



**Examining the Compact City approach in Urban Development: A
Case Study of Umhlanga Ridge New Town Center, eThekweni
Municipality**

By

Miss Hivanie Govender (206521312)

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the degree of Masters in Town and Regional Planning (MTRP) in the School of
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DECLARATION

I declare, that this dissertation is my own unaided work. All citations, references and ideas have been duly acknowledged. I confirm that an external editor was not used. None of the work presented has been previously submitted for any degree or examination at any other University.

Miss Hivanie Govender

Signature

Dr K Mchunu (Supervisor)

Signature

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ABSTRACT

This study aims to explore the compact city approach adopted in the Umhlanga Ridge New Town Centre to assess and critique the design, assumptions and outcomes of the ‘compact city’ developed and in doing so ascertain whether or not this approach satisfies the compact city ideology in terms of a sustainable form of urban development for the City of Durban, EThekweni Municipality. Umhlanga Ridge New Town Centre represents the compact cities characteristics, which is clearly visible in its design however, the question remains; is it a form of sustainable urban development and one that truly demonstrates the characteristics of a compact city model?

Compact cities refer to urban developments that are relatively high in density, mixed-use based on an efficient public transport system with dimensions that encourage walking and cycling (Burton, 2001). The main beliefs of compact cities, emphasise that urban activities should be located closer together to ensure better access to services and facilities via public transport, walking, cycling and more efficient provision of utility and infrastructure (Ofosu-Kwakye, 2009). Therefore, compact cities argue to be sustainable in terms of its prescription to higher densities that can support public transport and reduce the use of energy, ensuring efficient usage that allows for preservation of land, the ability for higher densities, mixed incomes and racial mixing, diversity and cultural development to promote social cohesion (Jenks *et. al.*, 1996 & Williams, 2000).

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List of Abbreviations

IDP	Integrated Development Plan
KZN	KwaZulu-Natal
LUMS	Land use Management System
PDA	Planning and Development Act
RDP	Reconstruction and Development Programme
RSA	Republic of South Africa
SDF	Spatial Development Framework
NMPR	Northern Municipal Planning Region
DFR Forum	Durban Functional Region Forum
GEAR	Growth Employment and Redistribution Plan
SPLUMA	Spatial Planning and Land Use Management Act
URNTC	Umhlanga Ridge New Town Centre
MSA	Municipal System Act

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Chapter One: Introduction

1.1 Background to the study

The compact city approach is aimed at addressing such issues of Urban sprawl, which is a major issue that needs to be addressed. Compact city will assist with the issues of Urban sprawl. In an investigation by Jenks et.al, (1996) in Kenworthy, (2006) acknowledged that rapid urbanisation was found to be one of the major challenges intensifying urban sprawl in cities.

Factors such as an increase in car ownership, lack of an efficient transport system, a choice for suburban lifestyles and the deterioration of inner cities are some of the factors that have driven the challenges of urban sprawl (Jenks et. al, 1996; Knox, 1994; Pieterse, 2006; Saligaros, 2006).

Urban sprawl impacts negatively on social fragmentation, increased cost in utility/service provisions, transport pollution with increased travelling distance, loss of income and time of transport and the encroachment on agricultural land as identified by Katz (1994).

Strategic spatial planning is being developed as one of the tools to transform apartheid-based spatial development in South Africa and to make the cities more environmentally sustainable (SACN, 2006: 6-7). In light of this, the EThekweni municipality in Durban has placed emphasis on densification and compaction. This is intended to respond to sprawl and avoid its associated pitfalls.

The preparation of Compaction policies are considered as possible options in promoting urban regeneration, revitalization of the inner city, reduction of urban sprawl, higher residential densities, mixed land-use, promoting public transport nodes, improved access between employment, housing and services, corridor development and urban infill (Barton, 2000; Jenks et.al., 1996; Kenworthy, 2006). These factors are the basic elements facing South African urban development given the challenges of housing shortages, unemployment and climate change in other cities apart from Durban.

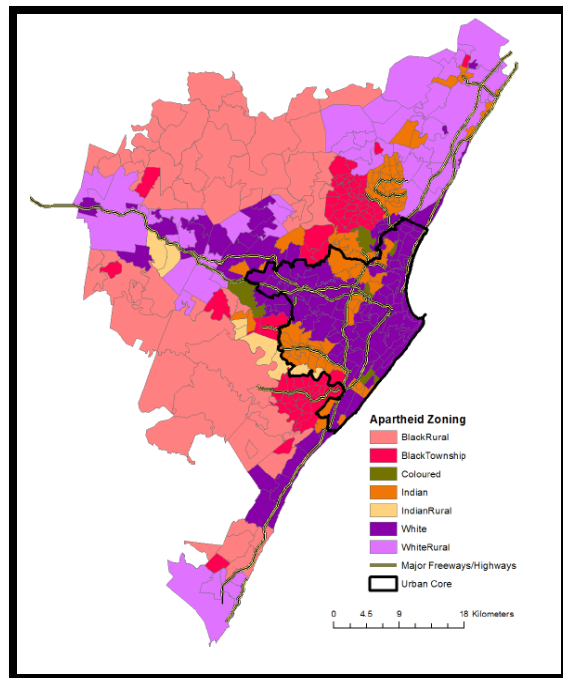
The primary aim of compaction and densification is to ensure that people are brought closer to their workplace, residences and recreation while living in harmony with the natural environment (EThekweni IDP, 2009/2010). This thinking is further supported by Jane Jacobs (1961) who advocates opportunities for higher density living, proximity between home and work, mix-use and social integration” (Todes, 2000a: 617). It is also acknowledged as an essential indicator towards sustainable urban development because land is seen as a vital element for development, though still a limited natural resource. Thus, within the context of compaction is the shift from low-density development to higher densities. The reason is that higher densities offer the opportunity for a larger population concentration in space, thus providing the viability for a mix of land uses, public transport and social mix (Jenks, et.al, 1996).

In the local front, the EThekweni Municipality, which was planned by government, spatial fragmentation marked the beginning of urban dispersal from the city centre. In adopting sustainable practices, the compact city model is being used to promote densification and infill development in the urban areas where extra capacity for bulk infrastructure exists, while discouraging encroachment on environmentally sensitive areas (EThekweni IDP, 2009/2010). In Addition, the development corridor concept has become relevant for densification in the mixed-use corridor which stretches from Durban's central business district to Bridge City and KwaMashu (EThekweni IDP, 2009/2010). With these strategic moves toward urban development, it is expected that the urban core and development corridors will attract investment toward economic growth, promote spatial integration and contribute towards the achievement of a sustainable city.

In this light, the researcher's aim of this study is to examine the compact city approach towards sustainable urban development. This enabled the researcher to ascertain whether or not the compact city approach used in restructuring South African cities in the case of EThekweni Municipality is a sustainable urban form of development. The researcher adopted a case study methodology to conduct this research study. The Umhlanga Ridge New Town Centre (URNTC) was selected as the study area to examine this hypothesis.

1.2 Problem Statement

Historically, the 1950 implementation of the Group Areas Act, where vast numbers of people living in cities throughout the country were relocated. In order for Durban's development to fit that of the model Group Areas city, approximately 60% of the black population (Indian, African and Coloured), and 10% of its white population were moved to the outskirts of the city; Chatsworth, KwaMashu and Wentworth (McCarthy and Smith, 1984). This created a spatially segregated city.



Since the repeal of the Group Areas Act in 1991, people have been legally entitled to live in any residential area, irrespective of race (Kitchin, 2002). Like most African cities, Durban, evolved as a “traditional city through the influence of colonisation and apartheid political ideologies, manifested in the spatial planning of mono-functional segregated city development”, Therefore in that context urban planning plays a thoughtful role in transforming and restructuring the city (Adebayo, 2002: 352).

FIGURE 1: Apartheid Zoning eThekweni Municipality IDP (2009/10)

The need for urban spatial restructuring has been the focus of attention in South Africa since the late 1980's not only as a way to redress the inequalities and inefficiencies associated with the structure of the apartheid city, but also as a mechanism for planning and accommodating future urban growth in a post-apartheid city (Dewar 2000).

Whilst there are clearly a wide range of factors underlying the current form of urban developments of South African cities, the key forces that have shaped current urban spatial patterns have been identified as apartheid ideology and planning and modernist planning principles and controls as stated by Dewar (2000: 210-211).

Dewar (2000: 210) further argues that most urban development in South Africa has occurred since the advent of modernism and the associated importation of urban planning and management systems and policies from the UK, Europe and the US and has therefore "strongly entrenched the urban characteristics of modernism" in South Africa. This includes a strongly anti-urban or pro-suburban ethos, an emphasis on the separation of the major activities of urban life, a quantitative or programmatic approach to settlement building, the promotion of the cellular neighbourhood unit concept, and the predominant concern with technological efficiency to the virtual exclusion of social or environmental considerations.

Dewar (2000: 210) argues that the influence of modernism has been overlaid by the policy of Apartheid, which enforced the spatial segregation of racial groups in urban areas and regionally through the Group

Areas Act and the removal of non-whites to self-contained settlements beyond the urban edge. Dewar (2000: 210) also asserts that the resulting apartheid urban structure has not changed significantly since the repeal of the Group Areas Act in 1991 and the advent of democratic government in 1994.

This is due to the significant investments of households, the absence of an active land market and the established social ties in these remote locations, as well as the considerably more expensive land prices in more central urban areas (Dewar 2000: 210-211). The on-going pattern of residential sprawl has also not been matched by urban employment and commercial opportunities due to a lack of investor confidence and entrenched patterns of accessibility. Growth has therefore tended to reinforce, rather than breakdown, the entrenched apartheid city structure. This is also supported in the paper by Harrison and Todes (2015) who concluded that despite state interventions, the spatial, racial and economic form of cities remained largely unchanged, and where changes have occurred this was largely due to informal settlements and to some extent the private sector initiatives.

Firstly, low-income and higher income housing developments tend to occur on the urban edge, largely due to the availability of more affordable land; the increased visual amenity provided by these locations and entrenched suburban values and residential development models.

Secondly, urban development tends to occur in relatively discrete pockets (frequently bounded by physical elements such as freeways or open space buffers) linked by a simplified and limited access movement system. This coarse-grained development pattern is the result of entrenched spatial planning concepts (such as the 'neighbourhood unit' or 'urban village') and the tendency to undertake formal housing developments as large entities on discrete, consolidated sites.

Finally, land uses, urban elements and race and income groups are all highly separated due to the previous Group Areas Act planning approaches and controls (e.g. zoning and separation of land uses) and market forces.

Together, these three spatial patterns result in major human and environmental consequences (Dewar 2000: 211) and impose massive costs on the urban system and the lives of urban residents and the urban poor in particular. (Dewar 1992b: 245-246) stated the following:

The sprawling, fragmented urban system generates an enormous amount of movement, but fails to create the preconditions for viable, efficient and widely accessible public transportation systems to emerge. The costs of this movement to urban dwellers, in terms of time and money, are becoming increasingly intolerable: the structural system is aggravating significantly the major development issues of poverty, unemployment and inequality. It is economically inefficient, inflationary and mitigates against economic growth. The large distances and low densities ensure that distributional costs form an inordinately high proportion of total costs in the cost structures of most businesses. The market concentration necessary to generate vibrant local economies does not exist and the limited number of points of high accessibility, in

combination with the spatially extensive market catchments, ensures that only large economic units can really flourish: the physical structure promotes economic centralisation and monopolisation. It fails to generate high levels of social and commercial services: indeed, the costs of providing the sprawling system even with adequate utility services are becoming prohibitive. It wastes society's scarce resources such as land, energy and finance. It is resulting in extensive environmental destruction and pollution. Finally, the potential of the housing process to generate economic development and achieve a wider circulation of income via inward industrialisation is not being realised.

This characterisation and critique of the South African city has been echoed by a wide range of authors namely McCarthy (1990: 9-12) and Hindson *et al* (2002), though with different emphases and levels of detail. This has formed a common starting point for articulating a new planning approach to the management of urban areas. In responding to the sprawling, fragmented and segregated urban structure identified above, it was argued that a number of key responses were required (Dewar 1992b: 248-253 and Hindson *et al* 2002). The following was noted:

Firstly, establish an *urban edge*: it was argued that a fixed urban edge between urban, agricultural and primeval land was necessary to protect valuable productive and primeval land from urban sprawl and to enable urban dwellers to use and enjoy these areas.

Secondly, increase *urban densities* so that the form of the city should be compacted in order to achieve high-performance urban environments and that this would include "efforts to increase land use and residential densities, promote 'infill' development in underutilised land between the existing fragments of the cities, and rehabilitate and densify inner city and suburban housing stock" (Hindson *et al* 2002).

Thirdly, it was further argued that urban redevelopment should promote greater spatial integration (between places of residence and work, between the urban core and the periphery and between complementary land uses) in order to increase the ability of the urban system to generate opportunities, improve access to the opportunities and facilities available within urban areas and to make better use of urban facilities and infrastructure. A particularly important element of spatial integration is the provision of low-income housing opportunities in well-located urban areas with access to urban facilities, services and opportunities.

Fourthly, it was argued that other forms of essential infrastructure (apart from utility services, housing, schools, etc.) should be considered that accommodate important social and economic needs. Key elements identified were urban agriculture, public urban spaces, economic infrastructure, improved information and communication and the multi-functional use of existing urban elements and urban spaces.

In addition, it was also argued that a more fine-grained development pattern should be promoted that generates a greater number of opportunities for small-scale businesses and a wider range of settlement choices for urban residents.

Finally, it was argued that more complex urban development processes would enable a wider range of agents to enter delivery systems (e.g. housing), thereby facilitating greater diversity, complexity and spontaneity in the design and development of urban environments.

These spatial restructuring concerns and proposals have subsequently been incorporated into the 'compact city debate' (Todes 2000). The 'compact city' has become the dominant approach to achieving sustainable urban development and promoting urban restructuring in the South African cities due to international success cases, namely cities like Curitiba (Brazil), Portland (US) and Freiburg (Germany).

Compact cities promoted urban sustainability in terms of its urban form being high density, mixed-use developments, promoting and enhancing an efficient public transport systems and enhancing the quality of life of all residents. However, in the concept of compact cities has been modified in the South African context in order to respond to the inherited urban form – namely, racially divided and spatially fragmented cities and the emerging social, political and economic forces, (Todes et al:2000).

The City of Durban, under EThekweni Municipality were urban sprawl and rapid urbanization is clearly visible, with the highest population concentrations in the northern municipal area. The city is faced with a challenge addressing the issue stemming from the apartheid legacy of fragmented city as well as urbanization. In light of this, EThekweni Municipality made deliberate attempts to build a sustainable urban development by the adoption of the Compact City approach (Rakubu, 2013).

1.3 Objectives

The objective of this research was to examine the application of the compact city approach on urban development.

To achieve this objective, the specific sub-objectives were formulated and listed below:

1. to investigate the impact of the concept “compact cities” on urban development;
2. to explore the relationship between “compact city” and sustainable urban development;
3. to assess the physical characteristics of Umhlanga Ridge New Town Centre against the “compact city” characteristics, and
4. to establish if the “compact city” approach adopted in the Umhlanga Ridge New Town Centre achieved the objective of sustainable urban development.

1.4 Research Questions

The research question for this dissertation was stated as: How has the Umhlanga Ridge New Town Centre responded to the criteria of a “compact city” ideology in order to achieve sustainable urban development?

1.4.4 Sub Research Questions:

1. What is the impact of the concept “compact cities” on urban development?
2. What is the relationship between the “compact city” and sustainable urban development?
3. What are the physical characteristics of Umhlanga Ridge new Town Centre?
4. How does the Umhlanga Ridge New Town Centre meet the “compact city” criteria in order to achieve sustainable urban development?

1.5 Introduction to the Case Study: Umhlanga Ridge Development

The research was conducted using a case study methodology. A case study methodology allows for an in-depth contextual understanding of the complex issues concerned with the research. This method has been chosen so that the compact city approach adopted in urban developments in EThekweni Municipality could be examined in its entirety. The researcher selected the urban development of the Umhlanga Ridge New Town Centre as the Case Study.

Umhlanga Ridge New Town Centre is a constructed mixed-use development located in the Northern Municipal Planning Region; it is 15 kilometres north of the Durban CBD. The development comprising of 140ha, is planned to facilitate development comprising of commercial, mixed use space, of offices and residential units. The development is designed with an ethnic approach considering the pedestrian’s safety and convenience, accessibility for all and a positively managed environment (Bredell, 2012) as shown in figure 2.

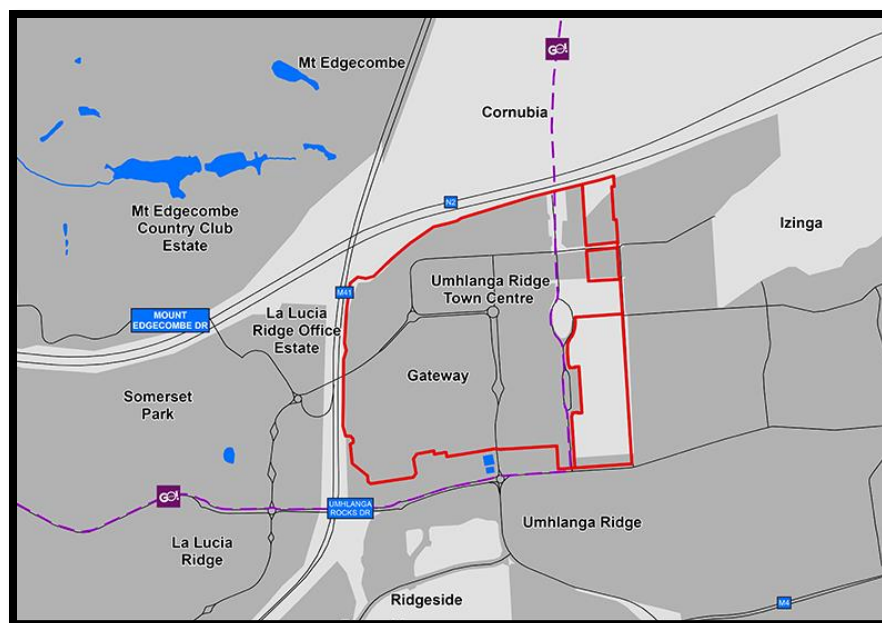


Figure 2: Locality map Umhlanga Ridge New Town Center, Tongaat Hulett Development (2017).

