienced by selected key respondents that is prevalent of a group from where the case has been drawn (Kumar, 2011:123). It is becoming the basis of the in-depth exploration of components of the case that the researcher wants to study.

#### **4.2.1 Selecting a method of data collection**

In view of the above selected research methodology, the data collected for this study was through the use of a particular qualitative method. Since the selection of the method to collect data is dependent on the type of data that is needed for a study, the oral interview as a qualitative method was chosen to collect data for this dissertation. According to Zhang and Wildemuth (2009:1), researchers generally utilise interviews to gain access to people's perceptions and feelings of a specific situation.

The interviews were conducted face to face with each of the respondents of the research target group, even though it is more time-consuming than focus group discussions where a group of approximately six people can be interviewed at once. The reason for selecting the individual face-to-face interview process was because it provided the researcher with the opportunity to explore sensitive individual experiences of the research target group (Woods, 2006:3). This process involves asking respondent questions and then recording their answers. Interviewing can take a wide spectrum of structures and can thus either be very structured or extremely flexible or an in between form (Kumar, 2011:338).

Given the exploratory nature of the research, the researcher chose to conduct unstructured interviews that allow for more in-depth discussions and conversations that could expose unforeseen facts. Unstructured interviews are described by Zhang and Wildemuth (2009:2) as an informal and conversational interview process to elicit information, with the primary focus to listen to and understand people's opinions and experiences. Hannabus (1996:2 cited in Sandy & Dumay, 2011:245) refers to the unstructured interview as a process that makes the interviewee feel relaxed and informal, going on from the assumption that participants do not know the questions in advance.

Questions posed during the unstructured interview process were open-ended, which is described by Sandy and Dumay (2011:245) as interview questions with no obvious answers and therefore result in additional questions asked. It is said by Greene (1998:15) that the



purpose of open-ended questioning is to access people's perspectives about the topic at hand and not to put ideas in their mind.

Therefore, in an unstructured interview process, it is important that the researcher adapt and generate follow-up questions that redirect the interview process and steer the responses of participants towards the objectives of the research. Although the unstructured interview process is a spontaneous and flexible interview process, it can also be loosely guided by the researcher by a specific list of questions, called an *aide memoire* or agenda. An *aide memoire* or agenda is described by Zhang and Wildemuth (2009:2) as a broad guide to issues of the topic, rather than asking the actual questions. Hence, for the purposes of supporting and achieving the research objectives, the researcher made use of the *aide memoire* or agenda, thus a list of guiding questions, which assisted the researcher in encouraging and achieving a level of consistency throughout the number of interview sessions.

Unstructured interviews were useful during the data collection process as they provided a natural flow of information. They facilitated a natural flow of the conversation and an in-depth discussion that generated unanticipated, but essential information relevant to the research; as opposed to a pre-existing or rigid questionnaire. Another positive is the visual observation of participants' frame of mind when conveying their personal experiences, views and feelings in an undisturbed manner.

The interview as selected data collection method made it possible to obtain primary data to increase the validity of the research. According to Kumar (2011:341), primary data is information collected through sources, such as interviews, questionnaires and observations for specific research purposes.

In addition, a lot of secondary data was collected by means of an extensive literature review with the aim to investigate and explore the theory related to the integration of housing and transport planning. In addition, the legislation and policies that govern and influence the integration of housing and transport planning in South Africa were scrutinised. Other spatial legislation applicable to the subject matter was also considered. An early review of the literature was done to prepare a research proposal, which assisted with and influenced the interview questions that were raised to the respondents. Literature review as a method of data collection can be described as a process of developing a theoretical and conceptual framework by searching for existing literature related to the research topic and putting into perspective about what other researcher's views are about the subject (Kumar, 2011:339). By reviewing existing literature it assisted the researcher with the formulation of a research methodology and to integrate the literature with the findings of the primary data collected.



#### **4.2.2 Limitations of the primary data collection method**

Whilst there are a number of advantages in conducting unstructured personal interviews, there are also several drawbacks in using this method. Since the process is extremely individualised, it takes a significant amount of time to gain access to interviewees. The fact that these individual face to face interviews are not anonymous can mean that the interviewees can feel exposed and experience the process as risky to their professions, which might prevent them from providing honest answers. The length of the interview session might also take longer than more structured interview sessions. It is also difficult for the interviewer to exercise the right amount of control over the pace and direction of the conversation, directing the questions and statements during the conversation and thus risking losing some valuable and useful information. The possibility may also exist that the researcher may not be able to get access to the respondents again if suitable data were not gathered in the initial interview process. Finally, to systematically analyse the data collected by an unstructured interview process takes a great deal of effort, due to the different responses generated and to find similarities within the various responses.

#### **4.2.3 The selection of the sampling technique**

For the purposes of this research, the most appropriate and relevant type of sampling method identified was purposive sampling, as its primary criteria for selection of participants is related to their particular professional knowledge about town planning, housing and above-mentioned transport planning fields, as well as their experiences in relation to the case study area in particular. The reason for the selected sampling method is supported by Burns (1997:365) who argues that when selecting a case study, it is useful to use the purposive sampling technique. This technique entails that the researcher selects and generates a sample size considered to be 'representative' of a section of a population (Battaglia, 2008:24).

#### **4.2.4 The sample size**

Following was to decide on a sample size that would be a representation of both the municipal officials and Kuils River residents. Based on the purposive sampling technique, the researcher was to use skilful judgement when selecting key informants from which data is collected that would meet various characteristics and criteria most important to the sampling process (Battaglia, 2008:524). For this reason, purposive sampling is also known as judgemental sampling, since the primary consideration in this sampling method is the judgement used by researcher when selecting key respondents who are willing and can provide the best possible information that is required to achieve the objectives of the research (Kumar, 2011:339).



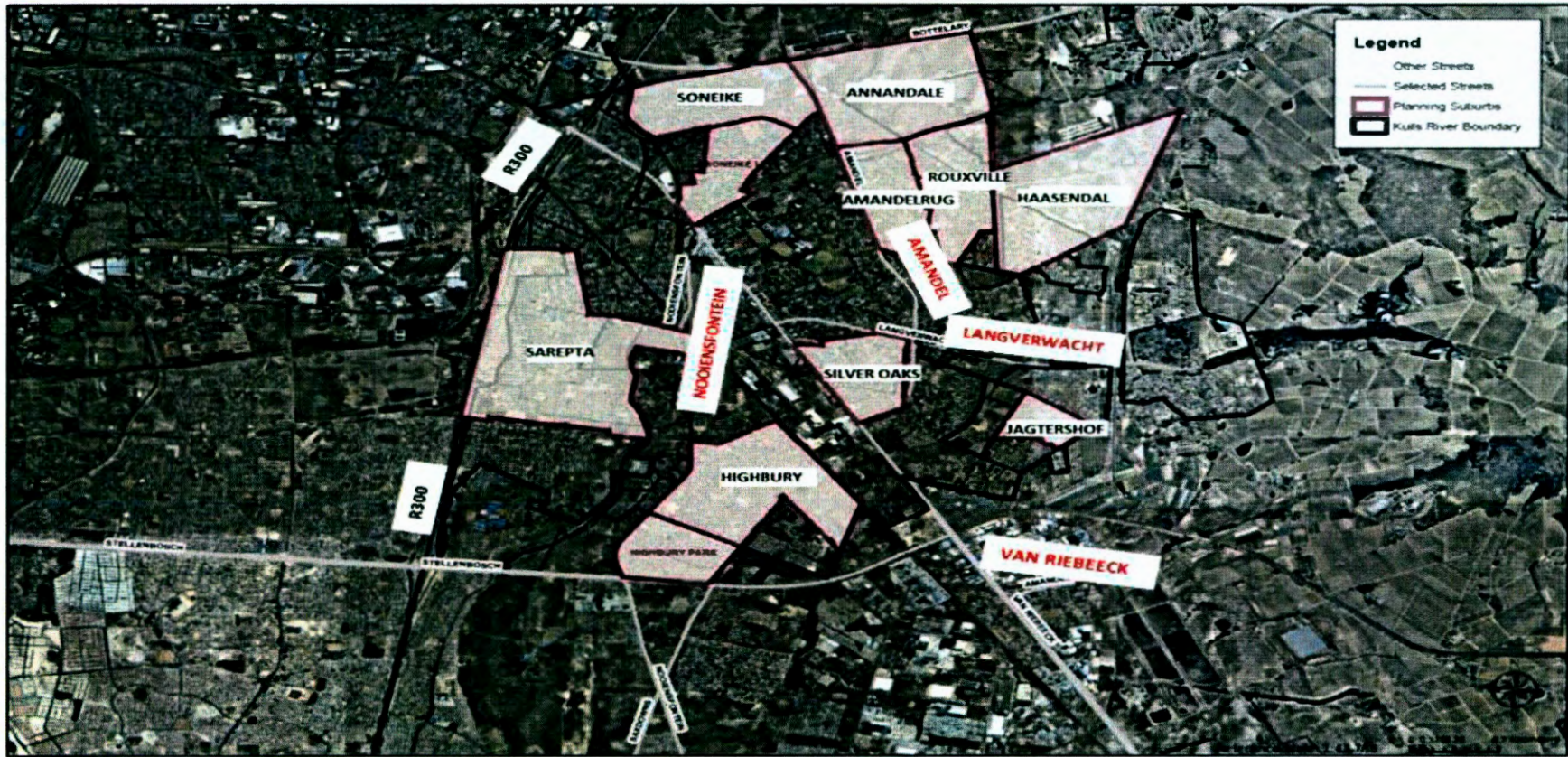
Whereas the sample size plays a significant role in quantitative research, in the case of qualitative research the sample size is not fixed, but based on reaching a point of data saturation. This means that when no new information is collected during the data collection period, the researcher will stop collecting additional data (Kumar, 2011:176). In qualitative research, the magnitude of the sample size is thus not considered important as only a small sample is necessary to identify a similarity in cases (Kumar, 2011:180). Taking in consideration Kumar's argument for this research, it can be argued that the experiences of the residents were uniform in relation to the traffic congestion challenges within Kuils River and might be more or less the same. The small sample size of 15 residents from the study area that was interviewed, can thus be accepted as sufficient to provide a reasonably definitive estimate.

The selection of a sampling size thus included the non-random selection of key respondents to participate in the research. This is a deliberate method, which means that the researcher was biased when selecting key respondents and was thus influenced by human choice (Kumar, 2011:187). In other words, respondents were selected based on certain criteria that will provide the researcher with the information needed to answer the research question of this dissertation. Hence, the sample size of six municipal officials to be interviewed was determined by set criteria as discussed in more detail under the selection of the key respondents.

#### **4.2.5 The selection of key respondents**

The key respondents consisted of both the officials from the City of Cape Town that is responsible for housing and transport planning in the city and the residents living in the study area. The officials were selected to participate in the study based on two basic criteria, namely their professional positions in the City of Cape Town and their knowledge and experience in the housing and transport sectors. The interviews were conducted with one town and regional planner, one senior housing official and three transport officials that each specialises in different fields, namely traffic engineering, NMT and TOD. In addition, the ward councillor representing the Kuils River residents was also interviewed. On the other hand, the 15 residents from Kuils River suburb were selected based on the single criterion that they were using and experiencing severe traffic congestion challenges during peak times on the specific roads, namely Amandel, Langverwacht, Van Riebeeck and Nooiensfontein in Kuils River as shown in Figure 4.1. The particular areas from which respondents were selected are also illustrated in Figure 4.1.





Source: Obtained from the Department of Rural Development and Land Reform

*Figure 4.1: Map of the study area in Kuils River*



The above-mentioned key respondents were thus chosen to determine the reasons for, or the contributing factors to the current traffic congestion situation in Kuils River. Furthermore, they were also selected to provide their inputs and views to the challenges experienced towards the integration of housing of transport planning as prescribed and promoted by relevant national legislation.