1.5 Validity

The study methodology was selected with the intention of acquiring the validity of information. Validity in this context would refer to data that was collected within certain timeframes, resources and access to information. Primary data was specifically important and was reliable for the study as the researcher was able to derive first-hand information based on people's experiences within the relevant case study.

The collection of this qualitative data was reliable. The information collected was of people's understandings or perceptions of the subject derived from their own world views or knowledge. This methodology included empirical evidence, values, meanings and experiences. It was not analytical and factual based on hard existence of scientific proof as is quantitative data (Longwe, 2010). There was also a collection of subjective data to evaluate the impact of the compact city approach in urban development through people's experiences in the field.

1.6 Conclusion

This chapter presented the background to this research study. It also discussed the research problem, which provided the core rationale for the study. The research objectives and research questions served as an important guide to ensure that the study had a clear direction and specific questions to answer in order to avoid collecting data unrelated to the research topic. In the next chapter the researcher will discuss the conceptual and literature framework.

Chapter Two: Conceptual and Literature Framework

2.1 Introduction

In the previous chapter the researcher presented the background to this research study. In this chapter the researcher will discuss the key concepts and theories underpinning this research study; urban sprawl, the sustainability of compact city developments in eThekweni Municipality and the critique of compact city approach. These factors are relevant and forms the basis for understanding the factors that contribute to the sustainability of urban developments. In addition, a link between urban sprawl and the sustainability of compact city will be discussed in this chapter.

2.2 Section One

2.2.1 Definitions of Urban sprawl

According to Salinger, (2006), Urban Sprawl is considered to be hazardous to cities, it has been proven that it threatens the culture of cities as it creates environmental, social and economic impacts.

Tirado (2008) defines sprawl as:

Development that is geographically dispersed auto-dependent, single use and impossible to walk to your daily needs, and usually, located along and off highways. It is associated with low-density residential developments, which threaten farmlands and open space. It raises public service costs, encourages people and wealth to leave central cities, which in turn, creates serious traffic congestion as the city only place of work, people enter in the morning and leave in the evening, thus increasing, time, cost and risk involved in travel and lowering our quality of life.

The European Environmental Agency (EEA) (2006) describes sprawl as, “development that is patchy, strung out and discontinuous; it leaps over areas and leaving agricultural enclaves”.

Other characteristics of sprawl are low density residential development, homogenous single family development with scattered units, non - residential uses of shopping centres, retail businesses located in a strip, freestanding industry, office buildings, land uses which are spatially separated, with the reliance on the automobile for transport. Sprawl has led to the large scale consumption of agricultural and degradation of environmentally sensitive land, in addition to the cost and risk of providing sustainable services, (Yusuf and Allopi, 2004).

Urban sprawl is an issue that communities, city councils, environmentalists, farmers, planners and politicians have been debating about throughout South Africa for many decades and probably in the foreseeable future. Urban sprawl is characterised by spatially extensive settlements where building densities are low and consists of free standing houses on large parcels of land, (Yusuf and Allopi, 2004).

2.2.2 Urban sprawl development

According to Yusuf and Allopi, (2004) Sprawl development consists of three basic spatial forms; such as density, ribbon and leapfrog. Shown below are valuable guidelines that are relevant to this investigation

1. *Density sprawl*: is the use of land for urban purposes along the margins of existing metropolitan areas.
2. *Ribbon sprawl*: is development that occurs along major transportation corridors outward from urban cores. Land adjacent to corridors is developed, but those without direct access remain as rural uses.
3. *Leapfrog development*: is a discontinuous pattern of urbanization, with patches of developed lands that are widely separated from each other and from the boundaries of recognized urbanized areas.

The Urban Strategy Department, (1995) document stated:

In 1973 when a global oil crisis occurred, the vulnerability of sprawled cities to the economic fluctuations and the limited supply of this non-renewable resource became appreciated. Since then increasing discussions of the economic sustainability of this urban form together with growing environmental concerns have been investigated. The Durban spatial form began to change in the late apartheid years, as rapid urbanisation and weakening apartheid controls led to a massive growth of informal settlements on the periphery. A few informal settlements emerged within central city areas as political instability undermined controls on settlement. By 1994 informal settlements accounted for about a third of Durban's population, but less than four percent were in central areas.

Harrison, (2003) further states the following on the South African issue.

Some of the settlements have densified and a few land invasions have occurred since the 1994 elections but a commitment and intervention by National and Local government has prevented large scale land invasions. Low income earners were offered housing subsidies; however, most housing projects were located close to or outside of the urban edge leading to further sprawl. The Metropolitan Human Settlements Unit is committed to restructuring the city along compact integrated city lines and has devised a number of innovative initiatives to housing development. However, the task is constrained by the high cost of the scarcely available land, a demand for other uses for the land and also objections from communities adjacent to the land to lower income housing.

2.3 Section Three

2.3.1 Impact of urban sprawl

Transportation

Pieterse, (2008: 29) argues that “the underlying thread of sprawl is the mass diffusion of car cultures – the quintessential emblem of modernity in both developed and developing countries”. Transport is a major

driver of economic growth but also a major contributor to the world's energy and environmental problems (Pan *et.al.*2009: 276). Urban sprawl has been exacerbated since the advent of the automobile and the subsequent construction of highways and parking that facilitated this new culture (Kenworthy, 2006:73). For example, the auto-dependence of US cities in 1995 had the highest length (156m /1000persons) of freeway per persons in the world (ibid). With this, spatial patterns of cities have come to conform to this method of transportation, thus not necessitating the need for mixed-use zoning and living.

Environmental

The increase in automobile dependence in the 21st century has caused an unprecedented outward growth of cities in the world; although the improvement of mobility cannot be denied. The use of the private car can be attributed to what is termed the technological age. The fact is this trend is necessary to boost the economic interests of cities; however, its adverse effects cannot be ignored. The problems with this trend are the damaging effects of pollution to the natural environment and human health. Notably, climate change is being perpetuated by the increase in dangerous gas emissions from cars, industries and coal-burning plants. With respect to the environment, natural ecosystems (flora and fauna) have been disturbed; large tracts of valuable vegetated land have been stripped bare to make way for asphalt layering to facilitate car use, thus, neglecting the planning of efficient motorised and non-motorised transport systems. This is the challenge compact city model intend to address through neighbourhoods planned for pedestrianisation and non-motorised transport modes (for example, cycling and walking) to reduce the need for automobile use which will in turn reduce the rate of dangerous emissions, help maintain a healthy population and prolong the lifespan of natural resources.

Accessibility

In Growth Management Plan (1993) and Sierra Club (2004), there are succinct definitions of sprawl that suggest that the most significant problematic consequences of sprawl development is reliant on vehicles and therefore lacks pedestrian, bicycle and public transit accessibility. Many roads do not have adjacent sidewalks or sufficient safety lanes for bicycles or pedestrians, which only make these roads accessible for automobiles only. Thus, people will not travel via bike or foot if the corridor is not safe regardless of the destination proximity.

Sprawl is not only low density but also dispersed in nature thus not well connected to other elements of the built landscape. The major lack of important community nodes and public transport routes due to there being no other modes of transport other than the automobile (Hasse, 2004). There is the lack of accessibility to the nearest community centres, schools, place of worships, shops and clinics as these are inaccessible

through sprawl development. Accessibility to these should be of utmost importance giving accessibility to the community living in the area.

This is another issue that the compact city model deems to address in terms of improving accessibility within the neighbourhood by allowing close proximity of community nodes and allowing for safe corridors allowing bicycle and foot traffic.

Sense of Community / Social Interaction

Contemporary urban landscapes are characterised by low-density Development, separation of land uses and infrastructure that favours the automobile. The sprawling neighbourhoods of today are thought by many to spawn social isolation among their inhabitants (Freeman, 2001: 69). Before civilisation, people used to settle close to each other and in clusters for security reasons, and because family members were a source of labour. As such, social ties and interaction were strong and neighbours kept watch for each other; in other words, these neighbourhood clusters were real places where a sense of community existed. Later in modernity, housing units were bound by fences and concrete walls and later, replaced by electronic security systems while telephones and the internet have replaced face-to-face interactions. The argument put forward by the compact city ideology is the fact that private communication networks cannot be substitutes for real communities (Talen, 1999: 1361). The mission of the compact city model is to rekindle that community spirit through sustainable neighbourhood design by increasing densities; mix land use; common open spaces and pedestrianisation which allows for social interaction and integration.

2.4 Section Four

2.4.1 Definitions of Compact City

Lock's (1995: 173) definition of a compact city is the process of ensuring that we make the fullest use of land that is already urbanised, before taking up green fields for development.

Naess' (1993: 309) definition of a compact city is encouraging development to where 'technical encroachments on nature have already taken place' typify the approach of the compact city advocate.

2.4.2 Aspect to Compact City

Generally, three aspects of the compact city are identified: a high-density city, a mixed-use city, and an intensified city (Burton, 2002). The first two aspects are related to the form of the compact city, while the third focuses on the process of making the city more compact. This third point is critical because there are few opportunities for a compact city to be created from scratch, which in any case would appear highly contradictory given the aims of urban compaction. Thus, '...more compact cities can only be achieved

through a process of making existing cities denser, of encouraging more people to live in urban areas and of building at higher densities: of intensifying cities' (Williams et. al., 1996: 83).

Therefore, there is general agreement that the 'compact city model' is based around an increase in density from current levels. Given that a main goal of the compact city model is to reduce the impact of urban development upon the countryside, most future urban growth will need to occur within existing city boundaries (Williams, 1999). In an attempt to replicate the 'supposedly desirable' densely developed cores of old European cities, many different methods of intensification have been proposed, such as 'the development of previously undeveloped urban land; redevelopment at higher densities of existing buildings or previously developed sites; sub-division and conversions; as well as additions and extensions' (Williams, 1999: 168). However, due to the nature of this density increase, the role of 'mixed-use' development, and the wide variety of international interpretations of the compact city concept are still contentious issues in the urban development literature.

2.4.3 The Compact City and its characteristics

Planning literature i.e. internationally from 1990 onwards focuses on the compact city ideology. A concept designed to implement sustainable development within the urban environment and to counteract the perceived negative social, economic and environmental impacts of urbanisation. There have been many attempts to define exactly what a compact city is, but in general it is taken to mean a relatively high-density, mixed-use city, based on an efficient public transport system and dimensions that encourage walking and cycling (Burton, 2000).

Through intensification of development within the city, many problems related to urbanisation have the potential to be overcome by reversing the unsustainability of fragmented-type developments. Compact city policies have often been designed primarily to reduce the use of private cars and to minimise the loss of open countryside. However, supporters of the concept claim it's more than just environmental benefits that can be gained from intensifying urban areas; in fact 'higher density settlements are argued to be more socially sustainable because local facilities and services can be maintained, due to high population densities, and therefore, accessibility to goods and services is more equitably distributed' (Williams, 1999: 168). Furthermore, they claim that high density urban living is seen as a prerequisite for vitality, vibrancy, cultural activities and social interaction' (Williams, 1999). The upgrading of local economies, particularly in areas that were neglected by urban decentralisation and sprawl, can potentially also be achieved through intensification.

The debate over exactly what a compact city is, and how a great variety of urban forms have been promoted as being 'compact' has grown throughout literature concerned with urban sustainability over the years,

(Arbury, 2010). According to Thomas and Cousins (1996: 54), initial impressions of the compact city invoked an intense medieval city, whose limits are clearly visible, and where the hubbub of activity is confined within the city's walls. While it is highly unlikely that urban planners advocate rebuilding walled cities, it is a confinement of urban activity that appears to be most desired by the supporters of the compact city theory.

However, although there may be consensus that the compact city is clearly distinct from urban sprawl, there still remain many questions surrounding exactly how compact the compact city should be, and to what extent it extends beyond a simple population density increase in the urban environment, (Aubury, 2010). Scoffham and Vale (1996) argue that it is highly important to ask these questions about what the compact city is; whether buildings should be brought closer together; whether the number of people living in buildings should be increased; whether it is dwelling density or activity density that needs to be 'compacted'; and what role a mix of urban uses has in the compact city debate.

2.4.4 Problems with compaction

According to Pratt and Larkham (1996: 279), one of the key problems with the compact city hypothesis is that it brings very diverse concepts together under a potentially misleading banner. A detailed examination of the compact city literature will be undertaken in an attempt to answer some of the questions raised by Scoffham and Vale (1996), and to analyse whether the wide variety of concepts referred to by the 'compact city' hypothesis can be brought together into a sound theory.

Burton (2002) has identified that the task of measuring urban compactness involves three processes: firstly, identifying and defining the various aspects of urban compactness; secondly, developing indicators for measuring each of these aspects; and thirdly calculating and reviewing the measure of indicators for a range of towns and cities.

Lock (1995) claims that there is no technical or professional agreement on how best to measure density and that few planners are comfortable in distinguishing between net and gross residential density, and overall town density. This disagreement makes it difficult to draw out the components of urban intensification and to identify what types of intensification should be encouraged, and what should be avoided. The nature of urban compaction has been deemed very important because certain types of development are generally thought of as being more desirable than others

Measures of 'dwellings-per-hectare', 'habitable rooms per-hectare' or 'bed spaces per-hectare' have been used, especially in the UK, in an attempt to find an optimum density of development which is both more compact than current levels – therefore helping to reduce the strain on the urban fringe for future development while also potentially creating other social and economic benefits attributed to the compact

city model. Importantly, densities must fit with society and the culture of citizens, low enough to find acceptance with the local population, who continue to express a preference for spacious living (McLaren, 1992).

Ebenezer Howard's Garden City, was considered to have a very low dwelling density at the time, it was intended to be built at 180 bed spaces-per-hectare when it was first proposed (Burton, 2002). By comparison, in the inter-war years in Britain a standard of 120-150 beds spaces per hectare was adopted, and since the Second World War the density of new towns developed, has been calculated at around 68 bed spaces per hectare (Burton, 2002). These figures appear to indicate that dwelling densities could be increased substantially before they would reach an undesirable level and yet over time densities have decreased.

Goodchild (1994) confirms this argument through identifying surveys by the UK government suggesting that residential dissatisfaction only appears to increase when density levels exceed 200 bed spaces per hectare, while Rydin (1992) argues that the optimum density for sustainable development is generally in the range of 150-180 bed-spaces per hectare, well short of the 'above 200' danger zone, but higher than the 'below 100' zone of unsustainably dispersed suburbia. Therefore, it appears that substantial savings in land consumption can be made, through avoiding the very low density development (of around fifty bed spaces-per-hectare) which characterises urban sprawl, without reaching density levels unacceptable to local residents.

In Britain, whilst attempting to identify an optimal housing density, intensification theory and policy has also focused on redeveloping existing buildings at higher densities and increasing the 'activity density' of buildings through programs such as 'living above the shop' to ensure a more efficient use of existing buildings (Williams et. al. 1996).

Various methods have been employed in the literature to discover types of development that increase density whilst avoiding the stigma associated with infill housing and high-rise buildings. Haughton and Hunter (1994) describe their optimal urban development as 'decentralised concentration', defined by Burton (2002: 222) as '...the development of higher density development along public transport corridors or the creation of high-density 'nodes' or sub-centres, which concentrate traffic flows sufficiently to encourage public transport provision'. It has further been argued that the method of urban intensification is often of more importance for both acceptability and sustainability than absolute densities. Burton, 2002; Garcia and Riera, (2003) have tended to agree that '...the high-density forms most appropriate for the compact city adopt traditional urban land-use patterns such as streets and squares and medium-rise or low-rise high-density housing.

Burton, (2002: 222) suggests, “it is possible to provide each dwelling with its own front door onto a public street, and to provide gardens for all family dwellings”. Thus, the ‘compact city’ appears to be a highly complex concept not only related to an increase in density, but also a variety of densities across the urban landscape in order to achieve its ‘benefits’. To further add to its complexity, a mix of urban uses has been identified as another important aspect of the compact city.

Mixed-use development supposedly further reduces travel times by locating businesses among residential areas, a shift away from the ‘bedroom communities’ and ‘office parks’ of sprawl development, which means more people are able to walk or cycle to work, while the distance travelled to conduct daily activities would be reduced in comparison to single-use dominated cities. Mixed-use development can also increase economic sustainability for local businesses, as they are located within close proximity of a greater number of people, therefore increasing ‘foot-traffic’ and improving social equity through decreasing the need to own an automobile to access many of the destinations required by local residents. While different types of mixed-use development have not been particularly well explored by the urban planning literature, Burton (2002) identifies that there could be a horizontal (where individual developments of different uses sit side-by-side) or vertical (a variety of use within the individual building) mix of uses within the same development. Both methods are based on creating residential and commercial developments within close proximity to each other, coupled with an increased proximity to educational and research establishments, potentially improving economic performance through better access to the latest technological advances and innovations.

Furthermore, mixed-use development is often linked with an increase in the activity density of an area: ‘the increased use of existing buildings or sites; changes of use, which lead to an increase in activity; and increased in the numbers of people living in, working in, or travelling through an area’ (Williams et. al., 1996: 84). However, the activity increase advocated by British policymaker’s state that compaction could lead to a crowded feeling unpopular with local residents. Burton (2002) states that often it is the density of activity rather than the actual density of dwellings which influences how crowded a neighbourhood ‘feels’. Therefore, as is the case with increasing densities, it would be necessary to carefully examine the best ways possible to implement mixed-use development. The disastrous results of mixing high-density housing and polluting factories in nineteenth century industrialising cities, which led to the introduction of zoning laws that facilitate single-use development, continue to stigmatise mixed-use development to some extent.

2.5 Section Five

2.5.1 Formative assessment of the Compact City Model

Throughout the early and mid-1990s there was widespread faith in the compact city model's ability to provide urban sustainability. This approach was apparently 'so dominant that it seems inconceivable that anyone would oppose the current tide of opinion towards promoting greater sustainable development and the compact city in particular' (Smyth, 1996 cited in Guy and Marvin, 2000: 10). However, where compact city policies had been implemented, follow-up studies began to show that the predicted benefits were not happening as they should have been, and that the claimed benefits of urban compaction '...are at the very least romantic and dangerous, and do not reflect the hard reality of economic demands, environmental sustainability and social expectations' (Thomas and Cousins, 1996: 56).

Furthermore, it was established that there was a significant difference between the romantic, vibrant, traditional city and the reality of traffic congestion, poor environmental quality and 'town cramming' of the city; in other words, 'the city' was something which many people wished to escape from, through suburbanisation and rural living, rather than embrace (Williams, 1999). As a result of the increased uncertainty surrounding the compact city concept, a clear critique can be developed, whether compaction actually delivers the environmental, social and economic benefits that it is supposed to; feasibility whether compaction defies the market and can be properly implemented; and acceptability (whether urban compaction will not? lead to a political backlash from local residents, (Breheny, 1997).

International Perspective

Central to this critique is an investigation into British and American compact city models the environmental arguments for the compact city, notably that it 'saves' the countryside from Greenfield development and that the number of car trips per person are reduced, have been questioned by empirical evidence. Williams (1999: 172) states that 'recent research in three London Boroughs which had been intensified over a ten-year period showed no reductions in car use. Travel patterns were so complex, due to lifestyle shifts such as cross-London commuting and increased journeys for leisure, that no relationship could be found.' Furthermore, the environmental gains made from not developing beyond the urban fringe are often negated by 'the subsequent loss of urban open space [that] may mean a reduction in ecologically important land, and a loss of space for trees and other greenery' Williams, 1999: 172). Indeed, although traffic emissions may be reduced by the compact city, there is the potential for more people to experience remaining emissions because of higher population densities.

Garcia and Riera (2003: 1926) also claim that ‘taking into account available studies, despite the straightforward intuition behind it, there seems to be no conclusive evidence clearly supporting the view that compact cities better accomplish certain environmental goals.’ Moreover, empirical evidence from a variety of studies (Handy, 1992; Ewing *et al.*, 1994; Frank and Pivo, 1994) suggests that while mixed-use development, a crucial aspect of the compact city, reduces vehicle trip rates, this can be in widely varying degrees – as increased walk-trips in mixed-use neighbourhoods often supplement, rather than replace, auto trips. It is also unclear whether mixed-use development exerts more of an influence on shopping or non-work trips, compared to commuting – although Frank and Pivo’s (1994: 362) study found that ‘mixed-use neighbourhoods were most strongly correlated with walk trips to work, but rather surprisingly they had no influence on mode choice for shop trips’.

The economic benefits of urban intensification have also been questioned: plans to rejuvenate downtown areas through intensification frequently fail according to Gordon and Richardson, (1997) while there has been little empirical evidence to show that higher population densities lead to economic growth. However, a study by Carruthers and Ulfrasson (2003: 506) across 283 metropolitan areas in the US ‘suggests that per capita spending on infrastructure declines at greater densities and increases with the spatial extent of urbanised land area.’ Therefore, while some efficiency gains may be possible for the provision of services through increasing population density, the complexity of the whole compact city concept means that in many cases no direct parallel can be easily drawn between economic growth and intensification. Improvements to social equity from the compact city model have also been questioned by researchers. Reductions in dwelling sizes due to increased densities; health risks associated with residential overcrowding or the closer proximity of residential areas to industrial areas in ‘mixed-use’ developments; higher crime rates commonly linked with high density living; as well as potentially negative impacts on social segregation and housing affordability are all clearly undesirable social outcomes that could potentially arise from the compact city model (Burton, 2000). Burton (2000: 1983) concludes that ‘when looked at in its entirety – that is, as a combination of all the different indicators – social equity has a limited relationship with compactness.’ Clearly, the veracity – whether supposed benefits will be delivered – of the compact city model has been seriously questioned in the literature since the mid-1990s.

Moreover, Breheny (1996 and 1997) questions whether the compact city model, even if theoretically manipulated in such a way to deliver on its potential benefits, can be feasibly applied in a way acceptable to the public. He claims that because decentralisation has been the dominant model of economic activity since the Second World War, it may be very difficult if not impossible to impose a new centralised logic that would effectively ‘require industry to return to the very places it has abandoned or ignored’ (Breheny, 1997: 212).

Likewise, because so many inner-city areas have been abandoned or neglected they have been stigmatised by high crime rates and poor housing conditions. As a result, it may prove naïve to expect residents or businesses to return to these areas, a necessity if urban intensification is to occur (Williams et. al., 1996). Closely linked to whether urban compaction can be implemented are doubts over whether this will be acceptable to local residents. Perceptions of ‘over-development’ have led to communities feeling ‘...that their neighbourhoods are being over-crowded, and are losing amenity. This leads to battles to stave off development, usually on back land sites, or well-loved amenity space such as playing fields or sports grounds’ (Williams et. al., 1996: 86).

Critiques of the compact city’s feasibility are very well founded because such policies would have wide-reaching consequences on the very nature of western-cities, and as such may be difficult to implement. As Breheny (1995:82) explains: ‘the implications of the compact-city policy are... profound. Potentially they involve considerable collective disruption, the introduction of draconian policies and massive but unknown redistributions of gains and benefits’. Surmounting the fragmentation of local government, as well as overhauling highly entrenched planning policies discouraging mixed-use development and reinforcing automobile dependency are other significant feasibility issues that would need to be overcome for the successful implementation of compact city policies. Overall, the need to reverse the process of decentralisation, which has dominated urban development since the nineteenth century, will be one of the most difficult obstacles for the compact city to overcome. This is not only because of the institutionally entrenched process of urban decentralisation, but also due to a widespread cultural preference for ‘...the cherished high land-consuming, high-mobility lifestyle’ that characterises most developed world cities (Breheny, 1995: 82).

Thus, even if urban compaction policies are implemented successfully, they may not be acceptable to large tracts of the population, resulting in the reversal of such policies by locally elected councillors keen to retain their jobs. Breheny (1997: 213) claims that ‘generally, marketing surveys carried out by house-builders reveal a strong preference for houses with gardens and as much space in both as possible’, an urban form that contradicts compaction. Moreover, developments requiring shared driveways, smaller units, multiple extensions turning detached houses into terraced housing, and other methods used to increase the density of use among the urban environment, have led to a perceived reduction in quality of building stock, especially in the UK (Williams et. al., 1996). Filion *et. al.*, (1999: 1319) summarise many of these problems by stating that: ‘One cannot escape noticing that policies inspired by such criticism [of urban sprawl] have had little influence on urban development which remains predominantly low density and car dependent. Proposed correctives have been stonewalled by a deep-seated consumer taste for low-density living and by vigorous an intensification NIMBY (not in my back yard) sentiments.’ Furthermore, even massive transit

investment, suburban downtowns, and urban regeneration projects have failed to alter the heavy car reliance typical of suburban forms of urbanisation (Filion et. al. 1999).

South African Perspective

In South Africa, the compact city approach has become integrally linked with urban spatial restructuring debates. Many of the criticisms oriented spatial restructuring proposals are therefore also applicable to the compact city approach prevalent in South Africa. Commentators have recently highlighted a number of cultural and institutional obstacles and social and economic forces that are likely to limit the prospects for compaction in South African cities (Dewar 2000; Schoonraad 2000; Todes *et. al.* 2000).

From a social and cultural perspective, a number of key trends have been highlighted that are likely to constrain compaction efforts in South Africa. Firstly, it has been argued that: "Planning is occurring in a context of massive social problems such as rising unemployment (estimated at 30%), violence, crime, and AIDS, all of which threaten to dwarf concerns about spatial restructuring" and compaction (Todes *et. al.* 2000: 241).

Secondly, it has been argued that the "anti-urban values of all groups" is "supporting the low-density, non-functional sprawl of South African cities" (Schoonraad 2000: 227). New arrivals to the cities have often been displaced from rural areas and have "built-in cultural attitudes to land" and "a number of new needs" (such as the practice of traditional medicine and agriculture) that "tend to underpin a land-extensive mind-set" (Dewar 2000: 217). This has been paralleled by the spatial decentralisation of high- income groups into "walled enclaves and security villages, also on the periphery" (Schoonraad 2000: 221).

Thirdly, 'nimbyism' appears to be a factor in the resistance of certain groups to particular forms of development. In particular, adjacent higher income communities who suggest that these developments encourage crime, decrease environmental quality and adversely affect property values (Todes et al 2000: 234) have encountered considerable resistance to centrally locate low-income housing projects.

Fourthly, it has been argued, "AIDS is likely to slow household formation, and could limit the extent to which housing is used to restructure the city, and reduce opportunities for compaction" (Todes et al 2000: 241). This is likely to be reinforced through reduced in-migration, as a result of stagnant economic growth, and on-going peripheral settlement, due to the availability of affordable land and the pursuit of survival strategies by the urban poor (Todes 2000: 14). Finally, recent investigations in Durban have shown that the "amount of well-located vacant land available for low-cost housing development has also been vastly overestimated" (Todes et al 2000: 234). This is due to the realisation that significant portions of this land

are physically unsuitable for development or have competing claims for its use, such as the open space system.

From an economic perspective, there are a number of trends and forces that are likely to constrain compaction efforts. Firstly, it has been observed that, in the land market, "well-located land is inevitably more expensive" (Dewar 2000: 216) than peripheral land, which encourages private sector speculation and low-income development in these areas, thereby perpetuating urban sprawl.

Secondly, it has been suggested that peripheral residential environments provide opportunities for the urban poor that are not catered for in terms of the compact city (Schoonraad 2000; Todes *et. al.* 2000). These areas have been a target for migration not only because, unlike central locations, they are affordable, but also because they "enable households to survive through complex urban-rural linkages and marginal local employment" (Todes *et. al.* 2000: 239). The larger residential plots on the periphery provide opportunities for residents to generate additional income through the construction and rental of backyard units and the utilisation of properties for shops and providing services (Schoonraad 2000: 223). In this way, they also satisfy "a vital need for rental housing stock not provided in significant quantities by any other sector" (Schoonraad 2000: 223).

It has therefore been suggested that compaction efforts that promote a reduction in lot sizes in peripheral low-income housing developments (to increase densities and reduce servicing costs) are counter-productive because they do not allow for the survival strategies and lifecycles of low-income groups. In addition, it is suggested that these efforts fail to recognise the high occupational densities currently being achieved on larger lots on the periphery (Schoonraad 2000: 223).

Thirdly, it has been suggested that "the freedom and power afforded to private landowners and developers within the capitalist market system" has allowed cities to be shaped by market forces rather than the compaction goals of public planning and policy in South Africa (Schoonraad 2000: 228). As Dewar (2000: 216) argues, "the revenue of local government is entirely based on taxes on land development", which "tends to foster an attitude that 'any development is positive', and private sector developers, continually seeking cheap land, continue to be the central players in determining the urban footprint".

Fourthly, it has been suggested that the predominant economic development trends in South African cities are not consistent with compaction efforts (Todes *et. al.* 2000; Turok 2000). The decentralisation of commercial, office and service activities from the CBD mainly towards the middle and upper income suburban areas undermines the access of low-income communities to much-needed shopping facilities and employment opportunities. In addition, "private sector economic initiatives are avoiding township and

informal areas" due to the perceptions of low-incomes and thresholds and high levels of crime and violence in these areas Trodes *et. al.* 2000: 240).

From an institutional and political perspective, a number of factors have been highlighted that are likely to constrain compaction efforts. Firstly, it has been suggested that "the creation and reconstruction of compact cities requires strong control measures" yet the current emphasis on strategic and participatory planning processes in South Africa has resulted in a "neglect of physical planning", which restricts "the means and ability of both government and urban planners to dictate urban development" (Schoonraad 2000: 225).

It has also been suggested, "Strategic plans and policy documents are vague and un-prescriptive" and do not provide sufficient guidance in terms of the "minimum density and intensity of development" to adequately inform the development control system, which "is based on individual lots" (Schoonraad 2000: 226). The resulting "gap between policy and implementation" is further exacerbated by the lack of "effective incentives and measures to promote or enforce densification and intensification of land use of the existing vast, low-density mono-functional areas" (Schoonraad 2000: 226).

Schoonraad 2000 advocates that the new land use management system be still largely based on the zoning and development control-oriented system imported from Britain, which is inappropriate in informal and developing areas and in the context of "lawlessness and a focus on private short-term gain, which currently pennate South African society".

Secondly, it has been suggested that "the emphasis on public participation has brought the needs of individual communities to' the forefront at the expense of the common good" (Schoonraad 2000: 226). This has been reinforced through the location of decision-making powers with politicians, who tend to focus on the delivery of visible and quantifiable products and services to their communities because of constituency politics.

Thirdly, the lack of economic growth in South Africa and increasing competition between regions has been cited as another factor that undermines the ability of government to direct private sector investment in accordance with its plans (Schoonraad 2000: 226). As Dewar (2000: 216) suggests, "the revenue of local government is entirely based on taxes on land development", which "tends to foster an attitude that 'any development is positive', and private sector developers, continually seeking cheap land, continue to be the central players in determining the urban footprint".

The combination of these factors has restricted the ability of spatial frameworks that advocate compaction and restructuring to guide and direct spatial changes. This is mainly due to the on-going processes of urban

sprawl, socio-economic segregation and urban fragmentation, which are reinforcing the existing inefficient, inequitable and unsustainable urban form of South African cities.

Clearly, valid questions have been raised in the literature over the years about the veracity, feasibility and acceptability of the compact city as a tool for promoting urban sustainability. Not only has the literature focused on the shortcomings of certain types of urban compaction, but the whole concept of increasing urban sustainability through intensifying activity within a more confined area has been questioned and found wanting. As a result, many researchers have begun to look at new approaches to promoting urban sustainability: if urban sprawl is clearly unsustainable, but urban intensification is only questionably sustainable and riddled with issues and complexities, what methods should be used in the search for a sustainable urban form? (Jenks et. al. 1996). The burning question in most urban sustainability researchers' minds is whether to focus on finding the best way to implement urban intensification policies, and to monitor their progress with utmost care; or whether to abandon the whole 'compact city' concept and instead move towards developing new methods of attaining a more sustainable urban future.

2.6 Conclusion

The literature has revealed the following trends; the compact city literature is fairly well developed in Britain, with writers such as Breheny (1992, 1996, and 1997), Burton (2000, 2002), Williams (1996, 1999, and 2000) and Jenks (1996) writing extensively on the topic, generally in the British context.

In the South African context, the compact city has been questioned on a number of theoretical and practical grounds. Given the realities of the spatial structure of cities in South Africa, there was a growing support for compaction. Most of reasons commonly cited in favour of compaction include; - the need to reduce movement, air pollution and dependency on oil imports, to maximise historic investment in utility infrastructure and social facilities, to increase thresholds and thus levels of service and to increase convenience.

Urban sprawl is an issue that many cities face globally, in the South African context urban sprawl and spatial segregated cities is a major challenge that many city council faces such as the EThekweni Municipality. One of the planning remedies used to address this challenge is the compact city ideology, because it is argued that a sustainable city should be compact, dense, diverse, and highly integrated.

The literature discussion in this chapter will enable the researcher to test if the compact city ideology used in URNTC is sustainable or not. In the next chapter, the researcher will introduce the case study area and discuss the researcher's findings.

Chapter Three: Research Design and Methodology

3.1 Introduction

The previous chapter provided a conceptual and literature framework for this research study.

This chapter outlines the research design and types of methods that was used to conduct the research, while also specifying the techniques that have been used to gather the data. The methodological or research design approach adopts a qualitative study this thesis adopted a case study approach to producing qualitative data. This study includes the use of instruments such as questionnaires, interviews, observations and site visits. This chapter aims to unfold in detail the steps that were carried out in order to obtain data relating to the key objectives stated for this study.

The data that was collected and analysed depended on both primary as well as secondary sources of data. The case study area selected for the research was the Umhlanga Ridge New Town Centre also known as the Umhlanga Ridge Development. This chapter begins by briefly examining the case study of the study areas. In this section, the sources of data adopted for this research dissertation are described. This chapter, in addition, describes the sampling technique that was adopted for the research and discussed the questionnaire and interview process for collection of the data. Lastly, the methods that were adopted for data analysis will be discussed.