To set up the interviews, appointments with all the key respondents were scheduled through e-mails and/or telephonic communication. During the appointment process through e-mail and telephone, participants were informed of the topic of discussion and had to agree to be personally interviewed. Subsequently, interviews with the key respondents were all personally conducted in 10–20 minute sessions. However, the timeframe for the personal interviews with some of the key respondents was generally shorter and not more than 10 minutes, but also varied depending on their interest in the topic of discussion. As the key respondents were interviewed, they directed or referred the researcher to important participants that closely matched the criteria and objectives of the study.

The interviews with the councillor and officials from the planning, housing and transport departments within the City of Cape Town were conducted at their workplaces and the residents were interviewed at their homes, at times most suitable to them. The interviews were recorded by a digital recorder and, where possible, brief notes were taken during the interview process, followed by typing up of more detailed notes, as well as transcribing of the recorded interviews for further analysis.

#### **4.2.6 Ethical considerations**

Consent was obtained from all the key respondents before the interview process. Respondents were informed about the subject matter and requested to indicate their willingness and availability to participate in the study. This implies, according to Kumar (2011:220), that respondents provided their informed consent to participate voluntarily. The respondents were assured of their right to privacy and confidentiality by the researcher, so as not to expose officials' views of the organisation they are working for. This assurance will avoid that possible harm can come to the City of Cape Town in any way or unfairly disadvantaged the officials within the organisation. It also encouraged the participants to be more open about their opinions during the interview process.

The researcher had no personal gain in the research, except for an interest in the reasons for the existing traffic situation in the particular area. Therefore no restrictions or bias was present during the research activities that may have prohibited the researcher in obtaining and distributing accurate or correct information. Unstructured interviews were purposely identified by the researcher as an appropriate and valid method with the intent to obtain



research information that can address and support the research questions of the study. There is thus no reason for the research not to be published or to be accessed by the organisation or group that was being studied.

Great attempts were made by the researcher to ensure that information obtained from respondents has not been distorted or misrepresented. Although it was extremely difficult, the researcher confirms that information gathered is authentic and not used as a reason to justify vested interests or to tailor the research findings to support the research objectives.

#### **4.2.7 Data analysis**

To analyse the study area, the researcher used mostly the primary data collected through the interview process to provide for the overall findings related to the traffic congestion challenges in Kuils River. For the purposes of making sense of information collected from the various interviews, the content of the qualitative data researched and obtained was analysed and main themes were identified that emanated from the respondents' answers to the interview questions. This was done by assigning coding or numbering of how frequently a theme was discussed by the different respondents. Interview coding is viewed as the first step in data analysis and the coding of raw data to identify any themes with similar conclusions of particular interest to the study (Zhang & Wildemuth, 2009:9). This process of counting the occurrence of the same words or opinions also enabled the researcher to highlight and identify the key issues of importance to the respondents. The direct responses that were viewed by the researcher as vital were also integrated in the reporting of findings to support or contradict an argument. Both of these methods were thus used to communicate the findings of the research and to achieve the objectives of the study.

The findings of the research is presented in a narrative format in Chapter 5, which according to Kumar (2011:340) refers to a technique of describing the personal experiences of respondents that was gathered through the primary data collection process. This is essentially about telling a story about the situation in the case study area as revealed by the key respondents. Analysis of the documented data and findings assisted in the identification of recommendations made in Chapter 6 and gaps in the literature review.

### **4.3 CONCLUSION**

To provide an academic basis or justification to explain why certain methods were chosen, the discussion in this chapter was linked back to the literature. In other words, as much as possible information was provided to explain the soundness of the methods used. By providing justification of research methods used, the objective was also to explain why other generally accepted research methods were not used.



This chapter's main attempt was to explore the usefulness of methods applied to the research to study complex configurations during the process of data analysis. It also provides insights to the essential components that strongly influence the way the study is conducted to reach its objectives and to ensure the validity of the study. To understand these methods in the context of this research, consideration was also given in explaining what each method entails and its critical importance in achieving the primary objective of the study.

The chapter has therefore provided a thorough demonstration of the chosen methods used to analyse qualitative data obtained from interviews. The methods utilised for conducting the research had to be in accordance with the objective of the study. This qualitative data was obtained and analysed to supplement information that could not be obtained through desk research and literature review. The data collected and analysed in this chapter assisted in the structuring of the chapters to follow.



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## Chapter 5

# RESEARCH FINDINGS AND DISCUSSION

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### 5.1 INTRODUCTION

The objective of Chapter 5 is to present findings of the analysed collected data from fieldwork and reviewed literature in Chapter 2. The data is presented in a thematic system that is based on the key objectives of the study, which is to generally explore the key respondents' opinions and views about the following two main research themes, namely (i) factors contributing to traffic congestion in Kuils River; and (ii) improvement of integration of housing and transport planning in Kuils River. In addition, the aim of this chapter is to complement the reviewed literature that can enhance the outcomes and objectives of the study and to ultimately make it more effective and reliable.

Hence, this chapter will present the perceptions and experiences of the City of Cape Town officials, as well as residents in Kuils River (as the study area in relation to the integration of housing and transport planning) collected from field research. It was an unstructured interview process and questions were based and derived from the following three subsidiary research questions as pointed to Chapter 1, namely: (i) How does the traffic congestion impact on residents in Kuils River? (ii) What are the contributing factors to the current traffic situation in the Kuils River? and (iii) How can the integration of housing and transport be improved in Kuils River? (See Appendix A and B for the overall unstructured interview questions raised to both the residents and municipal officials, which include the councillor, as key respondents.)

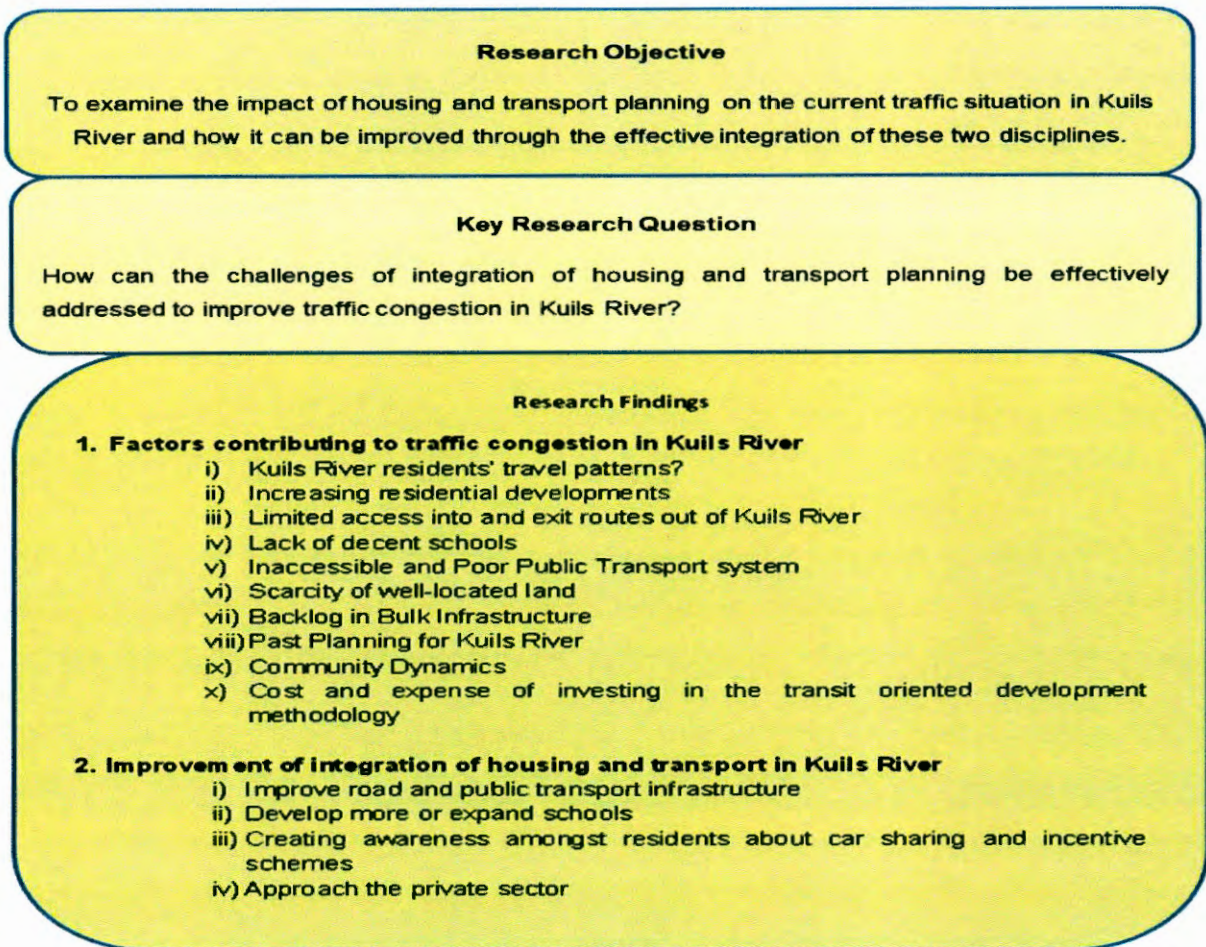
This research was gathered in August 2015 through personal or face-to-face interviews with all key respondents. A total of five interviews were conducted with the City of Cape Town officials, including one ward councillor, and fifteen interviews were completed with the residents of Kuils River. These research findings can be read in conjunction with the recommendations as set out in Chapter 6.

The findings are presented in a narrative format that will allow the different views and perceptions of the housing and transport sector specialists and the residents to come forward. The overall results of the interviews conducted with the residents will first be presented, which will be followed by the responses of the ward councillor and the City of Cape Town officials.



## 5.2 MAIN RESEARCH STUDY FINDINGS

In order to understand and analyse the context within which the various interviews were conducted, key themes were identified that speak to the key objective of the study. Each of the key themes will be discussed based on data gathered from the responses of key informants. On the other hand, in an effort not to lose important core information, some of the important individual views, will be included in the discussion. See Figure 5.1 for an illustration of the main research findings in an attempt to address the research objective and to respond to the key research question.



Source: Authors' own (2016)

*Figure 5.1: Diagram illustrating the main research findings*

### 5.2.1 Factors contributing to traffic congestion in Kuils River

As stated in Chapter 2, urban development influences such as land use, housing and transport development, road traffic volumes and travel performance are all interrelated and impacting on each other. Hence, with the growing traffic congestion and urban development, it is critical that the collaborative impacts of housing and transport planning on each other be



investigated, which can as a result impact on the travel performance of people and traffic congestion in towns and neighbourhoods.

### **5.2.1.1 Kuils River residents' travel patterns**

#### **RESPONSES FROM KEY RESPONDENTS (RESIDENTS)**

When the residents were asked to describe their experiences related to the traffic congestion in the study area, it became clear that out of the 15 residents interviewed there was not a single person that was not experiencing the current traffic congestion situation in Kuils River, despite the route being used during peak hours. Of the 15 residents interviewed, 11 residents are travelling with their private vehicles either on Amandel, Langverwacht, Nooiensfontein and Van Riebeeck Roads; the other four residents indicated that they travel by public transport.

Two out of the 11 respondents that travel by vehicle indicated that they are travelling outside of the peak traffic hour in the morning to avoid the traffic. Both of the respondents are senior managers at their places of work, which allow them to make such a choice, unlike the other residents that are not that fortunate to choose such an option. The 11 respondents travelling by private automobiles indicated that they are leaving their homes in peak traffic hours between 06:00 and 06:15 to arrive at work at 08:00. They cannot leave their homes later than 06:15, even if their places of work are only a 10 to 15 minute-drive from Kuils River. If residents leave at 06:30, they can easily arrive at their places of work around 09:00. According to these respondents, there are only two exit points from Kuils River to their places of work, which is either on Stellenbosch arterial to the N2 and the R300 to the N1.

One resident travelling on Van Riebeeck Road to the R300, explained that it is an estimated two and a half kilometres from his home on van Riebeeck Road to the turn of to the R300, but this short distance takes him 40 minutes when he leaves his home at 07:00. Then, from the R300 it is another 26 km to get to his workplace, which takes generally only 20 minutes on the R300. Hence, when leaving his home at 07:00, it used to take him an hour in traffic; he now leaves his home at 08:00 and it only takes him 20 to 30 minutes to get to work and is now cutting out half the time wasted in traffic.

Another resident travels in the morning peak hour on Amandel Road to drop off her child at school in Brackenfell, a nearby suburb and a five- to ten-minute drive from Kuils River. She has to leave at 06:20 in the morning to drop off her child at school in time, which is the same time of commuters travelling from Kuils River to the Cape Town CBD. The fact that she was battling to drop off her child in time at the school forced her to make the decision to move out of Kuils River to Brackenfell for easy access to her child's school.



The residents' travelling experiences as raised above, therefore give emphasis to what is stressed in Chapter 2, namely that a neighbourhood with enhanced accessibility shapes travel patterns by servicing the transport choices and needs of residents, but also by shortening the average travelling distance between activities (Olaru et al., 2011:221; Tennoy, 2012:89). However, it is further argued in the literature (Olaru et al., 2011:109; Tennoy, 2012:104) that for instance, if a new alternative route is built that involves an increase in road capacity in order to lead traffic away out of a suburb, it can cause the traffic volumes to grow. Only when the road capacity is reduced on other corresponding roads will it positively affect the traffic. This view thus contradicts the experiences of relief of traffic congestion, as described by the residents, as a result of the expansion of Amandel Road.

The other four residents that travel by public transport indicated that they travel with the Cape Town Business Express train that is a much more expensive form of public transport. The same four residents specified that they cannot travel with the 'normal' trains due to its unreliability and safety issues. In Chapter 2, it is especially emphasised by authors (Bickford, 2013:2; Loukaito-Sideris, 2010:65-66, Mtantato, 2011:203) that the reliability, safety, convenience and affordability of a public transport network system connected to neighbourhoods must be made extra appealing by promoting its benefits, such as accessibility to socio-economic amenities and activities. This ultimately offers residents with a convenient choice of transport mode. The same four public transport users viewed the travelling of residents with private automobiles as an important contributing factor to the current traffic congestion in Kuils River, especially because these private automobile users are not travelling in groups, but commute one person per vehicle.

It is argued in Chapter 2 that land use, road traffic volumes and the travel performance or patterns are all interrelated in a complex way (Tennoy, 2010:216; 2012:102). Thus, the traffic volume on roads is characteristic of the travel patterns of a community, which in turn affected transport and land use systems that is directly and indirectly affected again by the traffic volumes and travel patterns. Hence, any changes to one system will have an impact on another system.

### **5.2.1.2 Increasing residential developments**

#### **RESPONSES FROM KEY RESPONDENTS (RESIDENTS)**

The general feeling raised by 14 out of the 15 residents, is that an important contributing factor to the current traffic situation in Kuils River is the increasing residential developments in the suburb. This expansion factor has resulted in more residents and more vehicles being on the roads. The traffic situation thus became chaotic, because transport planning,



particularly road construction and public transport, did not keep up with the ever-increasing developments and growing population in Kuils River.

When asked about the impact of the current expansion of Amandel Road from a one lane per direction single road to a double lane road, and the soon to be expanded Saxdownes Road on the road traffic, the four residents travelling on the particular roads were of the opinion that it will definitely make a difference to the current traffic congestion on the road. They were also of the view that the near future expansion of Saxdownes Road without a doubt will bring further relief to the traffic congestion on Amandel Road. This means that the residents that can currently only use Amandel Road as an exit road to the higher order roads, will then be able to exit also from Saxdownes Road. Only one other resident indicated that the development of Saxdownes road might slightly assist with the traffic congestion on Amandel Road, but the problem will still remain as there are too much residential developments happening in Kuils River and the roads are just not keeping up or coinciding.

#### **RESPONSES FROM KEY RESPONDENTS (MUNICIPAL OFFICIALS)**

Interviews with the five municipal officials revealed that all five of them are soundly aware of the current traffic congestion challenges in Kuils River due to complaints lodged by residents and revealed in various newspaper articles. All of the officials recognised that the most significant contribution towards the current traffic congestion situation in Kuils River is that transport and housing developments were not keeping up with each other in the suburb, due to various challenges experienced within the City of Cape Town. Thus, all five respondents believe that the most important contributing factor to the current traffic situation in Kuils River is that there are too much residential developments happening in the suburb, which generate an influx of more people and resulting in the suburb becoming overpopulated. The town and regional planner interviewed, stated that the reason for the tremendous residential development in Kuils River is because it is a growing node in the metropolitan context, due to the reason that the suburb is situated on the urban edge of Cape Town with an increasing demand for development.

##### **5.2.1.3 Limited access into and exit routes out of Kuils River**

#### **RESPONSES FROM KEY RESPONDENTS (RESIDENTS)**

Hence, keeping the growing residential developments, the influx of more people and growing private transportation in mind, another contributing factor to the traffic congestion situation is identified by the same 14 residents, namely that there are limited access routes into Kuils River and too little exit points out of the suburb. According to Farahani et al. (2013:1), an increasing population volume puts more pressure on the planning of both public and private



transport that involves the planning of several transport networks in addition to conventional road networks. It is for this reason that effective transport planning plays an important role in providing greater accessibility to people in relation to movement and socio-economic opportunities.

#### **5.2.1.4 Lack of decent schools**

##### **RESPONSES FROM KEY RESPONDENTS (RESIDENTS)**

Out of the 15 residents interviewed, the general feeling is that there are too little schools for the growing residents in the area and that when it is school holidays the traffic congestion is much less. Linked to this, eight residents regarded the lack of decent schools in Kuils River as a vital cause of the traffic congestion situation in the suburb. As there is only one Model C English school located in Kuils River, most residents have to transport their children outside of the Kuils River suburb to attend a respectable English school in other nearby suburbs, such as Brackenfell and Bellville, which causes further blockages on the roads. According to McDonald (2007:24), the existing spatial distribution with longer distances between schools and learners influence their decision to walk to school or not, which increases the reliance on private transport and therefore contribute to traffic congestion challenges. In developed nations, private vehicles are the preferred mode of transport to schools, where the use of public transport is lower compared to developing nations (Marique, Dujardin, Teller & Reiter, 2013:5). Thus, the choice of school transport involves more than just the available infrastructure and distance; it is also linked to socio-economic and personal preference.

For instance, if a particular neighbourhood declines due to various reasons, then residents that can afford it will move to a more prosperous and socially prestigious neighbourhood. Litman (2015a:4) also argues that if residents have a perception of quality of schools in more accessible and multi-modal neighbourhoods, they will often move to a suburb where their demands are met. It is thus worth considering how minor and insignificant differences in socio-economic infrastructure incentives can make a neighbourhood more attractive.

#### **5.2.1.5 Inaccessible and poor public transport system**

##### **RESPONSES FROM KEY RESPONDENTS (RESIDENTS)**

The unreliability of public transport in Kuils River was viewed as a vital contribution to the traffic congestion in the suburb. The 11 residents interviewed that choose private transport as their main mode of transport stated that the reason for making this choice is due to the unreliability of public transport and that it was not safe. It is for this reason that Mtantato (2011:203) and Tennoy (2012:89) argue that the availability and access to reliable and safe public transport will increase public transport usage and provide commuters with a choice

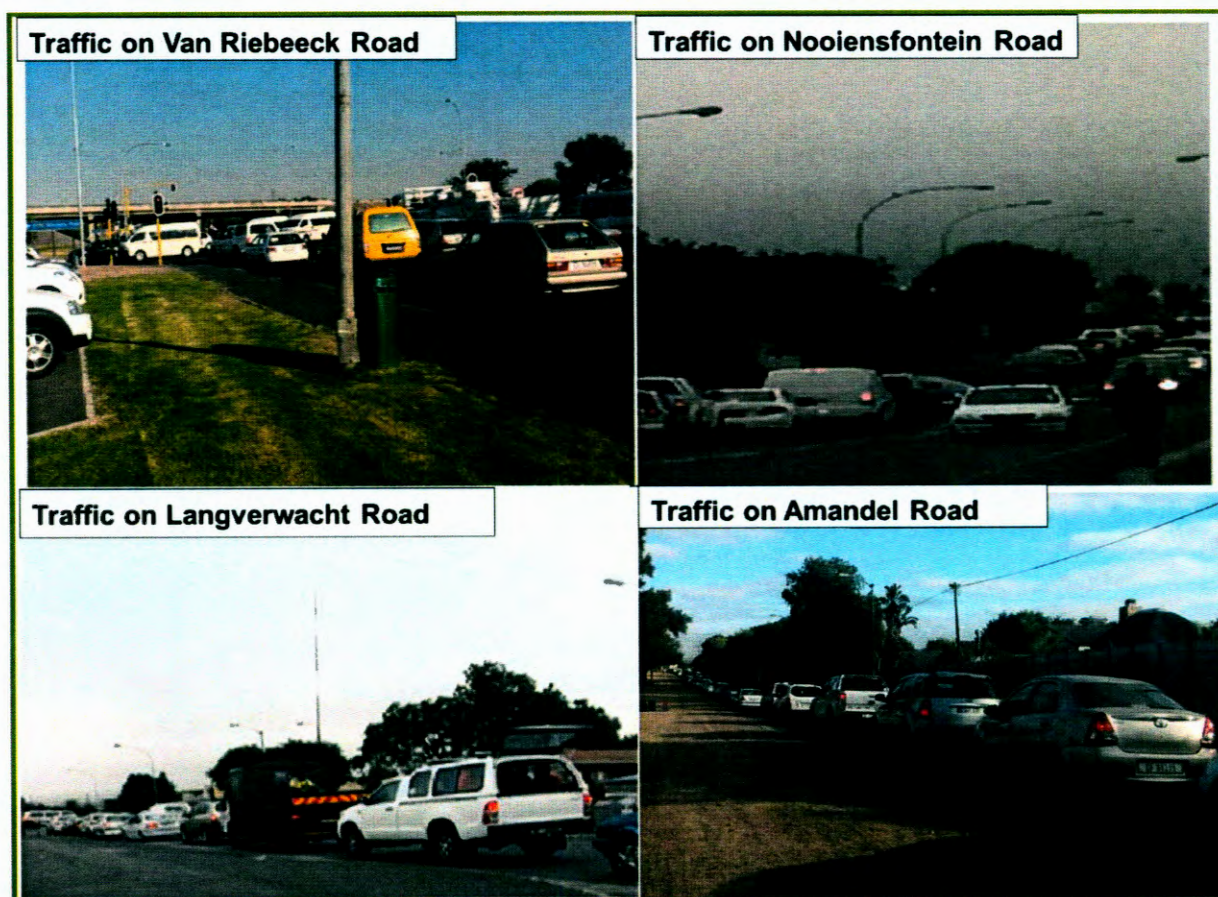


that can compete with private vehicles. This is the only way that traffic congestion can be addressed.

One of the fourteen residents interviewed, also identified the mini-buses on Van Riebeeck Main Road as an important contributing factor to the traffic congestion situation in Kuils River. According to this resident, the mini-buses are a problematic factor on the road, because they stop in the middle of the road, which causes a traffic blockage and slow-down of moving vehicles.