3.2 Case Study Method

Researchers have made wide use of this qualitative research method to examine contemporary real-life situations and provide the basis for the application of ideas and the extension of methods. Case study investigation helps us to understand multi-faceted grounds of research that can explain people's experiences or contribute to an understanding or penetrate to a greater depth than what has previously been discovered in preceding research. Case studies, in fact, highlight an in-depth contextual analysis of a study. They may be used to explain events or conditions and their relationships.

Yin (2011) defines the case study research method as an empirical inquiry that investigates a contemporary phenomenon within its real-life context; when the boundaries between phenomenon and context are not evident; and in which multiple sources of evidence are used.

3.3. Research Design and Methods

A qualitative research design was utilised for this research, since the aim of the qualitative method is to derive the opinions of experts or participants to allow deductions to be reached concerning the research objectives. The research methods for the study entailed collecting qualitative data from conversations and

interviews with key stakeholders in the Umhlanga Ridge Development as well as members of public that utilise this space.

There are numerous perspectives that all people have regarding Compact City model. This qualitative research allowed for the research participation of different people to discover exactly how they value compact city model in the city, as well as how people are looking to use and represent compact urban development through their diverse worldviews (Smith, 2006).

Qualitative research aims to derive several understandings and dimensions of discovery rather than to find a dominant interpretation of the world that explains society and space (Winchester, 2005). It is not analytical and factual, based on the hard existence of scientific proof like quantitative data (Longwe, 2010). Qualitative data is accused of being too subjective or biased and unable to be duplicated (Dwyer & Limb, 2001). Qualitative research has, despite this opinion, gained respectability over the years, because of its —interpretive turn. Therefore, qualitative researchers have constantly been able to protect their methodologies and this has resulted in valuable sources of research (Mottier, 2005:1).

3.4. Data Sources

The research was conducted using a combination of primary and secondary data sources. The following section explains these two sources in detail, noting the techniques employed under each data type, i.e. primary and secondary. This section also lists and explains the secondary data sources that were used. Primary data refers to the collection of all the original or raw data collected by the researcher. Secondary Data that was used for the study is a written constitution and documents obtained from the municipality.

3.5. Collection of Data

For this study, the empirical analysis depended on various types of data collection. This included interviews with users of Umhlanga Ridge Development, observation and visual analysis and interviews with knowledgeable professionals and officials who could contribute to the information regarding the status of Umhlanga Ridge Development in the region.

3.6. Primary Data Collection

Primary data is specifically important and is reliable for the study, since the researcher was able to derive first-hand information based on people's experiences within the relevant case study. These include data obtained by the researcher from interviews with key respondents, observation studies and photographs, as well as primary documentary material. Other primary materials that had been sources of data include newspaper articles and archived documents from the EThekweni Municipality, in particular the Planning Unit. Each primary data collection method will be explained in more detail in the following section.

Observation and Visual Analysis

Kitchin and Tate (2000) state that observation is dependent on the capabilities or potential of the observer to interpret live, visual events and occurrences as they unfold in a place in time. Observation by research allowed the researcher to watch people and their behaviours with regard to their environment and their surroundings. Observing people gave the observer an opportunity to understand why people behave the way they do. In specific reference to this study, observation had allowed the researcher to watch people's behaviour in the study area to deduce how people use and value such developments. It was also necessary to understand whether the design of the study area was user friendly to its occupants and as intended by the planners and urban designers.

According to Kitchin and Tate, (2000) there are two means of observation, namely Straight Observation and Participant Observation. Straight Observation is when the researcher is detached from the situation that s/he is observing. In other words, Participant Observation is where the observer is within the environment or situation s/he is observing. It was important to use both types of observation for this study. This allowed the researcher to recognise how people use the study area. It enables the researcher to first observe if this type of urban design and if it meets the characteristics of a compact city and secondly to establish if this form of urban design is a sustainable urban form in terms of sustainability. The researcher used an observation checklist i.e. See Annexure 3 to make know what to observe and look out for and thus arriving at a more informed decision.

Photographs

Photographs are actual proof of what exists in reality. Cameras are able to capture images of tangible buildings and structures, actions of people and the activities they perform. This means of collection of data was imperative for the study; as it to use as it allowed the researcher to capture how the study area was being used. It allowed the researcher to perhaps discover the importance and significance of urban development's through people's interactions with the urban form. Photographs were also able to capture intangible moments and people's experiences within the study area.

In this study, the researcher was be able, through photography, to capture valid proof that urban development can show case characteristics of compact city concept and its impact on the city. In addition, by taking photographs of the case-study area, mechanisms that control, design and regulate the urban development was recorded and documented.

3.7. Secondary Data Collection

Secondary data refers to all published material that has already been analysed. A number of secondary sources that were used for this thesis include books and journals. The Northern Spatial Development

Framework provided insight to how the area was being developed. It was necessary to derive the relevant information for the study area from the latest Integrated Development Plan. This type of data enabled the researcher to gain information from existing literature that may add value and truth for this study. . The information that was gathered for this research comprises of government documents, books explaining the dynamics of public and private spaces, and other case studies that would be analysed under the precedent studies section of this dissertation (Longwe, 2010).

Aerial Photography and Spatial Development Frameworks

Aerial Photographs provided useful data as they show the entire region and where public spaces are located within the Umhlanga Ridge Node. Maps were viewed from SDF's maps which pinpoint the geographical location of public spaces and the developments within and around them.

3.8. Sampling Technique

The researcher chose to adopt the purposive sampling technique that allowed for a selection of specified individuals who the researcher believed offered relevance, depth and contribution of data to the study (Robinson, 1998). Participants were chosen according to the principles of purposive sampling, which is a form of non-probability sampling based upon a variety of measures that may include specialist knowledge of the research issue, or capacity and willingness to participate in the research (Oliver 2006).

A purposive sampling enables the researcher to identify important people or experts in the field, specifically for the research, instead of selecting a random sample of the population (Sheskin, 1985). A purposive sampling method was therefore chosen for this study to identify the officials and representatives from the Tongaat Hulett and eThekweni Municipality. However, a purposive sample method, whilst relevant and useful for this study, it does not allow generalisations to be made for other compact city development within the City or elsewhere (Oliver 2006).

3.8.1 Target Group

- I. The key informants are:
- II. Project Manager Tongaat Hulett Development
- III. Previous Head: Development Planning Environment Management Unit
- IV. Deputy Head: Planning
- V. Senior Manager: Land Use Management
- VI. Regional Coordinator: Land Use Management – Northern eThekweni
- VII. Senior Professional Planner: Land Use Management – Northern eThekweni
- VIII. Senior Manager: Spatial Planning
- IX. Senior Professional Planner: Spatial Planning Department

3.8.2 The Interview Process

The researcher chose to use a semi-structured interview questionnaire. Questions were selected prior to the interviews, but these interviews were not to be restricted to these questions. Additional information was often gained from questions emerging through the interview, which researcher was not aware about prior to the interview.

3.8.3 Why is there a need for interviews?

A conversation between the interviewer and respondent allowed the interviewee to explain his/her knowledge, insight and experiences in his/her own words. The specified target group for these interviews are users of Umhlanga Ridge Development. Therefore the information derived from the users of public space added more depth and meaning to the research (Valentine, 2005).

The aim of the interview process was for the researcher to retrieve information from the users of public space. The interview method that was selected in the research process aids the researcher to retrieve citizens 'experiences on the ground, and the meanings that they attach to their experiences in public spaces (Cloke *et. al.*, 2004).

Interviews were also conversational by nature and each interviewee would have an individual experience to discuss a variety of ways in which people perceive public spaces. This also allowed the researcher to understand an individual's view and discover his/her knowledge and opinions in a way which would not affect the credibility of the respondent (Cloke *et al.*, 2004; Valentine, 2005).

3.8.4 Key Stakeholder Interviews

Information initially was collected from key informants from Tongaat Hulett's Developments, since Tongaat Hulett's are landowners and the driving force behind development in the North. This gave the researcher a more in depth analysis about the study area as well as the plans for the area. It was necessary, in addition, to interview, also a representatives from the Development Planning Environment and Management Unit from eThekweni Municipality who had insight in terms of the development of the study area.

3.8.5 Random Sampling for User Interviews

A simple random sample is a sample in which every member of the population has an equal chance of being chosen; this was used to select the users in the study area to be interviewed. Fifty people were selected randomly as a sample size, as representatives of general members of the public. These people were the users of study area i.e. Umhlanga Ridge Development.

A public survey was designed to allow the researcher to ask the users general research-related questions about the study area. The survey was used to discover people's perceptions and preferences regarding the functionality of the study area. The survey randomly selected fifty candidates to discover what the purpose was for them using the area. Do they live, work and recreate in the study area? Do they travel to the area and mode of transport they use? Whether or not they were satisfied using the study area and if there is room for improvement with regards to design. This enabled the researcher to understand the challenges faced daily.

3.9 Data Analysis

Primary data that was collected from the above-mentioned sources in this chapter had been analysed. Qualitative data obtained from interview process was recorded and transcribed. The information gathered from conversations was analysed based on thematic areas of interests for the research. The information gained from the fifty uses were recorded in writing and analysed based on common themes informed from what to look out for, from the literature review. Opinions, facts and knowledge from experiences were thereafter derived from the key respondents, which helped to deepen the research findings. Other primary data was collected, was through purposive sampling conducted interviews with representatives from the landowner and developer Tongaat Hulets. This enabled the researcher to discover what the rationale behind the development was and what future plans hold for the study area.

For secondary data analysis, information was synthesised and presented thematically from newspaper articles, maps and documents and put into context within this research presentation (Brenner, 2006). Thematic analysis of data allowed the data to be presented in a logical sequence and to expose implicit and explicit ideas within the data. In addition, thematic data analysis was used to identify and group relevant themes and ideas to allow for a systematic and coherent presentation of analysis.

3.10 Limitations

1. The study area did not incorporate the entire Umhlanga Ridge Development because most of the precincts in the study area are still under construction so it made it difficult for researcher to obtain information.
2. The study faced time and financial constraints, to be more in-depth than what is presented in this thesis. Time management was necessary, especially in the collection of data as the process was time-consuming and the researcher had to be decisive and not to include more than is required for the nature of the research.

3. There were some respondents (users of the area) that refrained from being active participants in the research process and refused to participate in the interview. However, this is expected of any research process.
4. Critics of the case study method believed that the study of a small number of cases could offer no grounds for establishing reliability or generalisation of findings. Others felt that the intense exposure to a study of the case biases the findings. Some critiques dismissed case study research as useful only as an exploratory tool.

3.11 The Research Breakdown Model

The actual research process will follow Yin (2011) five-phase model, which can be summarised as:

Step one - Compiling Data

The qualitative data for this study was collected from field-notes, interviews, observation, archives and interpreted using the method of thematic interpretation. A set of thematic categories was developed from the literature, the objectives, and the primary data (Kitchin and Tate, 2000). Each interview conducted was recorded and transcribed by the researcher, after which common themes were identified from the transcribed interviews. Dey's approach to interpreting qualitative data had been applied (cited in Kitchin & Tate, 2000). This involved a description of the data, classification of the data and connecting concepts across categories. This method was useful as it helped to describe and, in turn, interpret, understand and tease out relationships found in the data collected (cited in Kitchin & Tate, 2000).

Step Two - Disassembling:

Breaking down the compiled data into smaller fragments meant that the information had to be sorted into several themes that have a logical flow from one idea to another. This also entailed the data being sub-categorised and thematically divided into separate headings within the same chapter.

Step Three – Reassembling

The 3rd step of the model is Reassembling —using substantive themes (or even codes or clusters of codes) to reorganise the disassembled fragments or pieces into different groupings and sequences than might have been in the original notes (Yin, 2011:177). This step of the data analysis means that, after deconstructing the information into separate headings for a logical format, to reassemble means writing in a way that will link up all the ideas to one another. This means that resembling will have a developed coherency in the information that was presented so that the argument makes logical sense in its presentation and structure.

Step Four – interpreting the analysis of data:

The analysis of the data ensures that all the data was properly investigated in the context of the research. Proper interpretation of the data means that all the research questions could be answered.

Step Five – Conclusion

Conclusion, which is the final step, is the summary of the research findings (Yin, 2011: 177-179). The findings were derived from comparing the theory and concepts of the literature and conceptual framework with the fieldwork data obtained in the research findings. The conclusion is the final say on the discoveries in the research and provides a clear indication of the discoveries of the research project.

The data analysis is presented in this research study involves all five steps mentioned above.

3.12 Conclusion

In this chapter, the methodology of the research study was discussed. It also highlighted the material used for the study as well as the limitations experienced by the researcher. In the next chapter, the case study used in this study will be implemented to test if compact city ideologies are present in the urban design of the study area and establish whether or not it is a form of sustainable development.

Chapter Four: Context and Case study area - Umhlanga Ridge New Town Centre

4.1 Introduction

In the previous chapter, the methodology of the research was discussed. This chapter examines the application of the compact city approach adopted in urban developments, therefore it is necessary to (a) introduce and discuss the Umhlanga Ridge Development, which is the selected case study in the context of the EThekweni Municipal area. Firstly, the historical background and context will be introduced and, thereafter, (b) the selected case study will be discussed in detail.

4.2 Historical Background of Umhlanga and Tongaat Hulett

Coastal locations have always been the popular sites for physical development in colonial territories of Africa. Like any other coastal settlement, Umhlanga is not far from this phenomenon. Settlement on the north coast of Durban started at the Umhlanga village, and subsequently functioned as a small coastal tourist town in later years. Umhlanga began earning its modern reputation as a 'home of fine hospitality' in 1869, when tea and scones were first served at a cottage named Oyster Lodge, (Ofosu-Kwakye , 2009).

The Oyster lodge was built on a site overlooking the Indian Ocean, and has over the years become one of Umhlanga's landmarks , (Ofosu-Kwakye , 2009) Umhlanga was initially under British control, and it became part of the large estate belonging to the great sugar magnate, Sir Marshall Campbell in 1896 (Ofosu-Kwakye , 2009). With fertile soils and the appropriate climate, the area stretching northwards from the Umgeni River was used for intensive sugarcane cultivation. For over a century, this activity became established and birthed a number of sugar mills in the then Natal and Zululand. The first major development was the Victoria Hotel in 1920, followed by the first shops in 1950, the lighthouse in 1954 and the Natal Anti Shark Measures Board in 1964 (Nomico and Sanders, 2003: 213).

Tongaat Hulett was created in 1982 out of a merger by Tongaat Company and Hulett Corporation Limited. The land north of Umgeni River was privately owned under freehold title, with Tongaat and Hulett as the major private landowners. With a combined land assets stretching from the Umgeni River northwards into Zululand, Tongaat Hulett has been equipped with adequate resources and power to steer the direction of growth in the northern areas of EThekweni and to some extent in the western area of the municipality jurisdiction. Their main activity was sugarcane cultivation and milling. Currently, it extends to include aluminium fabrication, land management and property development. With much of Tongaat Hulett landholdings lying close to the urban area; and coupled with the pressures of urbanisation in the 1970s, there arose the need for Tongaat Hulett to release some of its agricultural land and reinvest in land development (VARA, 1988a: 1). Although urban development begun to occur in the North of Durban in

the 1950s, it was not until 1973 when major changes became significant. This was attributed to the rapid expansion of white suburbs as a result of the increasing levels of car ownership, increased incomes and other related factors, (Ofosu-Kwakye , 2009). Also, one of the early triggers that contributed significantly to urban growth in north of Durban was the rapid growth of settlements in areas like Phoenix which had approximately two-thirds of Indian housing; and informal settlements in Inanda (VARA, 1988b: 19). It is argued that these events between 1950 and 1970 triggered the need for a strategic decision, consequently, the spatial changes currently evident in the north of Durban. Another reason for the northwards expansion of the city has largely been the deliberate attempt to alter the historical land use pattern whereby employment opportunities had a strong bias towards the south. The DTP and aerotropolis, is one example that speaks to creating employment opportunities in the north (EThekwinini IDP Review 2015/2016).

The Regional Context

In the regional context of KwaZulu-Natal Umhlanga is located within the northern growth corridor along the coast between Durban and Richards Bay in KwaZulu-Natal (NCSFP, 2004: 3). In terms of linkages with greater provincial region, this area represents a major growth area for the province and the EThekwinini Municipality. The role of Durban in Kwa Zulu-Natal is considered essential due to its larger Gross Domestic Product contribution from tourism, manufacturing and a seaport serving the Southern African region (EThekwinini IDP Review 2009/2010).

Durban (known administratively as EThekwinini Municipality) stretches along 98km of coastline and has a very desirable sub-tropical climatic condition than any other province in South Africa. The city of Durban has a racially and culturally diverse population of just over 3.4 million (Statistics SA, 2007). Competing with the cities of Johannesburg and Cape Town, Durban presents itself as a pieced together city. It is a ‘port city’; ‘the country’s playground’ and an ‘industrial hub’ in Southern Africa but most importantly, the city’s future depends on reaching its vision of being “Africa’s most caring and liveable city” by the year 2030 (EThekwinini IDP Review 2015/2016). The development goals of the region rest on this vision, thus dictating the city’s long-term development strategy.

In terms of spatial and socio-economic transformation, the city of Durban is no different from other South African cities. Physical infrastructure and social amenities were well developed around areas of the urban core bordering major routes but poorly provided for as one moved inland where former black townships were located; and also far from employment opportunities (Schensul, 2008). In the late years of apartheid, the spatial form of Durban begun to change as rapid urbanisation and weakening apartheid controls led to massive growth of informal settlements on the periphery (Todes, 2000a: 618). Because South African cities and towns entered the 1990s with an apartheid urban planning and development legacy, urban planners and

managers, and politicians responsible for urban development were faced with the task of reconstructing the impression of a spatially segregated, highly fragmented and dispersed urban society. These changes also meant that the South African cities had to adopt urban development strategies that could address the looming pressures of rapid urbanisation and other socio-political dynamics (VARA, 1988a, 1988b; Strumpfer, 1997).

Essentially, the aim of the EThekweni Municipality has been to resolve spatial fragmentation and inequalities left behind by apartheid as well as strengthen its competitiveness to economic growth in relation to Johannesburg and Cape Town (Robinson, 2008). Spatial restructuring has become prominent especially in the context of encouraging compaction and mixed-use development; optimising the use of existing resources as well as the restructuring of institutional capacities to deal with these urban changes (Harrison, 2003, Pieterse, 2006). Their long-term goal is congruent to urban policy in South Africa that emphasizes the need for integration and sustainability.

The Local Context

The EThekweni Municipality area is divided into four functional regions: the North, South, Central and Outer West. Umhlanga Ridge is located within the functional region known as the Northern Municipal Planning Region (NMPR). It has a population of about 1.15 million, which is 31% of the EThekweni's total population of 3.5 million (Statistics SA, 2007). The Northern Municipal Planning Region extends from the Umgeni River in the south, to Tongaat in the north, with the coastline in the east and the ILembe District Municipality to the west and north. The topography is mixed, with rolling hills in the interior and gently sloping land to be found towards the coast. Four main river systems, the Umgeni, Ohlanga, Umdloti and Tongati Rivers, dissect the region (Northern Spatial Development Plan, 2008).

The Northern Municipal Planning Region covers a total area of 56920 hectares, representing about 26% of the Durban Metropolitan Area (Northern Spatial Development Plan, 2008: 4). Approximately 84% of the land is under freehold title with Tongaat Hulett Group as majority private landowner with about 9000 hectares. The region is about 25% urban, 17% open space, 36% agriculture, out of which 31% is under Sugarcane cultivation while industrial and commercial activities account for only 3% . The Northern Municipal Planning Region consists of three discrete land use corridors all running parallel to the coast .These are the northern urban corridor, the northern coastal corridor and the northern rural corridor.

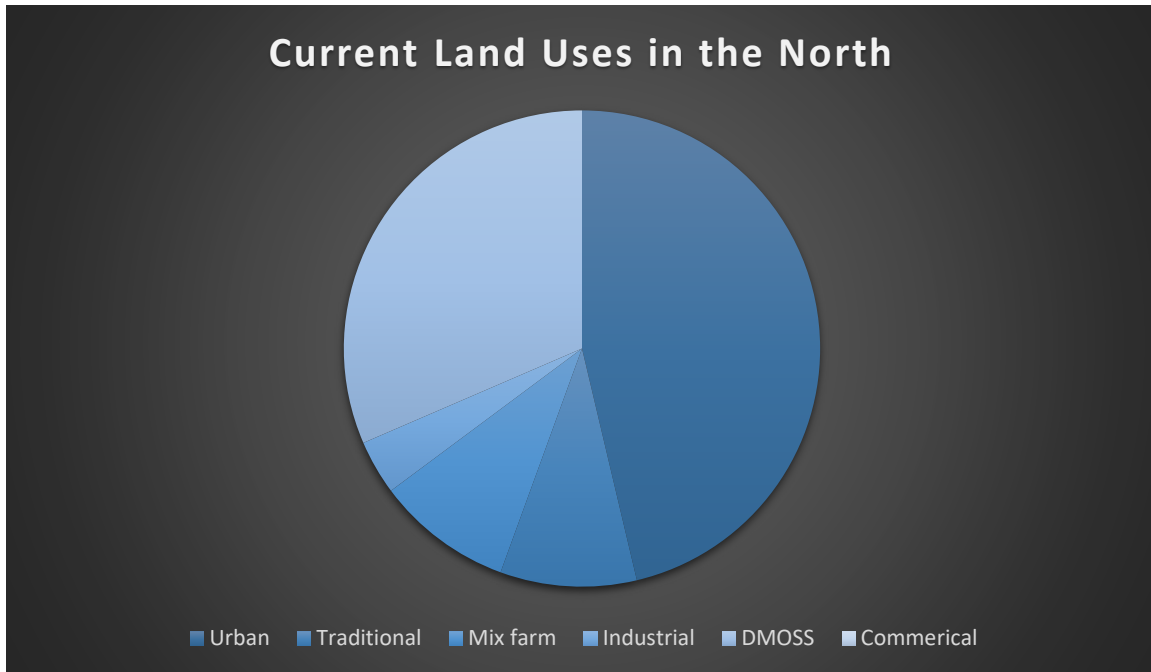


Figure 3: Current Land uses in the North

The roles of the corridors are directly related to their inherent landscape, settlement and infrastructure characteristics and potential that include urban, rural and coastal characters (Northern Spatial Development Plan, 2008: 38). Umhlanga Ridge forms part of the coastal corridor where a mix of uses, particularly tourism, recreation and residential development are to be consolidated. Presently, the spatial development plan for this Northern region supports a trend of coastal and inland corridors development, encouraging activity clustering and higher densities around nodes, strengthening the east-west routes linking the two corridors, and infilling with residential and mixed use development (Robinson and McCarthy, 2007: 36).

With its former status as a dormitory region, economic activities in the Northern region were limited to agriculture, sugar milling and tourism. In order to boost the economic base of the region, a number of catalytic public and private sector initiatives were planned and have been implemented over the past 10 years.

These include the industrial estates, a regional shopping centre and the Dube Trade Port (VARA, 1988b). It is expected that in the next 10 -15 years, the Northern region will generate a sufficient socio-economic base in its function as a major investment node for the EThekweni region as a whole.

4.3 Spatial Changes in Durban

In the wake of a post-apartheid era, the need to redefine and reimagine the new Durban was through a non-racial non-segregated set of policies that hoped to desegregate and deracialise a fragmented landscape (Saff,

1994). Durban, including Umhlanga has undergone massive spatial changes since the 1980s. Having much of Umhlanga and surrounding areas under sugar cultivation, dramatic expansion of urban areas into previously separate axes of urban use occurred between 1973 and 1986 (VARA, 1988a: 6). Changes in the spatial makeup of Durban became significant as agricultural land in the south of the region came under residential and industrial use. In 1973, land in the north was largely under large-scale agriculture; however, informal settlements grew further inland in places like KwaMashu and Phoenix.

“Progressively, agricultural land had been taken up for urban development with the city growing northwards along two broad ‘arms’, one along the coast and the other inland, with the coastal arm tending to move in advance of the inland arm. In the course of expansion, pockets of land were ‘leap-frogged’ and left in agricultural use” (Robinson and McCarthy, 2007: 36).

The key informants interviewed argued that these changes took place rapidly than anticipated and the fragmented nature of municipal governance within the Durban region hampered the possibility of any form of holistic approach to planning and development. In 1986, what remained in the north of Durban was a protruding tongue of large-scale agriculture owned by Tongaat Hulett Group and small agricultural areas in Hillcrest (VARA, 1998a: 7).

The Planning Framework

In 1988, concerns began to be raised about rapid urbanisation that was taking place and the lack of coordinated planning and vision for the metropolitan region (Robinson, 2009: 119). After a series of deliberations among various stakeholders in the region, the Durban Functional Region Forum (DFR Forum) was created in December 1988 as a platform for assessing the regional situation and to offer support for a co-ordinated long-term planning process for the Durban region.

Among other things, the Forum identified trends that would shape the future; identified desired future scenarios; and designed the utilisation of resources to arrive at the desired future. A significant outcome of the Forum was the regional development strategy known as “Operation Jumpstart”. This was literally aimed at “jump” starting strategic developmental projects in the region (Interview with Key Informant, 2016).

Within the “Operation Jumpstart” strategy, a number of key development projects were planned and implemented among which included the development of Durban’s International Convention Centre, inner city redevelopment (for example, Warwick Junction Project) and the formulation of a metropolitan plan to guide growth and development (Robinson, 2009; Strumpfer, 1997). Although none of the “Operation Jumpstart” projects was planned for the northern region of Durban, the conceptualisation of the Northern Corridor was a subsequent outcome of the Forum’s strategic planning process. The northern corridor

concept played a major role in the strategic interventions formulated by Tongaat Hulett that were appropriately justified by the expected population growth and the projected urban growth to the north (Todes, 2000b). Ultimately, the development plan for the northern coastal corridor, which includes Umhlanga Ridge, is aimed at being consolidated as a mix-use and mixed density residential, recreation, entertainment and tourist oriented corridor (Northern Spatial Development Plan , 2008: 39).

With Tongaat Huletts Developments as the major participant and funder of the Forum, “the long-term planning process is known to have patently supported their learning and helped them reap the benefits of supporting the Forum” (Strumpfer, 1997: 8). Essentially, the interest of Tongaat Hullet in the strategic decisions that came out of the Forum was because much of their extensive landholdings were becoming more valuable for urban development than agriculture, as was the case at that time (Architecture SA, 2008:50). The Northern Corridor Concept opened up opportunities for a mixed-use inland spine and a residential - tourism coastal spine within the location of Tongaat Hulett landholdings. In effect, the future spatial evolution of the north of Durban has been large-scale urban development in subsequent years of the “Operation Jumpstart”. The general projection was that the north of Durban would experience large-scale Greenfield development over the next 10-15 years (Robinson and McCarthy, 2007: 19).

A key uncertainty in the 1990s was whether Tongaat Hulett Group would release agricultural land for urban development as rapid urbanisation pressures mounted in the Durban Metropolitan Region (interview with Nancy Odendaal and Peter Robinson, 2009). However, in the last 15 years, agricultural land in the north has been released incrementally for urban development. Tongaat Hulett has been largely responsible for the spatial planning and development of their landholdings in the North, with some level of alignment with EThekweni’s Integrated Development Plan and Spatial Development Framework. Some of the current and future developments in the North of Durban are the Riverhorse Valley Business Estate, La Lucia Ridge Office Estate, Bridge City, Dube Trade Port and Cornubia.

4.4 Umhlanga Ridge as a Catalytic Development

The development of Umhlanga Ridge in the late 1990s marked a new era of major spatial changes in the north of Durban. Whereas Umhlanga Rocks (area adjacent to Umhlanga Ridge) had functioned as a major tourist town in the region for many years, the desired development of Umhlanga Ridge was for it to play a complementary role in that respect. Some of the comparative advantages of the Umhlanga Ridge were its nearness to the Central Business District and major transport routes like the N2, R102, M41 and the M12; a relatively flat topography and the potential for further global investment at the completion of the Dube Trade Port. The future of Umhlanga Ridge thus rests on the Northern Corridor Concept that requires it to evolve into a tourist, residential and entertainment destination, and become part of a major economic investment node in the wider regional context.

4.4.1 Umhlanga Ridge Town Centre

About 15km from Durban's central business district lays Umhlanga Ridge, evolving from sugar plantation scenery to the most elegant and sophisticated suburbia, developed around the New Urbanism theme. In the early 1990s, Tongaat Hulett initiated the development of the La Lucia Office Estates as a springboard for a new high intensity, mixed-use town centre for the emerging region (Architecture SA, 2008:51). Covering an approximate area of 240 hectares, the Umhlanga Ridge Town Centre is made up of a number of exclusive residential developments, hotels, luxurious shopping and entertainment centre and stylized office estates (Joran, 2002: 5).



Figure 4: Ariel View Umhlanga Ridge New Town Center

Source: Tongaat Hulett Development

4.4.2 The Urban Design Framework

Umhlanga Ridge New Town Centre transcends suburban mediocrity. It is urbane - sophisticated, gracious, courteous and elegant. It follows the vision of recapturing all those great, timeless qualities of cities that have been lost in suburban sprawl while avoiding all the negative connotations that have come to be associated with modern cities: poor quality environments, congestion, crime, grime and pollution (Moreland Architecture Guidelines, 2002).

The Umhlanga Ridge Town Centre, modelled on the compact city ideology and the principles of the New Urbanism Charter, is a mastermind of foreign urban designers and Tongaat Hulett; the intention was for the Town Centre to become a showpiece development in South Africa (Architecture SA, 2008:51). The main

objective was to create a comprehensive, vibrant and integrated commercial and residential region (New Ground, 2008: 22). It is an attempt to provide a “work, live and play” environment that is easily accessible; pedestrian-friendly; well kept and managed; offer spaces with the opportunity for interaction; and provide a vibrant mixed-use node with a legibility and place-making that gives the area a distinctive character (Architecture, SA, 2008:51).

The extract below explains Tongaat Hulett’s intentions and gives a vivid description of the Town Centre:

Umhlanga Ridge Town Centre is enthused with this vision and focuses, on one hand, on a public environment of quality and distinction...It is a place of treed boulevards, promenades, avenues, verdant landscapes and town gardens and residential parks - a place of memorable urban spaces, vistas and landmarks scaled around pedestrians and established to shape the form and value of the town as it grows - a place where the architecture creates a group form that is human in scale and gives a sense of nurturing enclosure - a place where streets are bright, lively, vibrant spaces lined with shops, restaurants, sidewalk cafes and filled with street life that promotes safety and surveillance - a place where car access and parking, while being of the top order, never dominate the central ethos that cities are for people. The qualities of landscaping, pedestrian convenience, safety and freedom from threat, be it from vehicles or crime, and the richness of living in an urban environment that meets all our needs, without having to get in a car and commute, are ever present and uncompromised (Moreland Architecture Guidelines, 2002).

The land-use map of Umhlanga Ridge Town Centre provides evidence of its structuring elements.



Figure 5: Land Use Map Umhlanga Ridge Town Centre (URNT Rezoning Report, 1999)

The Gateway Theatre of Shopping was the first project to have been implemented on the site for the Town Centre, thus became a catalyst to further development. In subsequent years, a number of residential developments have been added to create a vibrant, mix-use and safe environment, buildings have been set

on street boundaries; forming the outer perimeter for courtyard block development with inner courts of common parking and garden (Architecture SA, 2008: 52).



**Figure 6: Ariel View URNTC – Gateway Shopping and Entertainment Precinct
(Tongaath Hulett Development).**

The researcher observed that the ground and first levels of residential blocks with the case study area are being used for commercial and retailing activities as part of its mix-of-use principle of the compact city ideology. The Umhlanga Ridge Town Centre is built on a planned grid and connected to a series of pedestrian friendly roads, parks and public places, Roads are connected with roundabouts as a means to break away from the conventional use of traffic lights, an observation made by the researcher.

The Umhlanga Ridge Town Centre is the first New Urbanists development in Durban, and represents a new type of high density, multiple-use suburban living. With construction still in progress in the Umhlanga Ridge Town Centre, the finished product is expected to be a multiple-use, safe and vibrant urban environment. One of the objectives of this study is to verify the characteristics of the Umhlanga Ridge Town Centre against the compact city ideology of a mixed use, high density and efficient transport urban development. In applying the concept of compact city ideology to the Umhlanga Ridge Town Centre, it has contributed to a localized degree of sustainable urban development within the following contexts in Umhlanga Ridge:

- High densities have been achieved towards localized compaction to curb urban sprawl

- The concentration of different land-uses offer the opportunity for economic growth Its function complements the activities of surrounding areas such as a coastal tourism node of Umhlanga Rocks
- Natural vegetation has been preserved where possible and indigenous coastal vegetation has been used for landscaping purposes.
- A prolonged human presence in streets and open spaces offer opportunities for active and passive surveillance towards a secure and safe environment.
- Features such as fountains and outdoor artworks have been used to create an aesthetically appealing environment.

Umhlanga Ridge Town Centre is an essential element of development and redevelopment of the metropolis. Overall, it appears that every minute detail and sensory pleasure in the neighbourhood has been meticulously planned and ordered to create a picturesque and pristine living environment (Shaw et.al, 2004). In essence, the Umhlanga Ridge Town Centre fulfils the desired lifestyles of the contemporary urban citizen who is prepared to bear the financial costs, giving landowners and developers the platform to extract the maximum value for land and property development.



Figure 7: Ariel View URNTC – Residential Precinct in URNTC (Tonga Hulett Develops)

4.5. Land use & Zoning

The Umhlanga Ridge New Town Centre (URNTC) is referred to special zone 11 as shown in figure 8 .The purpose of this zone was to accommodate a wide range of recreational, entertainment, tourist, residential, shopping and business or commercially related and Business Park activities, in such a way that the uses contribute towards the creation of a dynamic, harmonious and well balanced new town centre of the highest aesthetic, landscaping and urban design quality.