#### RESPONSES FROM KEY RESPONDENT (WARD COUNCILLOR)

According to the councillor, as long-term resident, he can recall that when buses were running in the Kuils River area in the past, the traffic congestion situation was not as problematic as it is now. He views the deactivation of bus stops in the area as an important contributing factor to the current traffic congestion problem in Kuils River. Nowadays, it takes four mini-bus taxis to transport residents in the area when it used to take only one bus to transport the same number of people. According to the councillor, the roads experiencing the heaviest traffic during peak hours in Kuils River are Van Riebeeck, Nooiensfontein, Langverwacht and Amandel Roads (see Figure 5.2).



Source: Authors' own (2016)

**Figure 5.2: Roads in Kuils River experiencing the severest traffic congestion**



## **RESPONSES FROM KEY RESPONDENTS (MUNICIPAL OFFICIALS)**

The official responsible for TOD implementation in the City of Cape Town also revealed that because government is responsible for operating costs, it becomes very costly when commuters are travelling far distances. Thus, the reason that public transport cost so much is the distance that people have to travel. He also put forward that it makes sense to have a more integrated spatial form promoted by the TOD approach, because the operating cost of public transport is just too expensive. He concluded by saying that the City of Cape Town is under pressure and they are in the process of providing public transport to various lower-cost neighbourhoods in Cape Town.

### **5.2.1.6 Scarcity of well-located land**

#### **RESPONSES FROM KEY RESPONDENT (WARD COUNCILLOR)**

The councillor stated that another reason for the heavy traffic congestion in Kuils River is that land is being sold off to private developers without consideration of the impact on residents. The increasing privatisation and accessibility of well-located public land is becoming a major obstacle in the delivery of housing by municipalities (Landman & Ntombela, 2006:20, Mtanto, 2011:202).

## **RESPONSES FROM KEY RESPONDENTS (MUNICIPAL OFFICIALS)**

The one housing official interviewed, identified land suitability and availability for housing development as a major challenge towards the integration of housing and transport planning. According to the official, usable and available land is costly and the City of Cape Town has to purchase it at a very high price.

### **5.2.1.7 Backlog in bulk infrastructure**

#### **RESPONSES FROM KEY RESPONDENTS (MUNICIPAL OFFICIALS)**

Four out of the six municipal officials agreed that two of the most important challenges experienced by the City of Cape Town towards housing and transport integration are cost and access to funding for infrastructure development. To address traffic congestion challenges immediately through the development or upgrade of external transport services and roads, are viewed as too costly and expensive and it is a challenge for the City of Cape Town to leverage funding from developers. This is affirmed by Palmer et al. (2013:33), who claim that South African municipalities are experiencing critical challenges, related to both the declining state of infrastructure, as well as the expansion of existing infrastructure. In addition, it is recognised that most municipalities in South Africa experience challenges in terms of shortage of capital funding to invest in the required infrastructure.



The above-mentioned view is supported by Mtantato's (2011:213) argument that the challenge of eradicating infrastructure backlogs with limited resources is greater than the institutional coordination failure and is complicated by an urgent need to address urban development needs. This infrastructure backlogs force municipalities to put the added obligation on the private developers to fund infrastructure development necessary to serve their residential developments (Maboza, 2014:12 & O'Leary, 2008:259).

Therefore, according to the four municipal respondents, the City of Cape Town is trying to access additional funding to make improvements to the current transport network in Kuils River. The financial contribution of developers, while it was determined and in accordance with Council's policy was thus identified by the majority of officials as a third key challenge experienced by the City of Cape Town. In addition to the above, the town planner also stated that a significant contributing factor to the current traffic situation in Kuils River is that the entire bulk road infrastructure in Kuils River is development driven, where the developers build houses and pay a contribution towards the provision of bulk infrastructure municipal services. The problem in Kuils River is that the development contributions have never been enough. For example, a developer in Somerset West is paying a higher development contribution as opposed to a developer in Kuils River. The developers in Kuils River paid a very low development rate, which led to a backlog in the bulk road infrastructure. Therefore, the City of Cape Town could not develop the entire bulk road infrastructure, because the development cost generated was too low and the City of Cape Town did not generate enough income to address the roads backlog in the critical areas in Kuils River.

### **5.2.1.8 Past planning for Kuils River**

#### **RESPONSES FROM KEY RESPONDENTS (MUNICIPAL OFFICIALS)**

The transport official specialising in NMT raised two important contributing factors to the traffic congestion situation in Kuils River, namely the issue of the public transport system in Kuils River not being very accessible and that past planning for Kuils River was done mainly for motorised transport. Thus, lacking in the past was to consider non-motorised and public transport and how to integrate it with housing. It is only now that the City of Cape Town is realising that it needs to progress towards integrated planning in terms of housing / land use and transport. According to the literature there is a growing focus on NMT modes in cities globally due to its flexibility and affordability, compared to traditional planning approaches adopted in developing countries that are often still neglecting this mode of transport (Bickford, 2013:10).

The NMT official, furthermore, stated that another important contributing factor towards Kuils River's current traffic situation is that past planning for Kuils River was done for certain



middle class people only. There was no planning for the lower order class people, thus roads were planned with no sidewalks for walking. The City of Cape Town used an American kind of transport planning approach that was mainly about planning for motorised transport. Roads were thus built as wide as possible and as many as possible for vehicles. Hence, there was no integration of different modes of transport. It is only now that the City of Cape Town is realising that it is growing on top of urbanisation. The political transition in the country also results in people being no longer fixed in one area, but is now moving to different and better areas that result in a mix demand for transport and housing.

In relation to the above, the TOD official also referred to the historical lack of integration between housing and transport as a cause of the current traffic congestion situation. Although land use and transport planning has been trying to integrate for years, housing has always been seen as a different trajectory. In South Africa, one of the key pressures for government was to first meet targets, due to the huge housing backlog in the country. This situation is not necessarily conducive towards the integration of housing and transport planning, because of the pressure of meeting numbers. The quickest way to provide housing is often the way it is chosen, which is not necessarily the best way, which also makes transport expensive.

#### **5.2.1.9 Community dynamics**

##### **RESPONSES FROM KEY RESPONDENTS (MUNICIPAL OFFICIALS)**

When the interviews were conducted with the planner and housing and transport planning officials, it became apparent that there was a level of integration between the housing and transport planning departments within the organisation, but that they also experienced severe challenges during implementation. When asked about the challenges, the particular challenges raised consistently and experienced towards implementing the integration of housing and transport, in particular within Kuils River, were identified as property developers' contribution, cost and funding. Other challenges identified by the housing official explicitly were the NIMBY (Not-In-My-Backyard) mentality and community dynamics experienced during proposed housing developments.

Other two important challenges towards the integration of housing and transport were identified by the one housing official as community dynamics and NIMBY syndrome. The issue of resistance from middle class was also raised by another respondent, which implies the same sentiment as NIMBY. The NIMBY mentality generally refers to the reluctance and unwillingness of higher income residents to accommodate low-income housing in close vicinity of their neighbourhood, as discussed in the literature by Maboza (2014:11) and Beltrão and Kessler (2013:6). This mentality stems from the fear of the unknown and can be



a major barrier to TOD mixed housing and subsequent infrastructure development (Machell, Reinhalter & Chapple, 2010:1). Public opposition and resistance to projects can delay construction of housing and roads for years. A lot can still be said about the NIMBY mentality, which is a result of a social dilemma from the past apartheid system and characterised by the spatial separation of the advantaged and disadvantaged communities. Nevertheless, since this is not the focus of this dissertation there will no further elaboration around this community dynamic.

According to the NMT official, some of the challenges the City of Cape Town are experiencing towards the integration of housing and transport are: (i) private developers, government planning; (ii) issues of resistance from middle-class residents; (iii) urban environment not created to enforce integration; (iv) cost is a major obstacle; and (v) public transport is not strong enough. Residents do not want public transport in their area because of reasons such as noise disturbance. A paradigm shift is needed in terms of old habits and not wanting or resisting change.

#### **5.2.1.10 Cost and expense of investing in the transit-oriented development methodology**

##### **RESPONSES FROM KEY RESPONDENTS (MUNICIPAL OFFICIALS)**

When the five municipal officials were asked what they think of TOD as a solution to the traffic congestion challenges, three officials indicated that it is currently not viewed as a priority in the City of Cape Town, due to financial challenges. The priority is mainly to address traffic congestion challenges through the development of alternative routes and upgrading of connected routes. TOD is viewed as a costly and expensive investment challenge by the City of Cape Town and is not an immediate priority to address traffic congestion, but rather a long-term solution and future investment. On the other hand, the two municipal officials specialising in TOD and NMT, indicated that despite the challenges associated with the implementation of TOD, it has become a priority area for the City of Cape Town in terms of the provision of public transport and housing development, which the City of Cape Town is currently striving towards. These differing views reveal the opposing approaches to implementation by some of the more mature appointed and traditional officials, compared to the more modern and forward thinking approach of the newly appointed TOD and NMT transport officials.

In Chapter 2, the integration of transport and housing development is viewed as central to the TOD process and the most critical mechanism to reducing traffic congestion in cities. The TOD methodology is regarded by Bickford (2013:9), Cervero and Arrington (2008:3) and Vuchic (2005:39) as a viable transport planning strategy to reduce traffic congestion, due to



its main focus on provision and promotion of access to public transport as an alternative means to privatised vehicles and significantly enhancing the easy movement of people.

## **5.2.2 Improvement of integration of housing and transport in Kuils River**

As discussed in Chapter 2, according to Herala (2003:92), housing and transport planning can be successfully integrated if the basic requirement to decrease the demand for private transport and to develop alternative approaches to road transport is addressed. There is a common agreement (Curtis, 2008; Olaru et al., 2011:109; Qureshi & Huapu, 2007:315; Tennoy, 2010; Tennoy, 2012) that in order to reduce traffic volumes, there needs to be a shift towards strategies that influence private vehicle usage, which can be achieved through the following broad approaches: (i) encouraging land use planning and development with the objective to reduce vehicle usage; (ii) improve public transport systems; (iii) develop and improve on conditions for non-motorised transport (sidewalks and bicycle lanes for especially cycling and walking) and create awareness for dense land use to impose restrictions on private. Moreover, multiple transport modes require a balance between economic opportunities and residential locations and connection of local transport centres as optimal modes (Qureshi & Huapu, 2007:316).

Kitchin and Ovens (2008:52) describe integration as a means to provide all people with access to various opportunities and to meet their aspirations about their life within the city they live in. It is believed and advocated by various academics (Banister, 2005; Cervero & Arrington, 2008; Meyer and Miller, 2001) that the integration of transport and housing / land use planning is critical in realising sustainable movement patterns and accessibility in cities. Underlying this belief are the increased economic and social benefits, such as enhanced access to economic opportunities and activities and improved standards of living.

However, this actual integrated planning focus is repeatedly lacking in practice, especially in the initial stages of planning. The result is that both the housing and transport domains focus on their individual transport and land use issues and interventions are often conflicting, such as vehicle dependent housing development and unsustainable public transport systems (Brömmelstraat & Bertolini, 2008:1-9).

### **5.2.2.1 Improve road infrastructure and public transport infrastructure**

#### **RESPONSES FROM KEY RESPONDENTS (RESIDENTS)**

Responses from eight out of the fifteen residents, and therefore the most common opinions, were that the municipality can address the traffic congestion challenges in Kuils River by (i) expanding existing roads with the highest congestion and improve public transport



infrastructure. The four public transport commuters understandably advocated for improved and accessible public transport infrastructure. Two residents that are using the Kuils River highway, namely Van Riebeeck Main Road, suggested specifically that either a 'left lane only' or an off-ramp be developed on the left side of Van Riebeeck to access the R300. This will avoid private vehicle commuters from having to wait at the traffic robots to turn left into the R300 and by developing the 'left lane only' or an off-ramp will alleviate traffic on the Van Riebeeck Road. The suggestions are reinforced by Palmer et al. (2013:2) who argue that given the extent of socio-economic challenges experienced in South African cities, it is imperative that strategies be formulated that guide and ensure efficient and effective current and future infrastructure investment in the interest of citizens (Palmer et al., 2013:3).