SPECIAL ZONE 11: UMHLANGA RIDGE NEWTOWN CENTRE			
PAGE 1 OF 5			
<p>SCHEME INTENTION: This zone applies to the developments commonly referred to as the Umhlanga Ridge New Town Centre (URNTC). The purpose of this zone will be to accommodate a wide range of recreational, entertainment, tourist, residential, shopping and business or commercially related and Business Park activities, in such a way that the uses contribute towards the creation of a dynamic, harmonious and well balanced new town centre of the highest aesthetic, landscaping and urban design quality.</p>			
MAP REFERENCE: NS / 05 / 2012		COLOUR NOTATION: Black Cross hatch with SZ 11 inserted	
PRIMARY	SPECIAL CONSENT	PRECLUDED	
<ul style="list-style-type: none"> • Action Sports Bar* • Arts and Crafts Workshop* • Car Wash* • Convention Centre* • Display Area* • Educational Establishment* • Flat* • Flea Market* • Fuelling and Service Station* • Garden Nursery* • Government / Municipal* • Health & Beauty Clinic* • Health Studio* • Hotel* • Laundry* • Motor Display Area* • Motor Vehicle Test Centre* • Museum* • Office* • Office – Medical* • Parkade* • Pet Grooming Parlour* • Private Open Space* • Public Open Space* • Restaurant / Fast Food Outlet* • Shop* 	<ul style="list-style-type: none"> • BTTS* • Adult Premises* • Betting Depot* • Crèche* • Direct Access Service Centre* • Funeral Parlour* • Institution* • Night Club* • Place of Public Entertainment* • Place of Public of Worship* • Special Building* • Truck Stop* • Veterinary Clinic* 	<ul style="list-style-type: none"> • Agricultural Activity • Agricultural Land • Airport • Boarding House • Builder's Yard • Cemetery / Crematorium • Chalet Development • Container Depot • Correctional Facility • Dwelling House • Escort Agency • Industry - Extractive • Industry – General • Industry – Light • Industry – Noxious • Landfill • Mobile Home Park & Camping Ground • Mortuary • Motor Garage • Motor Workshop • Multiple Unit Development • Nature Reserve • Private Open Space • Public Open Space • Recycling Centre • Reform School • Refuse Disposal • Restricted Building • Retirement Centre • Riding Stables • Scrap Yard • Transport Depot • Warehouse • Zoological Garden 	
ADDITIONAL CONTROLS			
<p>General</p> <ol style="list-style-type: none"> 1. All landscaping to the satisfaction of the Municipality. BTTS shall mean Base Telecommunications Transmission Station. 2. This zone applies to the developments commonly referred to as the Umhlanga Ridge New Town Centre (URNTC). <ol style="list-style-type: none"> (a) The purpose of this zone will be to accommodate a wide range of recreational, entertainment, tourist, residential, shopping and business or commercially related and Business Park activities, in such a way that the uses contribute towards the creation of a dynamic, harmonious and well balanced new town centre of the highest aesthetic, landscaping and urban design quality. (b) The URNTC, provides the over-arching policy statements and basic intent of this zone and details the role and context of the Umhlanga Ridge New Town Centre (URNTC). (c) The rationale on which any decision taken, for the URNTC, within the context of this zone must be based and provides the over-riding principles for all decision making. 			

Figure 8: Special Zone 11 – URNTC (EThekweni Municipality North Town Planning Scheme)

4.6 Conclusion

This chapter introduced and presented the case study area i.e. URNTC for this research study. It discussed how the case study area was developed which enabled the researcher to address the main research question presented in chapter one i.e. How has the Umhlanga Ridge New Town Centre responded to the criteria of a “compact city” ideology in order to achieve sustainable urban development?

The next chapter will discuss the research findings and analysis the data collected to establish if the case study area i.e. URNTC is a sustainable form of urban development.

Chapter Five: Research findings & Concluding thoughts

5.1 Introduction

In the previous chapter the researcher introduced and presented the case study area i.e. URNTC for this research study. It discussed how the case study area was developed which enabled the researcher to address the research question.

This chapter is the climax of this research study, it links the research questions to the methodology used to answer the main research question. The researcher used four methods to gather information

- I. Documentation that includes i.e. Literature, Municipal documents, legislation, magazines and last news updates on the internet.
- II. Public Survey Interviews
- III. Observation checklist and photographs
- IV. Key Stakeholder Interviews

These four research methods assisted the researcher in answering the research questions i.e. how has the URNTC satisfy the criteria of a Compact City ideology in order to achieve a sustainable urban development.

The key elements of a compact city that was used in this research to discuss the findings are Transportation, Environmental, Accessibility and Sense of Community/ Social Interaction.

The first section of the chapter evaluates the public survey interview and key informant interview that assisted the researcher in answering the research question. The figure two below provides an overview on how the second section chapter is structured and provides an analysis on the research study.

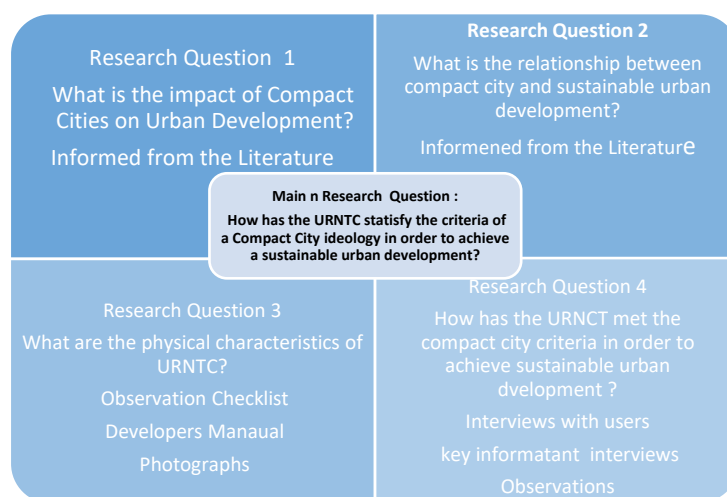


Figure 9: Research Method Diagram

Source: Researcher

5.2 Public Survey Analysis

The researcher conducted a public survey to discover people's perceptions and preferences regarding the functionality of the study area. The survey randomly selected candidates from the public as mentioned in chapter 3, to discover what their purpose for using the study area was. Whether or not they were satisfied using the study area and if there is room for improvement. This enabled the researcher to understand the challenges currently faced by the consumers and assisted the researcher in providing insight for any future developments. In addition, it also helped the researcher to ascertain if the area satisfied the compact city ideology of a liveable, workable urban development.

5.2.1 Reasons for the study area

One of the key elements in a compact city design is that its development allows consumers to work live and play within that particular development. Therefore, the researcher's rational behind the above-mentioned question i.e. reasons for using the case study area was to establish if the case study satisfied this characteristic of a compact city ideology. The public survey indicated that almost 70% of the consumers from survey used the study area for work and entertainment purposes only because they could not afford to live in study area due the high property rates.

Property values in the study area range from a million rand upwards and this is determined by the property market. In addition it important to note that the study area is privately owned it is important to understand that their main focus was to make a profit were as the city focus was to transform the apartheid spatial structure of the city as well attract investment into the City.

Personally the researcher is off the opinion that in terms of the city's objective of restructuring an apartheid city that's includes integration along racial and socio-economic lines was satisfied to an extent. In addition, in URNTC is a one of major economic hubs for the City and attracts major investment.

In terms of racial segregation, the researcher is of the opinion that this was achieved to an extent but will be improve given that the development is not yet developed to its full potential. Secondly, in terms of socio-economic perspective this component was achieved to an extent because the case study area only caters for a certain bracket of population that includes the upper working class. However, with the Development of Cornubia on its doorstep, only time will determine if these two development will bridge the gap between the socio- economic classes.

Statistics SA (2011) revealed the following, in terms of racial integration; over 50 % are from the white population group, and then followed by (26%)Indians, 17% to Blacks and lastly the remainder 1% belong

were identified as part of the coloured racial grouping. . This revealed that despite, majority of population belonging to the white racial grouping, some level of racial integration occurred.

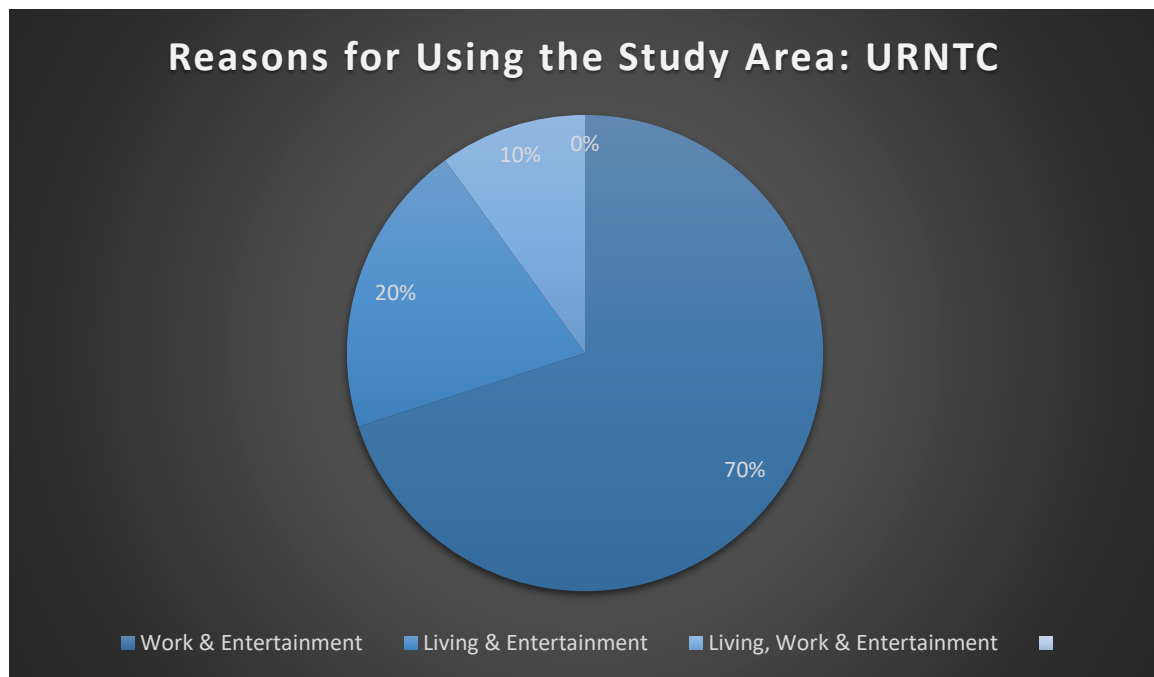


Figure 10: Reasons for Using the Study Area

Source: Researcher

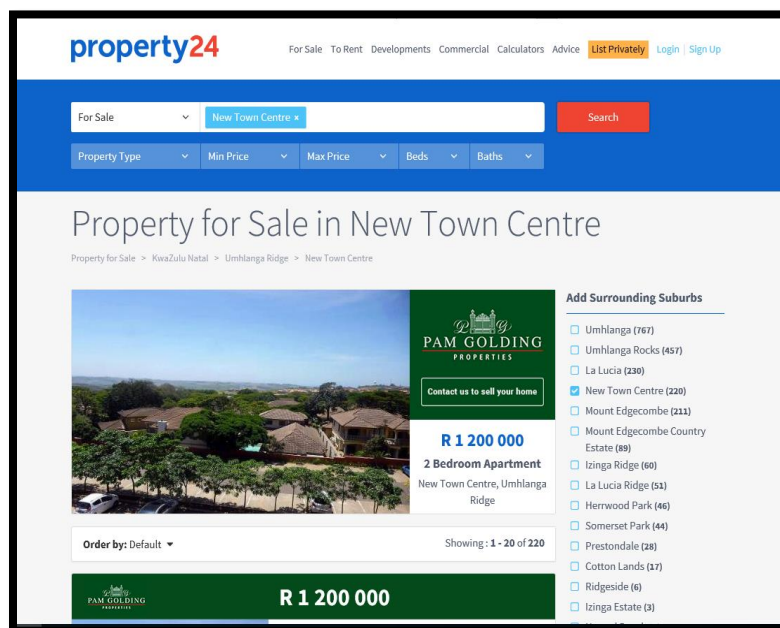


Figure 11: Property Values in URNTC

Source: Property 24

Umhlanga		
Main Place 599053 from Census 2011		
Area: 16.75 km ²		
Population: 24238 (1446.63 per km ²)		
Households: 9256 (552.44 per km ²)		
Gender	People	Percentage
Female	12794	52.78%
Male	11444	47.22%
Population group	People	Percentage
White	12925	53.33%
Indian or Asian	6353	26.21%
Black African	4147	17.11%
Coloured	517	2.13%
Other	297	1.23%
First language	People	Percentage
English	18591	78.90%
isiZulu	2118	8.99%
Afrikaans	1443	6.12%
Other	581	2.47%
isiXhosa	264	1.12%
Sesotho	139	0.59%
isiNdebele	135	0.57%
Sign language	108	0.46%
Setswana	91	0.39%
Xitsonga	36	0.15%
SiSwati	26	0.11%
Sepedi	20	0.08%
Tshivenda	13	0.06%
Not applicable	674	

Made up of:			
Name	Type	Population	Area (km²)
Herwood Park	Sub Place	2257	1.09
La Lucia	Sub Place	6414	4.11
Prestondale	Sub Place	1768	0.98
Somerset Park	Sub Place	2961	1.56
Stratton-on-Sea	Sub Place	361	0.72
Sunningdale	Sub Place	2758	0.94
Umhlanga Lagoon Nature Reserve	Sub Place	6	0.47
Umhlanga Ridge	Sub Place	2153	3.27
Umhlanga Rocks	Sub Place	1904	1.54
Umhlanga SP	Sub Place	3656	2.07

Source: Stats SA, 2011

5.2.2 General Experiences

The researcher's intention of asking the interviewees their experience in the study area was to establish their "feel" of the development and what attracted them to the area. The rationale behind this question was based on sustainability. Even though there are a variety of definitions in terms of sustainability that the researcher discussed in the previous chapter of this study, it is common knowledge that sustainability of urban development is also determined by the user's experience of that particular area. For example, in the case of EThekweni, the CBD was deteriorating over time due to its occupants (businesses and people) not being "happy" with the area. Reasons for their unhappiness were lack of economic opportunities, high crime rates, which led to property owners and business not wanting to invest or use the area that thus affected the sustainability of the area. Hence, the question relating to experience helped the researcher to ascertain if the area embodied elements of sustainability by determining people's experiences of the case study area.

The survey highlighted two themes, that majority of the consumers used the case study because the services offered in area was well located in terms of convenience and that area offered a feeling of safety and security. This meant to researcher that area was easily accessible to it users and provided a sense of safety and security. Hence satisfying compact city ideology of accessibility as well as being sustainable, it proved to be area that was safe that attracted both investments and people into the area.

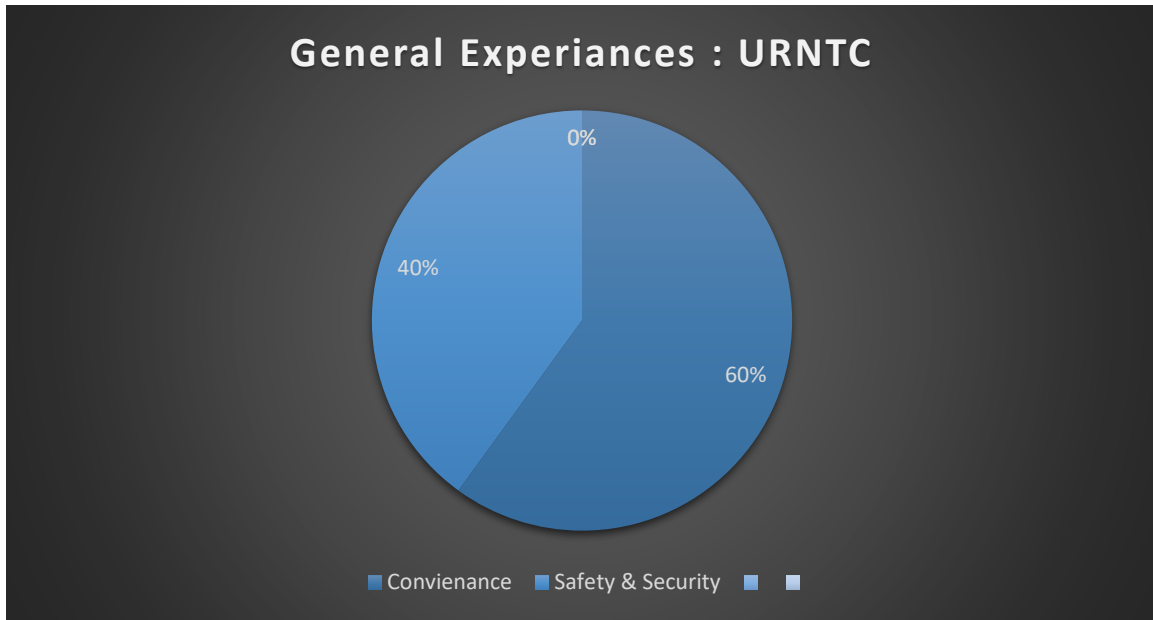


Figure 13: General Experiences

Source: Researcher

5.2.3 Thoughts of visual design

The researcher's thought behind the visual design question was based on Urban Design factor in the compact city development that is linked to sustainability. As discussed in the previous chapter sustainable urban development is linked to urban design.

Majority of the people interviewed within the case study area claimed that the area is very well maintained and possess a great environment. Some also mentioned that the area is well designed in the sense that the traffic circles provide ease with regards to flow of traffic. Certain interviewees mentioned that the green areas help with aesthetic quality of the environment and reflect an elite design.

5.2.4 Opportunity for the disadvantaged

The interviewees were of the view that the study area did provide numerous employment opportunities; however, it mostly catered for people who had matric and university level qualifications. In terms of affordability of goods and services, they were of the opinion that it is based on individual level of affordability.

5.2.5 Quality of Life

In terms of Quality of life, 60% rated URNTC as having excellent quality of life- reason being its convenience and safety and security of the area, 30 % rated it to be average because they could not afford living in area and lastly 10% rated it to poor because they saw it has not being family oriented development because majority of consumers in area mostly use the area for work purposes and viewed the area for more of the elite people in Durban.

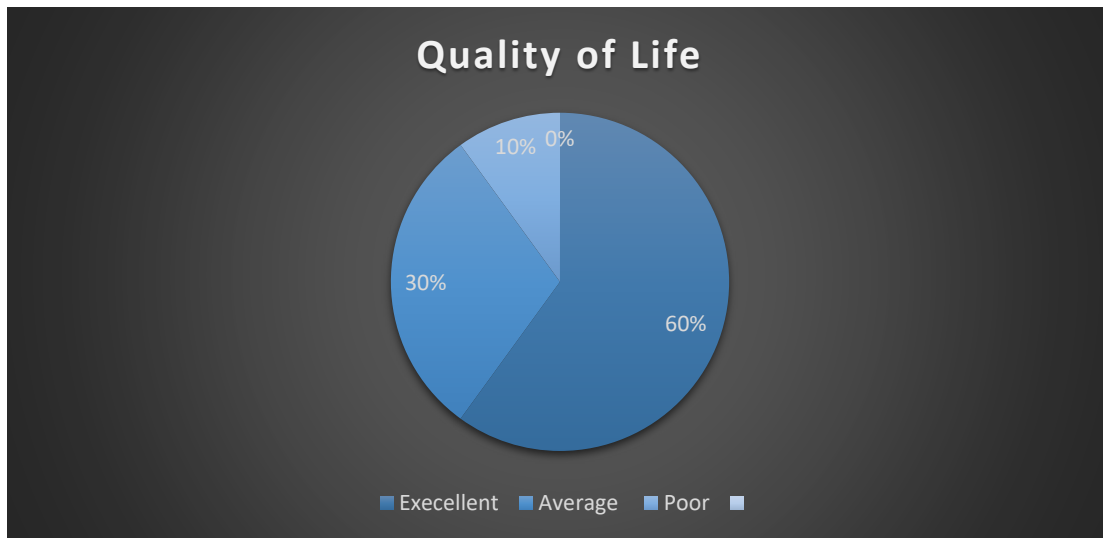


Figure 14: Quality of Life

Source: Researcher

5.2.6 Accessibility of Transport

Majority of the candidates rated accessibility to transport in the URTNC as average because they owned vehicles or joined lift clubs to access the area. However it must be noted that majority of the candidates used the study area for employment purposes and there various lift club services in the area, another form of informality and mode of transport but at the same time demonstrating innovation as to how people will make voices to access employment.

5.2.7 Integration

In terms of racial integration, it was evident that the URNTC was becoming integrated in terms of racial factor. However, it was evident that there was still mostly un-integrated regarding income status of residents.

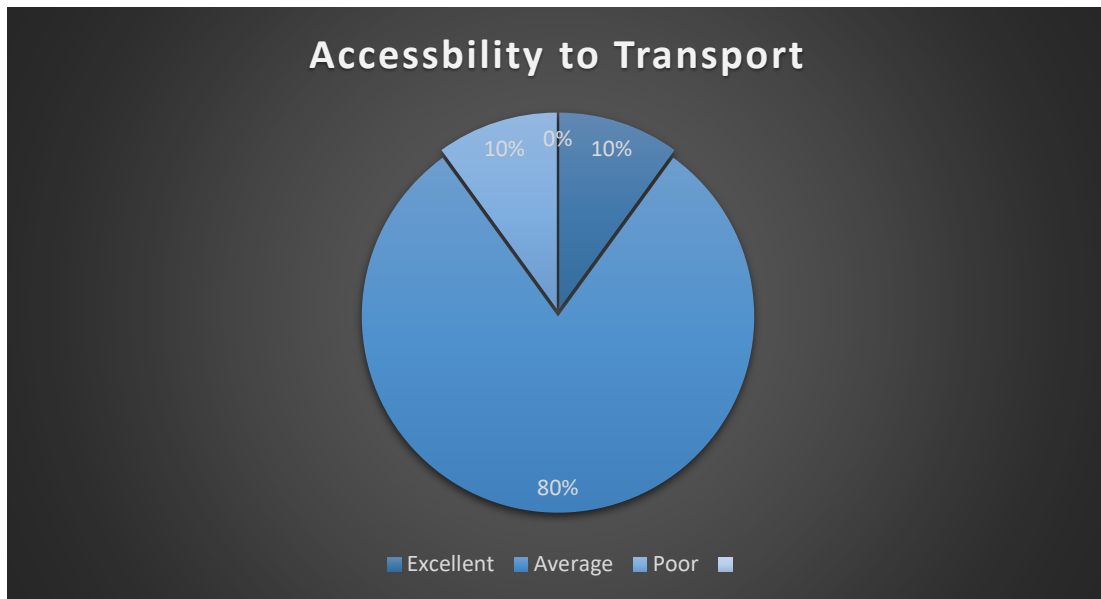


Figure 15: Accessibility to Transport

Source: Researcher

5.2.8 Challenges experienced within the study area

One major theme was highlighted in terms of challenges the study area presented was Traffic. Majority of the candidates stated that traffic was a major issue entering and leaving the case study area during peak hours. The researcher is of the opinion because the study area is under major infrastructure construction this could be to the contributing factor to the traffic congestions in the area. However, this also points to a number of people having to travel to the area and those that live in the area, do not necessarily walk or cycle to work. It was difficult to ascertain this, because living in the area, could still mean that people had to find a way to get to work or place of entertainment, either via public transport, walking or cycling or the use of private motor vehicle. Whilst the area is compact, it is still a large area and inter-movement remains an issue.

5.2.9 Suitability of the study area

Majority of the candidates found the URTNC development favourable and mentioned that they would not mind similar developments modelled throughout the city. They believe this type of design and development could make Durban more recognised on a global scale.

5.2.10 Recommendations for improvement

One major theme that was highlighted with all the candidates was public transports. Initially when the area was designed, public transport infrastructure was not catered for. Nevertheless, over years, the success of URNTC had a positive ripple effect on the surrounding areas and the Umhlanga node is one of the most successful developments in Durban due to its major economic attraction. So going forward it was recommended that public transport facilities should be catered for consumers who use the area for employment opportunities.

5.3 Key Stakeholder Interviews

The researcher interviewed key stakeholders that were key members in the development of URNTC. The aim was to understand the rationale behind the development that was discussed in the previous chapter and enabled the researcher pose specific to the research question and sub-questions.

5.4 Research Findings

The researcher divided the main research question into question into four categories or sub-research questions and discussed each question. The research methods used were important for all the research questions; however, in certain circumstances one of more of the research methods played a dominant role in responding to the research questions.

5.4.1 Research Question One: What is the impact of Compact Cities on Urban Development?

The researcher wanted to ascertain how compact city influences the sustainability of urban development. The interviewed key stakeholders in this regard to answer the relevant questions posed.

Key informant confirmed that the main objective at the time was to create urban transformation to the post-apartheid city, create sustainable urban structure, and establish inequitable, democratic urban system. And this was going to be achieved by subscribing to compact complex urban system based on high intensity, vertically and horizontally mix used urban system that not dependent on private mobility. The compact city model addresses the spatial challenges cities face such as urbanisation, sprawl so forth. It was also mentioned that in terms of South African context, urban spatial inequality stemmed from the apartheid legacy which was a major concern.

5.4.2 Research Question 2: What is the relationship between compact city and sustainable urban development?

The researcher wanted to establish the relationship between the compact city model and sustainability. The researcher was curious to understand that in terms of planning there is various urban developments' model that could be used to create a sustainable city.

A key stakeholder mentioned that as a planner the underlying objective is it strategic or technical to create a city that is liveable for the future generations to come such as creating a sustainable urban development.

It was also added by key stakeholder that Sustainability is about finding more socially cohesive, economically efficient and ecologically sound ways of producing and distributing existing resources. This can also be achieved by securing quality of life and establishing the value of goods held such as the environment and the community. The general interviews that were done hold true to this as majority of the interviewees mentioned that the quality of life is excellent in terms of well-designed and maintained area.

Another stakeholder added that the main purpose of a compact city approach is to save resources like Land, travel distances and wastes in order to enhance the quality of life. The public interviewed also mentioned that the creation of neighbourhoods within walking distances reduce the travel times and create liveable environments accessible for pedestrians and cyclists within the case study area which makes it sustainable.

5.4.3 Research Question Three – What are the physical characteristics of URNTC?

Research question one and two established the relationship between compact city model and sustainability due to it having same purpose. In order to understand the impact and its relation the researcher had to define what a compact city model is which was discussed in the literature chapter.

In summary, the research identified three characteristics in a compact city model, namely a mixed used development, high density and efficient transport model that promotes walk-ability and pedestrian development. The researcher used these characteristics to ascertain if the study area embodied these characteristics as well satisfied according to theory.

I. Mixed Use Development

Mixed land-use was considered as an essential indicator of sustainable urban form because when applied appropriately, generated opportunities for local enterprises which contributed towards localised economic sustainability (Jones et.al. 2009). Furthermore, socio-economic integration and diversity were enabled through the provision of different housing typologies in a particular place and this was seen to encourage social interaction and socio-economic diversity and created a sense of community. The characteristic of a mixed land-use adopted in the URNTC precinct had created employment opportunities for both skilled and semi-skilled labour as was evident from the different types of economic activities observed by the researcher and confirmed by key informants interviewed. The benefit of mixed-use developments is

revenue generated from property rates paid to EThekweni Municipality from Tongaat Hulett developments. This had become essential to finance service provision and other urban projects in other parts of the region. The URNCT also showed an incorporation of open spaces (that is both active and passive open spaces) in neighbourhood development also contributed towards quality living environments and preservation of natural ecosystems (Kenworthy, 2006, 2008).

Images taken by researcher indicates how a building within the URNTC had multi land uses to them. Mixture of Business, Commercial, Entertainment and Residential.

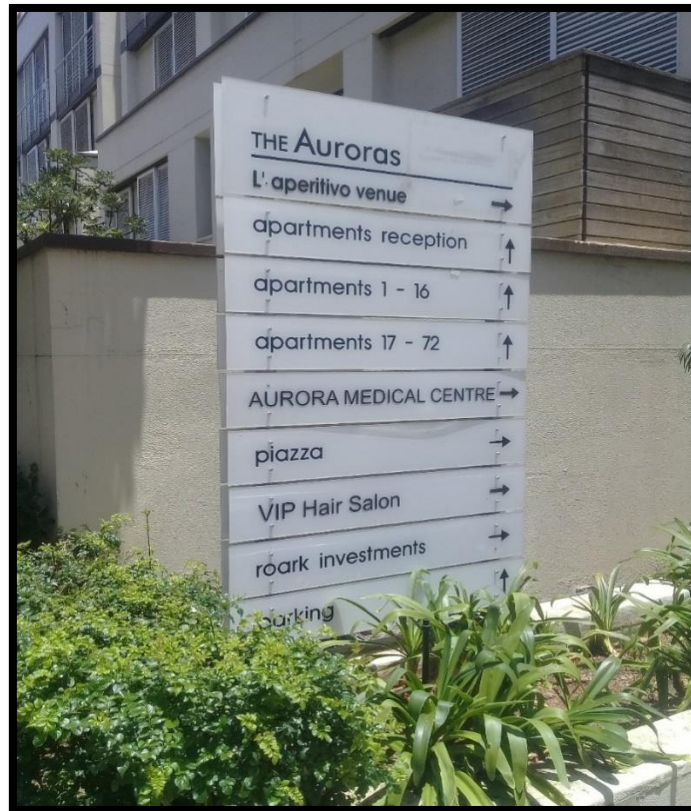


Figure 16: Apartment Block in the URNTC indicating the mixture of uses.

Source: Researcher



Figure 17: Apartment block within the URNTC indicating mixture of uses.

Source: Researcher

II. High Density Development

An increased residential density in urban development was identified as relevant as to the reduction to the rate of urban sprawl. It generated threshold populations that supported public transport and other land uses and reduces travel times and distance in reach of daily activities. Increased densities also led to a reduction in the demand of land for urban development and thus, protected natural environmental systems and allowed for socio-economic diversity based on different housing typologies. Secondly, it was established that increased densities promoted the provision of basic services and social facilities in close distances thus reduced the need to travel longer periods and less energy usage. Barton, (2000), Jenks et.al, described this phenomenon as the mixed-use principle. (1996) and Priemus et.al (2004).



Figure 18: High Density Development Buildings in URNTC

Source: Researcher

III. Efficient transport system that is not dependent on privatised mode of transport.

Public transport has been identified as a useful indicator for driving the path of urban sustainability; and known as “the culprit for initiating a quest for compactness, in an effort to reduce reliance on the motor car, reduce pollution, limit energy consumption and move more people onto public systems (Jenks, et.al., 1996:71). Transportation is an element of the compact city. Whilst transportation in the sustainable city is concerned with energy efficiency and reduced emissions, non-motorised forms of transport such as walking and cycling are relevant to lessen the same concerns and create healthy societies. The current high dependence on automobile does not only have extremely high environmental, economic, and social costs but undeniably, also shapes the way cities are built and grown (Balsas, 2001: 429).

Two key informants have described the current modes of transport in EThekwini Municipality as a ‘defamation’ of the city’s desire towards a sustainable city. The dispersed urban form of the EThekwini region has perpetuated the increase in private car usage facilitated by road building; and coupled with an inefficient public transport system. Knowing that the goal of the EThekwini Municipality is to implement an effective, efficient, sustainable and safe public transport system, this current situation does not reflect a sustainable transport path. It is documented that Warwick Junction, the busiest transport node in the region,

has about 460,000 daily commuters. These include trains trips, 300 buses and 1,550 mini buses (popularly known as taxis), with only 70,000 commuters each on rail and buses respectively (Dobson et. al, 2009). From these figures, it can be concluded that taxis are responsible for more than half (about 320,000 commuters) of commuter movement and this means frequent trips as taxis accommodate approximately 16 passengers per trip. Currently, EThekweni's average utilization of public transport is 21% rail, 30% bus and 85% taxis.

Furthermore, these statistics imply higher volumes of emissions, increased traffic congestion, and subsequently increased travel times. Globally, road transportation is by far the fastest growing source of carbon emission, thus contributing towards climate change (Du Plessis and Landman, 2002: 55). Brown et.al. (2009) has argued that it is often easier for transportation planners to plan for freeways than other sustainable alternatives. Subsequently, this practice continually defies the desires of sustainable transport systems (Kenworthy, 2006). Ultimately, an efficient public transport system offers advantages to easy accessibility, enhanced economic productivity and discourages the use of the private car.

The north of Durban, public transport has been identified as a major challenge because of the lower population concentration associated with low-density development built for private car use. The researcher observed that Umhlanga Ridge Town Centre is only accessible mainly by taxis and the private car and two key informants as well as the public survey confirmed this. Even with this, public transport penetration and connections are non-existent within the greater Umhlanga region. Although the Umhlanga Ridge Town Centre prioritises pedestrian movement over vehicular movement, the researcher observed that no provision had been made for alternative non-motorised modes of transport like cycling.

Essentially, the implementation of an efficient public transport system can only be viable if land-uses are integrated within the wider development framework; and has the necessary threshold population to support it (Quinn, 2006). However, one key informant interviewed argued that for efficient transport system to be available it required the correct modes of transport and a land-use pattern that supports it and that the current challenges with the metropolitan transport systems will have to be critically evaluated to support urban development within the region. It has also been suggested that "efforts to achieve a more balanced transportation system based on New Urbanists principles are currently blocked by a lack of political will and the inertia of existing policies, building practices and built form" (Ellis, 2002: 254). So far, the transport situation at Umhlanga Ridge is not far from this phenomenon except that the previous land-use that was agriculture and subsequently, the kind of low-density development characterised by high car ownership did not make public transport a priority for the Northern Municipal Planning Region. Three of the key informants interviewed shared this view; and who commented that transport planning in EThekweni had been marginally addressed, making the use of the private car a necessary alternative.

An efficient public transport system was also identified as a critical indicator to drive a sustainable urban form (Jenks, et. al, 1996, Kenworthy 2006, 2008). Key informants interviewed at Tongaat Hulett Development and EThekweni Municipality with respect to the Umhlanga Ridge New Town Centre where an efficient public transport barely existed confirmed this. The efficiency of a transport system was measured based on the availability of transit systems and ‘green’ alternatives such as walking and cycling by Crane and Schweitzer, (2003) and Kenworthy (2006). These transport alternatives were found to offer choice, maximise accessibility and mobility within a region whilst reducing the rate of emissions from excessive car use. In addition, the success of pedestrianisation and cycling were dependent on: firstly, street design which facilitated traffic calming and safety for pedestrians and cyclists; and secondly, by different land-uses in proximate distances to decrease travel times (Hamilton-Baillie, 2008). The effective implementation of these facets of transport contribute to the physical, economic and environmental sustainability of neighbourhoods and cities as a whole (Cervero, 2003; Hayashi and Tomita, 2003; Kenworthy, 2006, 2008).



Figure 19: Vacant Land used for parking private use vehicles.

Source: Researcher



Figure 19: Indicating no infrastructure for public transport

Source: Researcher



Figure 20: Access to the URNTC is done mostly via private use vehicles.

Source: Researcher

5.4.4 Research Question four - How has the URNCT met the compact city criteria in order to achieve sustainable urban development?

Many interviewees and key stakeholders expressed that an urban form was sustainable because it enabled its inhabitants to adopt lifestyles that had minimal negative impacts on the economic productivity, social relations, and the physical and ecological environment.

Interviewees mentioned that increased densities led to a reduction in the demand of land for urban development and thus, protected natural environmental systems allowing for socio-economic diversity. It was also added by stakeholders that increased densities promoted the provision of basic services and social facilities in close distances within the study area thus reducing the need to travel longer periods and less energy usage. Barton, (2000), Jenks et.al, described this phenomenon as the mixed-use principle. (1996) and Priemus et.al (2004).