Source: Authors' own (2016)

*Figure 5.3: Current Access from Van Riebeeck Road to the R300*

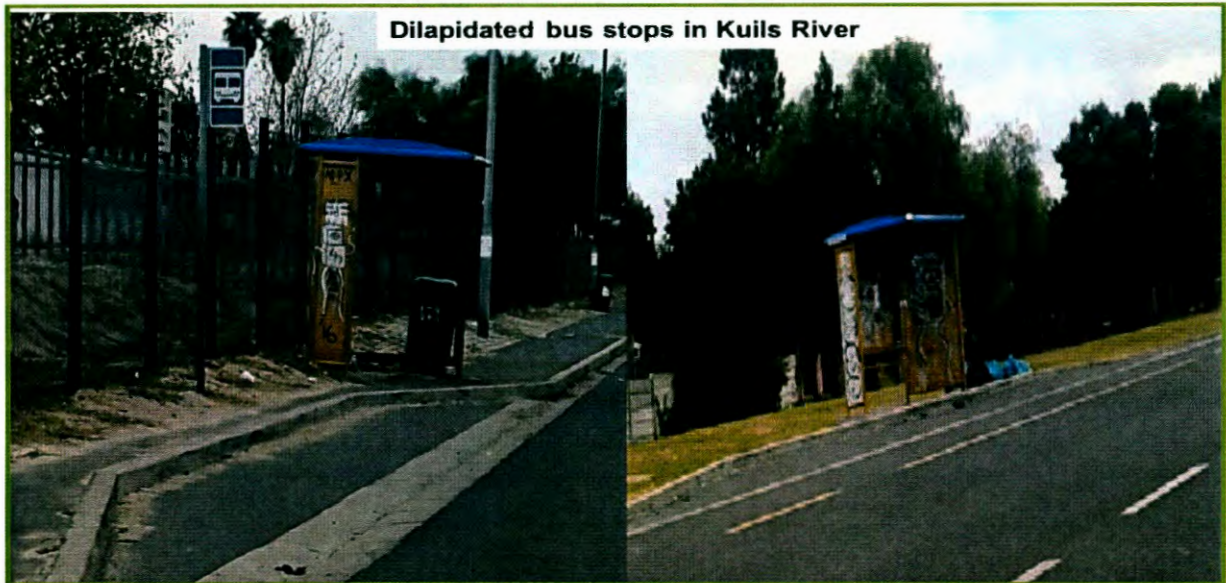
#### **RESPONSES FROM KEY RESPONDENT (WARD COUNCILLOR)**

The ward councillor stated that in an attempt to address the traffic situation in Kuils River, he engaged and reached an agreement with the City of Cape Town Traffic Department to put in place traffic calming measures, such as altering times of robots and putting traffic officers in place at the busiest road sections. He indicated that these options, however, brought only temporary relief to the traffic congestion in the area.

The ward councillor suggested that as a long-term solution, transport and housing officials as well as developers, should work together to solve the traffic congestion problem. He recommended that the City of Cape Town must look at past planned roads that were never developed by the municipality or the developers. The councillor also mentioned that old and dilapidated bus stops as shown by Figure 5.4, must be reactivated in areas where it was



operating in the past, as well as new ones should be developed in areas where no buses are running to encourage public transport use in Kuils River.



Source: Authors' own (2016).

*Figure 5.4: Old and dilapidated bus stops in Kuils River*

#### **RESPONSES FROM KEY RESPONDENTS (MUNICIPAL OFFICIALS)**

Suggestions that were put forward by the majority of municipal officials were that roads should be expanded to provide right of way bus lanes to promote public transport, which should especially be provided in middle to higher income areas. Therefore, an important strategy to consider when expanding roads is to allocate more lanes to public right of way in terms of public transport to encourage more people from using private vehicles towards using public transport. It is important to give public transport a right of way for easy flowing of traffic.

The NMT official was of the opinion that the MyCiti small buses should be considered to be provided in certain middle to higher income areas where no taxis or mini-buses are operating. This could also be considered at a localised scale, to service especially main attractors in Kuils River, such as to the main road, malls and railway transport systems.

The town and regional planner indicated other and additional future plans of the City of Cape Town for Kuils River is to develop the Bottelary Road to link with the R300, which will bring tremendous relief to the current morning traffic in Kuils River. He also pointed to the fact that initially, and based on past planning, Amandel Road was never planned to be expanded, although it currently functions as a reasonable high-order road. The upgrading of the Saxdownes Road development was part of the planning of Kuils River from the start. The



Saxdownes Road is partially constructed and is planned to link residents from Langverwacht to Bottelary Road.

The traffic engineer that was interviewed, stated that the City of Cape Town is trying to alleviate the traffic congestion problem in the Kuils River suburb, through the current expansion of Amandel Road in Kuils River, but the organisation is also aware that it will not solve the biggest congestion problem in the morning. The development of Amandel Road is an interim measure until the City of Cape Town has accessed enough funding for the development of Saxdownes Road, which will solve the traffic congestion problem in the morning and take the pressure off Amandel Road and the lower order roads leading up to Amandel Road. Hence, COCT has developed a Developer's Contribution Policy in 2014 that is targeted at property developers and to assist in generating additional funding and recover a portion of the roads bulk infrastructure costs related to a particular infrastructure development from developers. This enables the provision of infrastructure in a timeous and efficient manner (COCT Transport Authority, 2014:31). The City of Cape Town's decision-making in terms of roads infrastructure and access is influenced by the National Transport Policy.

The view that the expansion of roads and development of alternative roads is unlikely to ease traffic congestion, may even result in an increase in traffic congestion, is advocated by Olaru et al. (2011:109), Qureshi and Huapu (2007:315) and Tennoy (2012:104). These literature allies are also of the opinion that the provision and access to a reliable, safe and efficient public transport network system is the only effective way to reduce traffic congestion in the long term.

On the other hand, the NMT official mentioned that the challenge with expanding roads is that once more road space is provided more vehicles will be on the road and will not solve the traffic congestion problem over the long term. With wider roads, speeding is promoted that become dangerous for pedestrians and can create conflict between vehicles and pedestrians. Hence, the City of Cape Town's future planning is focussed on TOD, NMT and the BRT public transport system. The City of Cape Town's current approach to TOD is to analyse travel patterns, work on new land use and housing scenario's, and make use of population projections of up to 2032.

#### **5.2.2.2 Expand existing or develop more schools**

##### **RESPONSES FROM KEY RESPONDENTS (RESIDENTS)**

Another common suggestion raised by eight out of the fifteen residents is that existing schools be expanded or more schools be developed. This will keep residents from having to



travel to other suburbs to drop off their children, which will impact positively on the current traffic congestion.

#### **5.2.2.3 Creating awareness amongst residents about vehicle sharing and incentive schemes**

##### **RESPONSES FROM KEY RESPONDENTS (RESIDENTS)**

Only one resident indicated that the municipality should create awareness amongst residents about the traffic congestion situation in Kuils River and what they can do together with the municipality to improve this, i.e. lift clubs. This approach is supported in the literature in Chapter 2 (Cervero & Arrington, 2008:16; Ndebele & Ogra, 2014:455; Suzuki et al., 2013:36; Zhao et al., 2008:584) where vehicle sharing and incentive schemes are promoted through demand strategies.

#### **5.2.2.4 Approach the private sector**

##### **RESPONSES FROM KEY RESPONDENTS (RESIDENTS)**

The above-mentioned resident also suggested that the municipality must approach businesses or the private sector to provide company transport, such as mini-buses to their workers. This approach is described as collaborative planning in Chapter 2, which entails the inclusive engagements between a supportive government structure and the citizens as stakeholders. It further involves cooperation and the integration of sector plans that is based and guided by joint decision-making and planning as a means to address an objective through implementation as partners with collective capacity (Fischer et al., 2013:2; Maboza (2014:12; Schroth, 2010:13-14).

### **5.3 MAIN RESEARCH DISCUSSION POINTS / SYNTHESIS**

The literature on housing development suggests that public transport regulations can influence the location of housing development preferences, planning or decisions, taking into account the socio-economic situation of a community. Where the middle income is being more open to accessibility and close proximity to their work of place, the low income would be more focused on walking proximity. Policy-makers should thus carefully take the residents in a neighbourhood into consideration. Further research on this subject matter is needed through targeted household surveys.

It is clear from the transport section in the reviewed literature that if transport improvements are implemented efficiently through the solicitation of suitable integrated housing / land use and transport coordinated policies, cities can benefit substantially. By encouraging higher building and population densities, as in the case of Curitiba in Brazil, the use of public



transport in an area would be optimised and contributing to greater spatial efficiency. Without a doubt, transport and housing / land use policies should be integrated and pre-determined by spatial and socio-economic objectives.

It was also found that transport planning should be done in collaboration with housing / land use planning, thus there should be integration of these two disciplines, rather than just alignment of plans. The City of Cape Town, in its Integrated Human Settlements Plan as discussed in Chapter 1, indicated that its comprehensive approach towards integrated housing development entails the primary focus of addressing the challenge of aligning housing and transport planning. Based on the transport literature section, namely key elements towards successful transit-oriented development implementation, it can be concluded that the City of Cape Town is taking the wrong approach to align its development plans, instead of integrating its plans.

A frequent observation made by the municipal officials when interviewed in terms of the challenges experienced by the City of Cape Town, is the lack of funding and the commitment from the developers to contribute towards infrastructure related to residential developments. It might then also be argued that the City of Cape Town has experienced challenges related to the developers' contributions in the past, but is nevertheless approving residential developments at the expense of the residents.

An interesting finding was that the two officials that raised their opinions about TOD as the best approach to address traffic congestion in Kuils River are both specialised in modern transport fields, namely TOD and NMT. Gathered from this observation, it can be presumed that the transport officials specialised in these two fields have a more progressive and forward thinking approach to transport planning.

All 15 of the residents interviewed were particularly frustrated with their unpleasant personal experiences with the current traffic congestion situation in Kuils River and were all relating it to poor planning by the City of Cape Town. On the other hand, a great deal of the municipal officials' responses focused on the City of Cape Town experiencing its own challenges in terms of addressing infrastructure related issues.

Concerns that came up most frequently amongst residents as a contributing factor to the traffic congestion situation are the increasing residential developments in Kuils River and the roads infrastructure not keeping up. According to the municipal respondents interviewed, it became clear that the demand for transport is growing and will always increase due to residents that are increasing in numbers in Kuils River, as well as economic opportunities. The neutral opinion by both the municipal and residential respondents was that if the public



transport infrastructure is improved and expanded and taking a greater share of the aggregate traffic, road traffic volumes would stabilise.

It was found through the interviews that most residential respondents are making the personal choice to travel by private transport, because it is in their financial means to do so and based on convenience. Their financial means, however, was found to be not the only reason for using private transport, but that a perception exists amongst respondents that public transport is only for the poor and not for middle class people. Hence, in the literature it is advocated that an effective public transport network system should be planned and designed in such a way that it is attractive to all commuters, especially to the middle class, by promoting its benefits and offering choices to a convenient multi-modal transport mode. This is motivated by the BRT system implemented in Ahmedabad that was developed for both the underprivileged and the so-called middle to elite class of people.

It was found that the City of Cape Town is aware of the needs of the Kuils River residents and that they are thinking the same way in terms of addressing the traffic congestion, such as expansion and upgrading of existing roads and the upgrading of the R300 road as planned by the City of Cape Town and recommended by some residents. It became clear that plans are in place to address the traffic congestion challenges in Kuils River, but given the financial constraints of most municipalities and the cost and funding involved for such significant and complex infrastructure development projects, it might take some time towards implementation.