Within the study area, it was mentioned by key stakeholders that there is mixed land use based on high intensity vertical and horizontal mixed use. Mixed land-use was considered as an essential indicator of sustainable urban form because when applied appropriately, generated opportunities for local enterprises which contributed towards localised economic sustainability (Jones et.al. 2009). Furthermore, socio-economic integration and diversity were enabled through the provision of different housing typologies in a particular place and this was seen to encourage social interaction and socio-economic diversity and created a sense of community. The incorporation of open spaces (that is both active and passive open spaces) in neighbourhood development also contributed towards quality living environments and preservation of natural ecosystems (Kenworthy, 2006, 2008).

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5.5 Conclusion

First, compact cities are argued to be efficient for more sustainable modes of transport, (Williams, Burton, and Jenks 2000). Firstly, the URNTC when initially developed did not cater for public transport facilities, so even though public transport is accessible to area there is no designated infrastructure for public transport i.e. Buses & Taxis. Researcher observed that even though the design of the development did promote to extent walk-ability the users of URNTC are still very dependent of private vehicles. On this basis, the researcher is of the opinion that URNTC did not meet compact city characteristic of providing an efficient public transport system.

Second, compact cities are seen as a sustainable use of land, (Williams, Burton, and Jenks 2000). The researcher is of the opinion that this characteristic was satisfied due to historical background of apartheid in the case of EThekweni Municipality, the city in conjunction with THD the property owners did make full use of that land and development a urban development that not only transformed the city from its previous spatial structure but also become a major economic hub for the city.

Third, in social terms, compactness and mixed uses are associated with diversity, social cohesion, and cultural development. Some also argue that it is an equitable form because it offers good accessibility, (Williams, Burton, and Jenks 2000). The researcher is of the opinion that the URNTC satisfied this characteristic, because it was evident, that study area was integrated in terms of racial diversity as well mixture of land uses.

Fourth, compact cities are argued to be economically viable because infrastructure, such as roads and street lighting, can be provided cost-effectively. In addition, population densities are sufficient to support local services and businesses (Williams, Burton, and Jenks 2000). The researcher is of the opinion that the URNTC satisfied this characteristic, because it was evident that study area attracted investment into the City as well as provide job opportunities to its inhabitants. In addition the public survey indicated that study area was well design and appealing to its users.

The development of Umhlanga Ridge Town Centre remains to be completed, it is hoped that it will become an urban neighbourhood which mirrors the principles of integration and sustainability. Most importantly, as we work towards achieving urban sustainability, various elements of today's industrialised, technological and cosmopolitan world would need to be critically examined in order to make relevant trade-offs and formulate workable ideas to reconcile the conflicts between manmade and natural systems on a much larger scale.

Chapter Six: Conclusion and Recommendation

6.1 Introduction

In the previous chapter, the researcher provided a data analysis on the research findings of the case study area. This chapter is the concluding chapter that provides recommendations and conclusion to the research study.

The main aim of this research was to examine the Compact city approach in urban development using the case study of Umhlanga Ridge New Town Centre, eThekweni Municipality. This was conducted by gathering relevant information from literature as well as participants and major stakeholders interviewed from the case study area. It was the purpose of the research to assess and analyze the design, assumptions and outcomes of the compact city, and in so doing ascertain whether this approach satisfies the case study area.

The key issues emerged during the research was through the participants interviewed, which brought about a major issue of public transport being a vital element that had been identified within the Umhlanga Ridge New Town Centre. It was also evident in the study area that there had been no infrastructure available for public transport, in terms of bus stops or public transport zones.

However, the success of pedestrianisation and cycling was evident, as this was accomplished through the street design which facilitated traffic calming and safety for pedestrians and cyclists. In addition, the different land-uses in proximate distances had been achieved in decreasing travel times within the study area.

6.2 Recommendations

6.2.1 Possible solutions

Unemployment in South African cities is high and growing. The reality is that a large and increasing number of people have no option but to secure their survival through self-generated income from small businesses. A requirement for small business to thrive, however, is intensive, vibrant local markets. It becomes cheaper for low-income households to outsource many of the functions that would otherwise be undertaken within the household.

Movement on foot is the only mode of travel affordable by a growing majority of urban dwellers. It is therefore necessary to create urban environments that operate efficiently and pleasantly at the pedestrian scale. This demands sensible and well-planned compaction models for development.

The necessity to resolve the current problems of public transport because of the static historical pattern of urban opportunities and the sprawling nature of growth, the urban system generates enormous amounts of

one-way movement at peak hours, with a dramatic fall-off in non-peak periods. This pattern, and the pattern of low-density sprawl, makes larger capacity fixed-line movement modes such as the train non-viable. The lack of high-capacity, fixed line public transport has had two major consequences. One is that many households, which would otherwise not choose to do so, are forced to own cars. Since affordability is a problem, the vehicles they purchase are inevitably old. They require on-going maintenance that is a large drain on household income, and they are highly inefficient in terms of emissions. The other has been the birth of a vigorous non-regulated taxi system that, rather than complementing larger capacity carriers such as train and bus, taxis directly competes with the bus and rail systems. This has had the effect of increasing the number of vehicles on the roads, increasing the number of accidents and increasing pollution. It is also a major factor contributing to escalating violence, since vicious taxi 'turf wars' are endemic in almost all major towns and cities.

Urban sprawl cannot be totally reversed in the EThekweni Municipality area but a few measures to achieve compaction can be achieved as listed below.

- Densification in existing Brownfield land, within urban areas to promote higher residential densities.
- Infill development where large tracts of vacant land Greenfield land, within urban areas are developed, have been left un-developed or as buffers during the apartheid planning area.
- To define an urban edge this restricts outward expansion of urban areas.
- To specific rezoning with minimum density for new development. Provisions should be made to construct more than one dwelling unit, without subdividing the property. The minimum size of properties should be decreased.
- The introduction of property taxes which penalizes the under-utilisation of land and thereby encouraging higher densities.
- The review of building regulation, which restrict building height, coverage, and off street parking requirement.
- A general reduction in parking requirements.

There is a need to dramatically reduce the lateral spread of cities by imploding growth onto underutilised land. Higher densities are necessary to maximize economic opportunities. Compaction encourages economic diversification and there is an increased threshold of support for varied forms of social and

commercial services. Inhabitants of a city must be able to fulfil their needs and undertake most of their basic activities on foot. The unit (water, electricity, sanitation) cost of services to the consumer tends to be lower. Compaction maximizes the use of existing infrastructure, enables viable and efficient public transportation system, and thus can discourage car dependence with enormous cost savings. Compact cities make more efficient use of resources such as land, energy and finance and can significantly reduce the current rate of environmental destruction.

The compact city approach has been argued to be sustainable in terms of its prescription to higher densities that can support public transport and reduce the use of energy; ensure efficient land use that allows for preservation of land in the countryside; and the ability for higher densities to promote social cohesion, diversity and cultural development (Jenks et. al, 1996; Williams, 2000).

Strategic spatial planning is being used as one of the tools to transform apartheid-based spatial development and to make cities more sustainable (SACN, 2006: 6-7). With this, the EThekweni Municipality has placed emphasis on densification and compaction. This is intended to counteract sprawl and avoid its sustainability pitfalls. Compaction policies are considered as promoting a range of principles, such as urban regeneration, revitalization of the inner city, preventing of urban sprawl, higher densities (mainly residential), mixed land-use, promoting public transport nodes, improved access between employment, housing and services, corridor development and urban infill (Barton, 2000;; Jenks et.al., 1996; Kenworth, 2006). These elements are also the fundamental elements of contextualization in South African urban development given the challenges of housing shortages, unemployment and climate change. The mechanism used by the EThekweni Municipality towards compaction and densification is its Land Use Management Framework.

The aim of compaction and densification is to ensure that people are brought closer to where they live, work, study and relax while living in harmony with the natural environment (EThekweni IDP, 2009/2010 Review: 7). Compaction is parallel to the “Urbanists ideals of Jane Jacobs (1961) which suggest opportunities for higher density living, proximity between home and work, mix-use and social integration” (Todes, 2000a: 617). It is also identified as an essential indicator towards sustainable urban development because land is seen as an important element for development yet a limited natural resource. Thus, within the context of compaction is the shift from low-density development to higher densities. The reason is that higher densities offer the opportunity for a larger population concentration in space, thus providing the viability for a mix of land uses, public transport and social mix (Jenks, et.al, 1996).

In the EThekweni Municipality, apartheid planning characterised by spatial fragmentation marked the beginning of urban dispersal from the city centre. In adopting sustainable practices, the compact city model is being used to promote densification and infill development in the urban core where extra capacity for

bulk infrastructure exists, while discouraging encroachment on environmentally sensitive areas (EThekweni IDP, 2009/2010 Review: 18).

The north of Durban has been recognised as the future direction of large-scale urban growth within the EThekweni region. The Municipality in its Integrated Development Plan has embraced Compact City concept; its application has become evident in developments such as Umhlanga Ridge. Compaction has been employed through intensification, mixed land uses and higher densities at the Umhlanga Ridge Development, (Architecture SA, 2008). This is because compaction is as an essential aspect of urban development to curb sprawl, promote social contact, decrease automobile use, and subsequently reduce energy use. The researcher wishes to reiterate

I. Relationship between Compact City approach and Urban Development

Urban development refers to the social, cultural, economic and physical development of cities. Urban development's play an important role in urban planning, since they have a major impact on a city's social, economic and environmental functioning and performance (Martens, 2001).

Firstly, the development of a city affects the ability of an urban system to generate a range of economic, social, cultural and recreational opportunities and facilities (Dewar et al 1991: 16). They are more likely to accommodate the diverse needs of urban dwellers such as employment opportunities, access to services and facilities, cultural expression.

Secondly, urban development affects the distribution of people in relation to urban opportunities, resources and facilities and therefore their ability to access these opportunities, (Marten, 2001). Urban development that result in large distances or major barriers between urban residents and the opportunities they need, or wish, to access impose major costs and inconveniences on urban dwellers. This is particularly significant for the urban poor, for whom transport costs are a major, and often unaffordable, burden. The development of a city therefore affects its ability to meet the basic needs of urban dwellers such as shelter, utility services and community facilities, (Marten, 2001).

Thirdly, urban development affects a city's ability to promote collective activities and social interaction, which are essential ingredients of city life and urban development (Dewar et al 1991: 17). The development of a city can either promote or retard social interaction, depending on its ability to provide high quality and suitably located public spaces where interaction can occur. Finally, a city's urban development affects the environmental quality and sustainability of urban areas. The form of a city has a direct bearing on the environmental quality of public spaces and built form. In addition, cities with limited and fragmented open space systems are likely to be less ecologically sustainable due to the decreased diversity and interrelatedness of their open space systems.

Urban development is therefore not only a critical component of the social and economic life of a city but is also significant in terms of its environmental quality and sustainability and has a major impact on the quality of life of urban residents. This is not to deny the importance of spatial factors to the urban economy or quality of life. Spatial planning and restructuring efforts cannot be successfully pursued in isolation from the prevailing social, economic and political dynamics of the specific context in question (Dewar *et. al.*, 1991: 11).

For many planners and scholars, compactness is the crucial typology to be implemented to achieve sustainability. Dumreicher et al. (2000) argue that a sustainable city should be compact, dense, diverse, and highly integrated. They ask for urban developments that is easily walkable, small enough to eliminate even the desire for a private automobile, yet large enough to provide the variety of opportunities and services that constitute a rich urban life.

The compact city approach is relevant because of its relationship to sustainability. The approach forms part of the wider meta-discourse on sustainable futures, particularly the impact of climate change (Jenks *et. al.* 1996). Cities are major contributors to unsustainable lifestyles and the built environment is increasingly part of the wider attempt to promote a more sustainable future. Urban development's affects many aspects of behaviour that contribute to more or less sustainable lifestyles and there are wide ranges of other economic, environmental and social sustainability indicators that are related to the built environment (Defra, 2009). There is general agreement that compact city approach applied in urban developments can improve sustainability of a city, (Brehon, 1992 and Williams *et. al.*, 2000).

6.3 Conclusion

The development of Umhlanga Ridge Town Centre remains to be completed, it is hoped that it will become an urban neighbourhood which mirrors the principles of integration and sustainability. Most importantly, as the EThekweni Municipality work towards achieving urban sustainability, various elements of today's industrialised, technological and cosmopolitan world would need to be critically examined in order to make relevant trade-offs and formulate workable ideas to reconcile the conflicts between manmade and natural systems on a much larger scale.

Compact cities are argued to be efficient for more sustainable modes of transport, (Williams, Burton, and Jenks 2000). Firstly, the URNTC when initially developed did not cater for public transport facilities, so even though public transport is accessible to area there is no designated infrastructure for public transport i.e. Buses & Taxis. The Researcher observed that even though the design of the development did promote to extent walk-ability the users of URNTC are still

very dependent of private vehicles. On this basis, the researcher is of the opinion that URNTC did not meet compact city characteristic of providing an efficient public transport system.

Compact cities are seen as a sustainable use of land, (Williams, Burton, and Jenks 2000). This characteristic was satisfied due to the historical background of apartheid especially in the case of EThekweni Municipality, the city in conjunction with THD the property owners did make full use of that land and development of urban development that not only transformed the city from its previous spatial structure but also became a major economic hub for the city.

In terms of social aspects, compactness and mixed uses are associated with diversity, social cohesion, and cultural development. It is argued that it is an equitable form because it offers good accessibility, (Williams, Burton, and Jenks 2000). Within the research, the URNTC satisfied this characteristic, because it was evident that the study area was integrated in terms of racial diversity as well mixture of land uses.

Compact cities are argued to be economically viable because infrastructure, such as roads and street lighting, can be provided cost-effectively. Also, population densities are sufficient to support local services and businesses (Williams, Burton, and Jenks 2000). The URNTC through the research has satisfied this characteristic, because it was evident that the study area attracted investment into the City as well as provided job opportunities to its inhabitants. In addition the public survey indicated that study area was well design and appealing to its users.

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Annexures

- I. Precinct Plans
- II. Questionnaires
- III. Observation Checklist

Key Stakeholder Questionnaire: Umhlanga Ridge Development

Name :

Designation :

Organisation :

1. What is your role and function in relation to the URNTC?
2. What was the rationale behind the URNTC in terms of your organisation?
3. What urban planning ideologies were applied in the URNTC?
4. What difficulties were experienced in planning and implementing this type of development?
5. Is there a form of agreement or alignment with between the City and Tongaat Hulett's?
6. What were the spatial planning considerations taken into account in terms of the City's IDP?
7. Do you think the URNTC satisfies the rationale behind the development?
8. What are the general positive outcomes of the development thus far?
9. What are the general negative outcomes of the development thus far?
10. What lessons have you learned that you would apply in future developments like these?
11. What future plans/ developments can be expected in the URNTC?

Public Interview Questionnaire: Umhlanga Ridge Development

1. In terms of the following categories please indicate the reason for using the study area;

a) work	
b) Living	
c) Entertainment	
d) All of the above	
e) Work and Entertainment	
f) Living and Entertainment	

2. What are your general experiences in the study area?
3. What are your thoughts on the visual design of the study area?
4. Do you think the study area provides an opportunity for the poor in terms of employment, affordable goods and services, opportunities for informal trade? Please provide a reason for your answer.
5. How would you rate the quality of life in the study area? (some of the indicators include good health, family and friends, employment, economic opportunities and safety). Please provide a reason for your answer

a) Excellent	
b) Average	
c) Bad	

6. How accessible is the study area for you in terms accessibility of transport? Please Provide a reason for your answer

a) Excellent
b) Average
c) Bad

7. In your opinion do think the study area show cases integration compared to inherited urban form of apartheid?
8. What are some the challenges you experience on a day to day basis with regard to using the study area?
9. In your opinion do you think this type of development is suitable for the City of Durban? Please provide a reason for your answer?
10. What recommendations would you suggest to improve study area?

Researchers Observation Checklist: Umhlanga Ridge Development

Basic Elements	Features Observed	Comments
Land Use	<ul style="list-style-type: none"> What land use is present? (commercial, residential, industrial, offices, community facilities, other) Are the uses evenly distributed? 	
Densities	<ul style="list-style-type: none"> What is the density of land use? How concentrated are the uses? 	
Layout and Urban Design	<ul style="list-style-type: none"> Walkability Connectivity Mixed use and diversity Mixed housing Quality Urban design and Architecture Traditional neighbourhood structure Increased density Green transportation Sustainability Quality of Life 	
Compact City Characteristics	Features Observed	Comments
High Density	<ul style="list-style-type: none"> High dense settlements Less dependence on automobile (high density) Clear boundary from surrounding areas 	
Mix Uses	<ul style="list-style-type: none"> Mixed land use Diversity of life (mixed-land use) Clear identity 	
Efficient Public Transport	<ul style="list-style-type: none"> Social fairness (high dense settlements) Self-sufficiency of daily life Independence of government (clear boundary) 	
IDP Spatial Planning Objectives	Features to be Observed	Comments
Economic generation	Has the redevelopment promoted employment opportunities?	
Creating opportunity for the poor	What elements suggest that opportunities have been presented to the poor?	
Promoting accessibility	Is the precinct accessible to pedestrians, vehicles and public transport?	
Accessibility to employment and services	Are residents/tenants well located in terms of access to employment and services?	
Minimizing costs of Infrastructure Expansion	How extensive has the infrastructure expansion been? Has the development made optimal use of existing infrastructure?	
Protecting the Natural Resource Base	The current state of the natural environment.	