Overall, the primary data collected through the unstructured personal interviews for this study, added to an improved understanding of the challenges experienced related to the current traffic congestion situation and the integration of housing and transport planning within Kuils River. Despite the challenges experienced by the City of Cape Town officials towards the integration of housing and transport planning, the organisation is moving towards a TOD approach projected for up to 2032 as stated by the TOD official. The appointment of officials that distinctly focus on TOD and NMT within the City of Cape Town is a commendable reflection of the organisations' commitment and efforts towards addressing the challenges of the integration of housing and transport planning and improving the quality of life of its citizens in the long run.



## 5.4 CONCLUSION

During the gathering of data, the general knowledge of the municipal officials relating to the topic was discovered to be quite good and that they are aware of the challenges linked to the integration of housing and transport planning in Kuils River. However, having studied the housing and transport policies that are all pro-integration, it appears that there is lack of knowledge and expertise at implementation level. Thus, at national or higher management levels there is agreement in terms of integration, but the gap is still being seen at implementation level.

The situation in Kuils River is complex and there are ways of life and insufficient infrastructure contributing to this complexity. It is gathered that the growth of housing developments places significant pressure on the road networks of the suburb, resulting in an increase in average travelling times. If the housing development is not curtailed in this suburb, then the existing traffic situation will remain and even get worse. The pressure to reducing the travelling time resulted in significant investments by municipal officials in the roads infrastructure, rather than assigning resources to alternative means of transportation.

Because the residential respondents are experiencing the challenges first hand, it is thus of utmost importance for the municipality to consult with the people for their inputs and possible solutions to assist in the planning and development of potential infrastructure investments. Hence, it seems that for urban and regional planning to be successfully applied and executed, plans may have to be representative of the needs of affected communities. To address the existing traffic congestion in the suburb will therefore require an approach that will support the lifestyle activities of residents. The importance lies in the need to enhance the understanding of municipal officials of the process that will allow them to develop strategies that embraces an integrated urban planning system.



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## Chapter 6

# CONCLUSIONS AND RECOMMENDATIONS

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### 6.1 INTRODUCTION

As pointed to in Chapter 3, there are many legislations and policies, such as the Housing Act of 1997, the National Transport Act of 2009, and the Spatial Planning and Land Use Management Act of 2013, that clearly provide for the integration of housing and transport planning in South Africa. These housing, transport and spatial acts and policies have reformed the way municipalities implement their sector plans to accommodate and improve the lives of citizens.

The main purpose of the transport and housing department in any municipality in South Africa is to implement policies towards the integration of housing and transport planning, considering sustainability factors such as environmental, social and economic issues. This integrated policy approach to housing and transport planning is an encouraging means towards the sustainability of infrastructure developments and providing socio-economic benefits to communities. This approach of bringing socio-economic opportunities closer to residential development is seen as key in the creation of places and alleviating the nuisance of traffic congestion. Hence, by addressing unsustainable housing and transport patterns through collaborative planning and collective decision-making, this approach also provides opportunities for alternative transport modes.

Working towards the objectives of the above-mentioned policies, it was found in the previous chapter that the City of Cape Town is experiencing various challenges towards the integration of housing and transport planning. Particular challenges, such as the cost and lack of funding for infrastructure developments and the commitment from property developers to contribute towards the bulk infrastructure for developments in Kuils River, are constantly experienced by the City of Cape Town. Other challenges experienced during proposed housing developments are the NIMBY (Not-In-My-Backyard) mentality and related community dynamics. It was also noted that the City of Cape Town is focussed on aligning its sector plans with one another, rather than integrating it, which is a different approach to alignment. This is a serious problem, as the integration of plans is an important factor working towards the transit oriented development (TOD) approach in neighbourhood development. Hence, the integration of transport and housing / land use planning is the only



way that the serious traffic congestion challenge experienced by the residents of Kuils River, can be effectively addressed.

The primary aim of Chapter 6 is thus to provide answers to the key research question of this dissertation, namely how to best manage the challenges of the integration of housing and transport planning that might positively impact on the traffic congestion in Kuils River. The conclusions and recommendations are made from critical issues drawn from the research analysis.

## **6.2 SUMMARY OF THE RESEARCH**

It is vital to note that a 'business as usual' approach as highlighted in the National Development Plan (NDP), of supplying municipal infrastructure to any location and/or in any form, is not sustainable. In considering transport infrastructure provision requests, especially to peripherally located subsidy housing projects whose residents cannot afford to pay rates, it is essential that housing lifecycle costs are also factored into transport investment decision-making. An opportunity to strengthen housing and transport integration has emerged, thus there is a need for socio-economic development plans to be strengthened and to ultimately shape spatial planning policies.

Finding ways to integrate the different elements of transport planning and housing development can mutually benefit both sectors and achieve substantial results that can benefit neighbourhood communities significantly. Some of the results that can be achieved through integration of these two dominants are reduced traffic congestion; lower housing and travelling costs; environmental preservation; and greater choices in housing types, location and transport services.

The logical answer to the challenge of integrating housing and transport planning is for urban and regional planners to ensure that legislation and policies are effectively implemented and that objectives are met. To achieve sustainable urban development, the focus should be on improved urban and regional planning and coordination.

## **6.3 RECOMMENDATIONS**

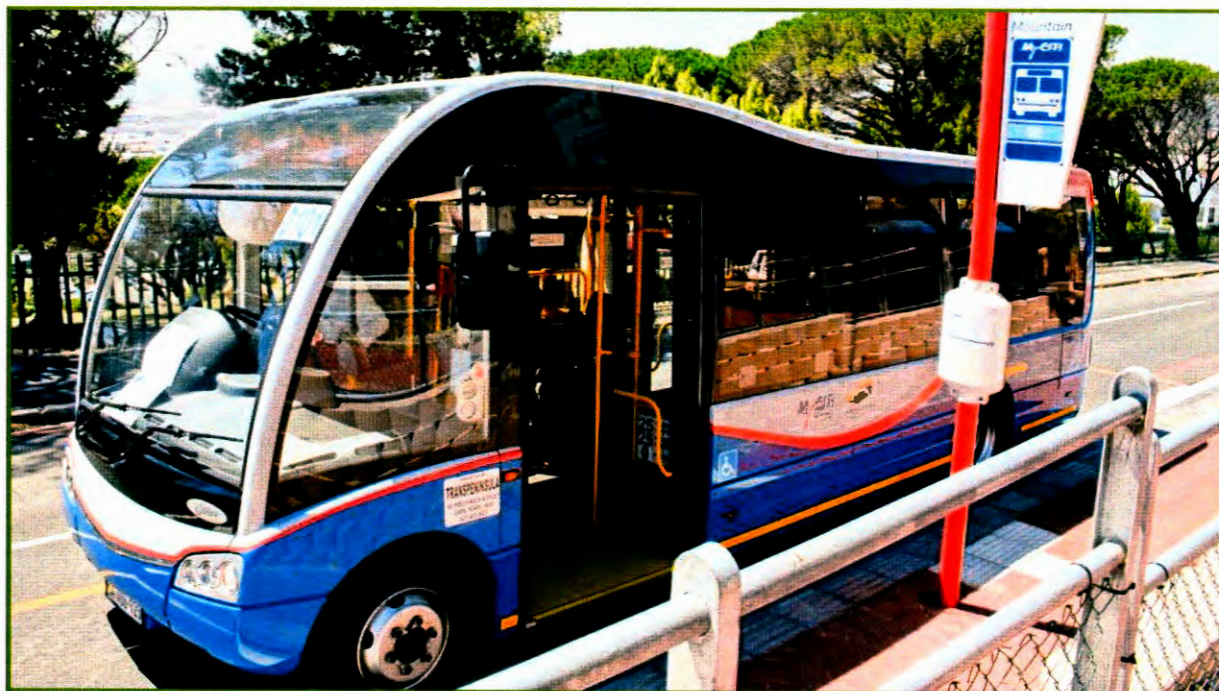
The premise of Chapter 6 is based on the effective integration of transport and housing planning as set out in the City of Cape Town's 2032 TOD plan. The effective and efficient mobility of residents will largely depend on the City of Cape Town's ability to achieve its developmental goals for 2032. The City of Cape Town's role as a municipality is to provide the necessary infrastructure services and support to the residents of Kuils River. With a plan already in place and keeping the City of Cape Town's challenges towards the integration of



transport and housing planning in mind, the following recommendations are made to assist the City of Cape Town towards addressing the traffic congestion challenges in Kuils River.

### **6.3.1 Improved provision of public transport will reduce road traffic volumes**

Not everyone or all middle income residents want to utilise public transport, due to its unreliability and being unsafe. Hence, if public transport is becoming more reliable in Kuils River, more middle class people or private vehicle users will make use of it. Public transport routes connected to housing developments represent an important way of integration with the local surrounding systems (i.e. access to work and shops). MyCiti small buses as illustrated by Figure 6.1, should be considered to be provided in certain middle to higher income areas in Kuils River where no taxis are operating. The MyCiti small bus system could also be considered at a localised scale, especially to main attractors in the area, such as to the main road, malls, and railway transport systems in Kuils River.

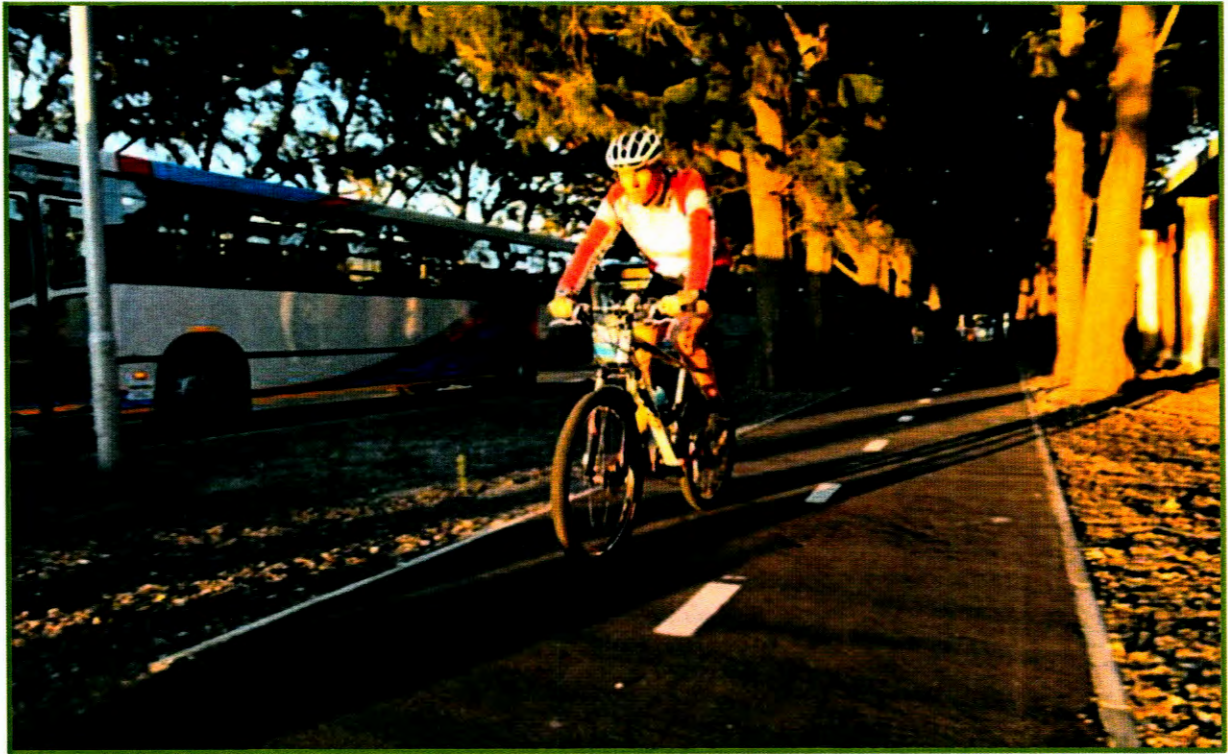


Source: Buchanan (2013: online)

*Figure 6.1: MyCiti small bus system*

There should also be integration between the different transport modes within Kuils River. The City of Cape Town should introduce and develop a hard core transport infrastructure, but also develop the soft type of infrastructure, such as traffic calming measures and the building of sidewalks and bicycle lanes. This will ultimately encourage integration of different transport movement types as shown by Figure 6.2.





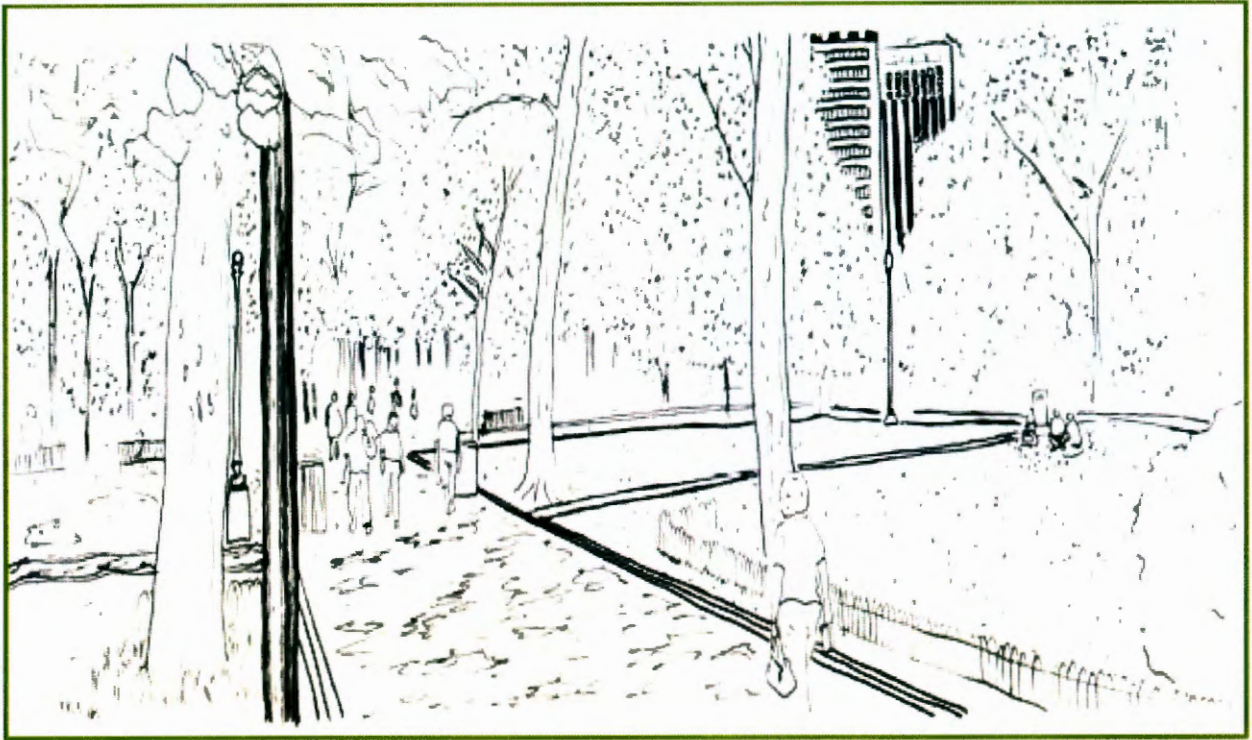
Source: MyCiti (n.d.: online).

*Figure 6.2: Integration of different movement types*

### **6.3.2 Encourage non-motorised transport, such as walking and cycle paths through environmental design**

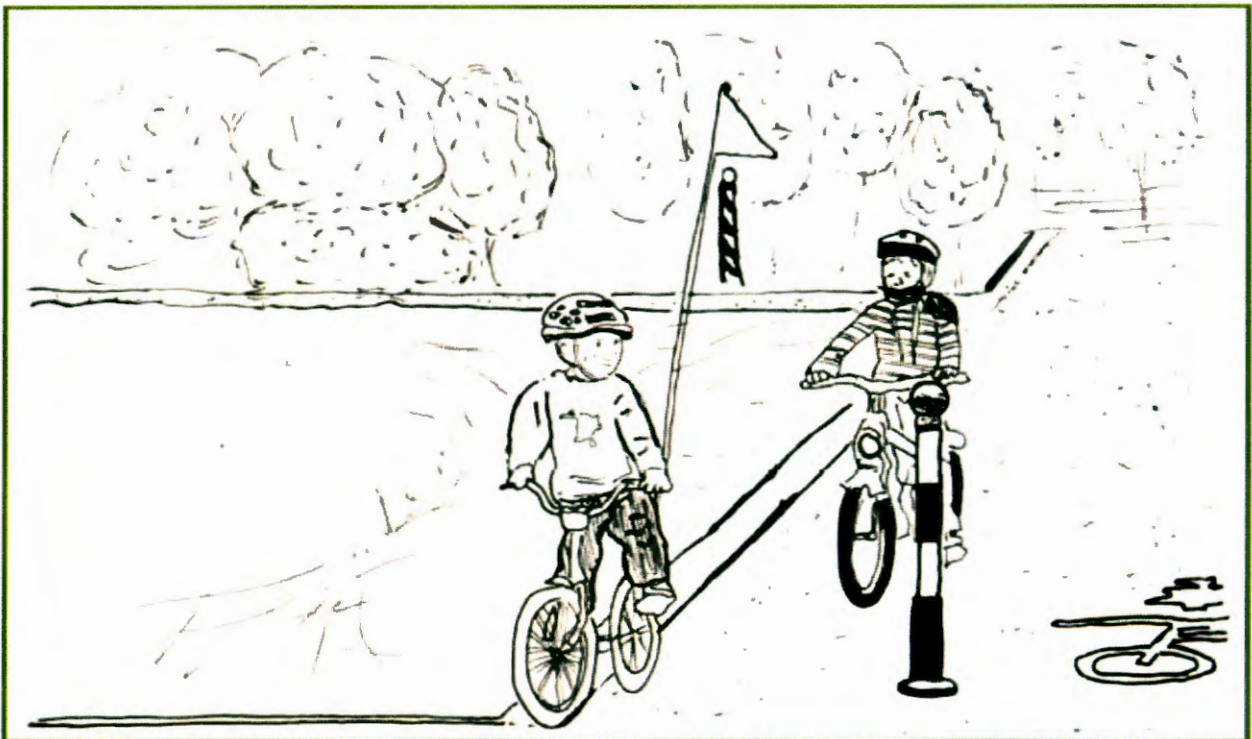
Although theory suggests that non-motorised transport (NMT) systems should be prioritised around lower income areas, NMT routes should also be considered in certain middle to higher income areas in Kuils River to encourage walking to the benefit of the residents' physical well-being. The NMT routes as illustrated by Figure 6.3 and 6.4 should especially be considered on Amandel Road that links surrounded middle-class pedestrians to the nearby Soneike Mall and the Spar shopping centre. See Figure 6.5 indicating the ample space available next to Amandel Road to develop an NMT route. The NMT routes should be spatially and environmentally designed in such a way to ensure that it is safe and creating a sense of place that is pleasurable and interesting. To achieve NMT success similar to the case of Bogotá, exclusive provision must be made for an extensive NMT road network that has access to the inclusive MyCiti BRT system within the neighbourhood.





Source: Kay (2013)

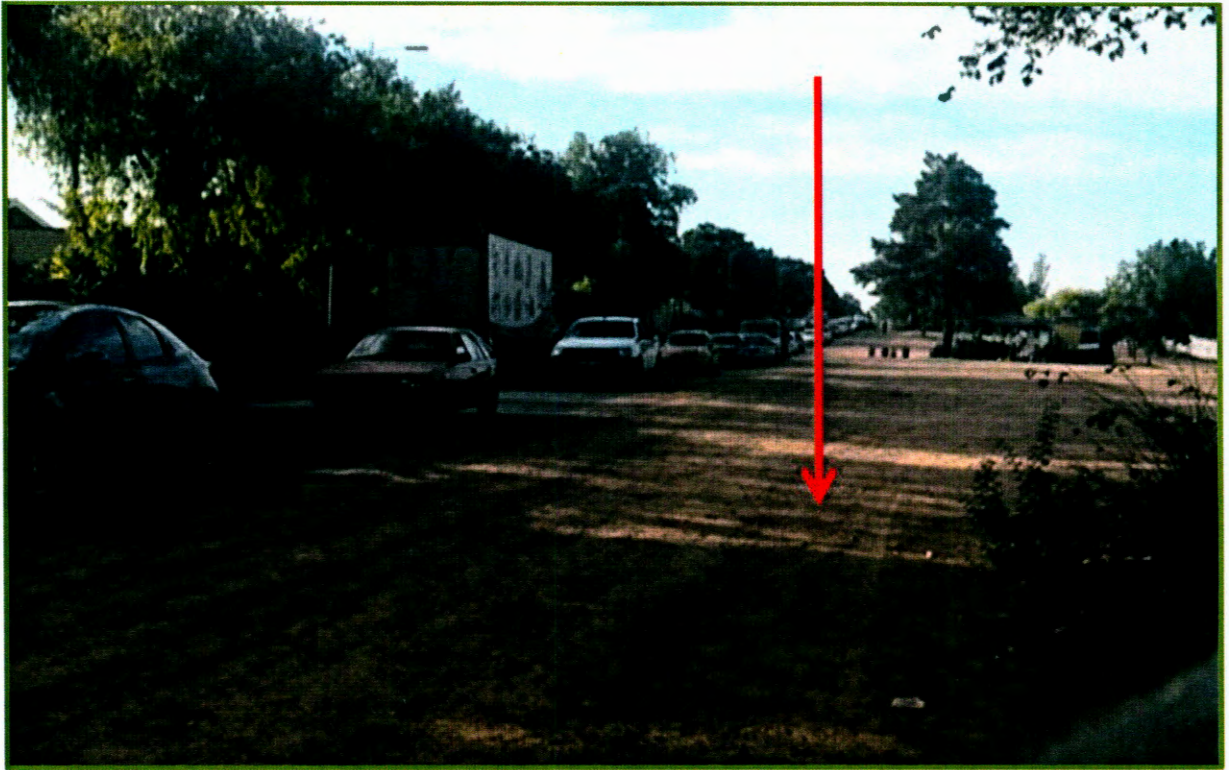
*Figure 6.3: Walking paths through environmental design*



Source: Kay (2013)

*Figure 6.4: Cycling routes through environmental design*





Source: Author's own (2016)

***Figure 6.5: Proposed site on Amandel Road for a non-motorised transport route***

To specifically address the traffic congestion challenges during the school period, NMT mobility to schools at a local scale should be encouraged in Kuils River. As it is important to consider redesigning in an effort to minimise the need for road works or construction, traffic calming measures are a vital mechanism if the municipality wants to improve walkable environments.

Welcoming to residents and to encourage walking to schools, it is recommended that controlled pedestrian crossings, such as puffin pedestrian crossings, as illustrated by Figure 6.6, be considered on the routes in walking distance from schools in Kuils River, such as Amandel Road. This traffic congested road links surrounding residential areas with the only decent Model C school in Kuils River and should offer safety.





Source: Traffic Choices (2014: Online)

*Figure 6.6: Puffin pedestrian crossing*

The puffin pedestrian crossings are responsive to both the driver and pedestrian needs and designed with traffic signal poles fitted with detectors. The detectors detect the presence of pedestrians and direct them when to cross and allow for slow movement, especially vulnerable age groups such as school children. The detectors thus extend the crossing time of pedestrians and assist in unnecessary delay of traffic flow (Traffic Management Guidelines, 2003:191). The relevant road markings and traffic signs should be placed as guided by the 2012 South African Road Traffic Signs Manual (RSA DoT, 2012).

### **6.3.3 Encourage an environment that is promoting alternatives to private vehicle travel**

Outreach programmes must be developed and awareness created amongst people about the traffic congestion situation and what they can do to improve this, such as through lift club incentives, i.e. a ride matching database with information on lift club opportunities. This is done through a travel demand management intervention to determine the travelling needs within a community with the aim to influence their travel behaviour through innovative and attractive marketing of alternative forms of travelling.

In the case of both Bogotá and Ahmedabad, the key focus was to invest in people to reduce their travelling time, but also to promote the use of public transport. By keeping the people's social needs and the provision of public transport in mind, both countries has achieved significant success by linking these two needs in the implementation of a public transport system.

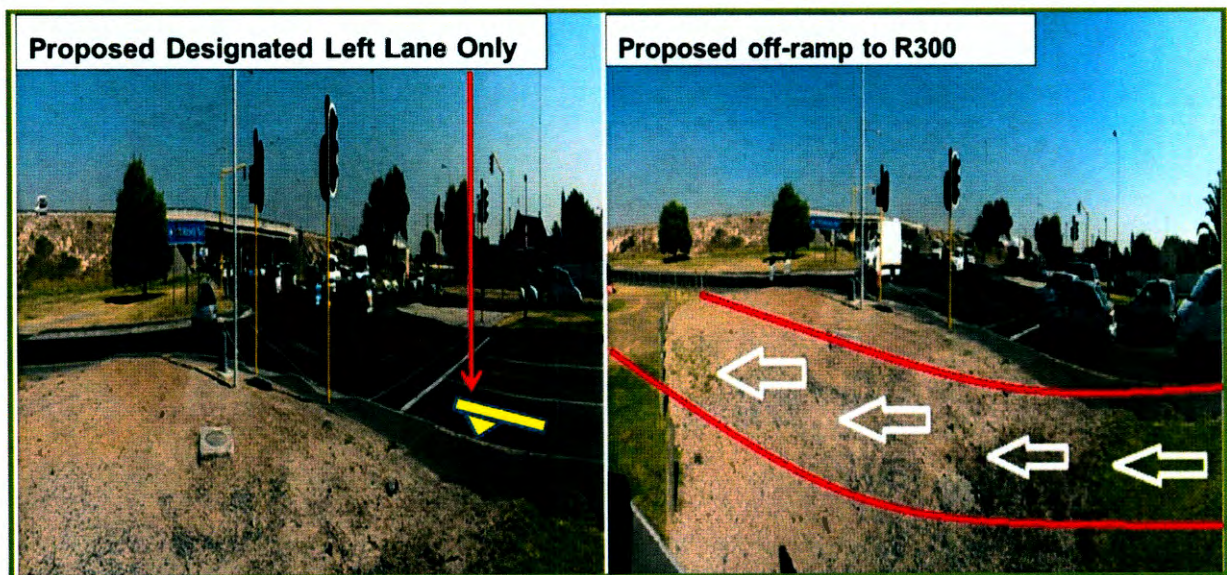


### 6.3.4 Develop strong public–private partnerships to provide opportunities for joint planning and cost-sharing

The municipality should approach businesses or private sector to provide company transport such as minibuses to their workers. The provision of school transport by private schools supported by the municipality could also play an important role in the alleviation of traffic congestion. This approach formed an integral part in the successes of both case studies where public–private partnerships were established to improve and minimise the costs of service delivery.

### 6.3.5 Focus on accessibility and expanding of road transport networks to alleviate road traffic

The municipality must improve the existing road infrastructure by increasing exits/entry points. In Kuils River, a 'left lane only', or an off-ramp on Van Riebeeck Road to access the R300 to Cape Town, should be considered to eradicate the obstruction of traffic flow on the road. The 'left lane only', which is a cheaper option for the municipality, or the off-ramp, will save travellers on Van Riebeeck to the R300 a significant amount of time on their way to Cape Town. See Figure 6.7 for an illustration of this proposal.



Source: Authors' own (2016)

*Figure 6.7: Proposed access from Van Riebeeck Road to the R300*

For the City of Cape Town, in the process of expanding its current transport networks in Kuils River through provision of additional lanes for motor vehicles as done with Amandel Road, the integration of public transport should also be considered. To sustainably relieve the traffic congestion on these roads, bus lanes with 'right of way' for public transport should be considered to be integrated on the expansion of these routes. See Figure 6.5 showing



the bus lane with 'right of way'. The success of this proposal is confirmed by the Bogotá case where exclusive bus lanes were developed within a neighbourhood that was effectively integrated with surrounding and feeder bus services within the new BRT system.



Source: Alprop Holdings (n.d. online)

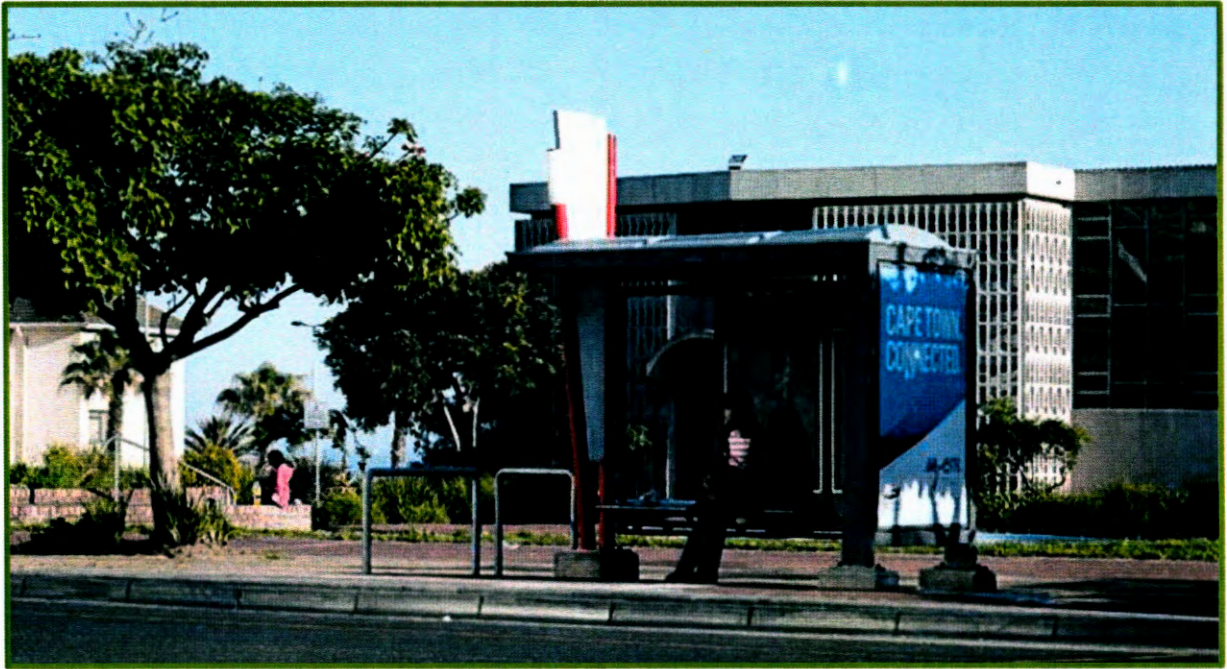
*Figure 6.8: MyCiti bus terminal with right of way*

### **6.3.6 Assess the state of past public transport infrastructure and reinvest**

The City of Cape Town must look at past planned roads that were never developed by the municipality or the developers, and reinvest in it again. It is recommended that old and dilapidated bus stops as shown by Figure 5.4, be reactivated in areas where it was operating in the past as illustrated by Figure 6.9 and Figure 6.10, as well as new ones should be developed in areas where no buses are running to encourage public transport usage in Kuils River. By implementing the MyCiti BRT system in the Kuils River neighbourhood, the need for the revitalisation of the old bus stops will undoubtedly arise. From a financial perspective, the re-investment in past infrastructure may save costs, but might also promote investments in infrastructure losses, making it more attractive to private sector to reduce cost and time.

Dept. Stads- en Streekeke, Transport  
Dept. Buitelandse Handel en Toerisme  
1997-1998





Source: MyCiti News (2013: online)

*Figure 6.9: Reactivated bus stop*



Source: Knoetze & Du Plessis (2014: online)

*Figure 6.10: Reactivated bus stop*

### **6.3.7 Identifying barriers to the integration of housing with transport planning will assist in realising effective planning as a key objective**

To address grievances from communities, the municipality might want to create awareness and engage residents in helping them recognise that new developments might make a valuable contribution to the upgrading of their area. Rarely are communities engaged on



specific benefits that can overcome the NIMBY mentality. Hence, residents must be educated about the potential benefits of TODs and must be proactively included in the early planning phases of a future development to promote and formulate a shared vision. This shared vision would entail the involvement of the residents affected by developments, because it will ensure that all matters pertaining to the plan are taken into consideration.

### **6.3.8 Private developers**

To reduce uncertainty, time and cost and to ensure streamlining of the development process, private developers must be explained beforehand what is expected from them and what is expected from the City of Cape Town. If any, incentives for private developers must be specified clearly in the City's Developer's Contribution Policy (COCT Transport Authority, 2014). The City of Cape Town should ensure developers follow regulations and procedures by adopting well-defined development plans that encourage developments within the City of Cape Town's periphery, before going for cheaper, low potential land far away from socio-economic activities.

## **6.4 CONCLUSION**

The findings and recommendations of this study can be applied to all modes of transport or multi-modal transit, because the primary influences between housing development and transport planning are valid, despite the transit mode adopted in a city or neighbourhood. Whether it is a Metrorail or BRT investment, the urban planning fundamentals remain the same, similarly to improvements in road accessibility that will encourage densification.

This study also serves to provide key guiding principles and recommendations for the improvement of traffic congestion in Kuils River. It is hoped that the findings and recommendations will be used in similar contexts to inform greater integration of housing and transport planning for neighbourhoods in Cape Town.

With urban development constantly evolving, policies are required to take into consideration the link between space and time, for a more integrated development approach. A holistic plan seeks to identify all of the important aspects of interactions that occur within the social, economic and physical activities in a neighbourhood and then create a plan that embraces and enhances all these factors. Such development is inherent to a compromise between social, economic and environmental objectives that improves quality of life, within the limits of acceptable impacts on infrastructural resources.



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## APPENDIX A

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### INTERVIEW QUESTIONS FOR KEY INFORMANTS (RESIDENTS)

1. What was your motivation for choosing to live in Kuils River area?

- Location
- Proximity to work/ socio-economic opportunities
- Accessibility to public transport and transport networks/ main roads
- Property Price
- Property Availability

2. Is your private automobile your main mode of transport?

- Yes/ No

2.1 If No, please indicate alternative mode of transport and provide details

3. Please indicate where you are working and the road you are using or need to use to get to your work with your private automobile.

4. What are the challenges you are experiencing getting to work or as a resident in relation to the traffic situation in Kuils River?

5. What do you think are the contributing factors to the current traffic situation in Kuils River?

6. What do you suggest the municipality should do to address the traffic congestion challenge in the Kuils River area?

7. If any, provide an overall/ general opinion of the current traffic situation in Kuils River?



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## APPENDIX B

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<b>INTERVIEW QUESTIONS FOR KEY INFORMANTS (MUNICIPAL OFFICIALS/ WARD COUNCILLOR)</b>
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1. What is your overall/ general opinion of the current traffic situation in Kuils River?
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2. What do you think are the contributing factors to the current traffic challenges in Kuils River?
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3. Is the municipality doing anything to address the traffic situation in Kuils River?
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4. In your opinion, what do you suggest the municipality can do to address the traffic congestion challenges in the Kuils River area?
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5. What is your opinion of the role of TOD in COCT and as a methodology to addressing traffic congestion challenges in Kuils River?
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