

The influence of gated communities (security villages) in the pursuit of sustainable urbanism in eThekweni. A case study of Mount Edgecombe Country Club Estate, UMhlanga

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DECLARATION

I hereby declare that this dissertation is my original work. Any work done by other persons has been properly acknowledged in the text. This dissertation is being submitted in partial completion of the Master of Town and Regional Planning degree at the University of KwaZulu-Natal. This dissertation has not been submitted for any other degree or examination at any other university.

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ABSTRACT

This study examined the influence of gated communities in the pursuit of sustainable urbanism in eThekweni Municipality, using Mount Edgecombe Country Club Estate as a case study. Sub-objectives were established as a guide in addressing the main aim. The sub-objectives highlighted key components of sustainable urbanism and gated communities in the South African context. Sustainable urbanism indicators were established using gated communities as an urban built form so as to lay a foundation to determine the influence of the case study on sustainable urbanism. The study also sought to establish the extent to which eThekweni Municipality incorporates sustainable urbanism as a means to sustainability. Gated communities were also assessed in the South African context with a focus on their nature, extent and effect in an urban setting.

Qualitative research methods were used to gather relevant information. Qualitative research enables a researcher to clearly observe personal perspectives and experiences while highlighting contextual and locational factors that relate to the phenomenon at hand. It allowed the researcher to describe the phenomenon in detail, laying the foundation for conclusions on the influence of gated communities in the pursuit of sustainable urbanism in eThekweni.

The study found that gated communities' have disparate influences on sustainable urbanism at the internal and external level. It was found that gated communities, particularly large security estates, have the ability to adopt key sustainable urbanism principles, such as biophilia and transit-oriented development, through their management body. Externally, it was observed that the urban context in which a gated community is located influences the way the community functions. Thus, in the eThekweni urban setting, fear of crime and the Municipality's financial capacity has limited the extension of sustainable urbanism principles beyond gated communities' boundaries.

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List of Acronyms

ARC – Association of Residential Communities
CBD – Central Business District
CNU – Congress of the New Urbanism
D'MOSS – Durban Metropolitan Open Space System
EIA – Environmental Impact Assessment
GBCSA - Green Building Council South Africa
HBI/B – High Performance Infrastructure/Building
IIEC - International Institute for Energy Conservation
KZN – KwaZulu-Natal
LSM - Living Standard Measure
MECCE – Mount Edgecombe Country Club Estate
MECCEMA – Mount Edgecombe Country Club Estate Management Agency
NEMA – National Environmental Management Act 1998
NHBRC - National Home Builders Regulation Council
SANS 10400 - South African National Standards 10400
SEA - Sustainable Energy Africa
SEED - Sustainable Energy, Environment and Economic Development
THD – Tongaat Hulett Developments
UIP – Urban Improved Precinct

Chapter One: Introduction

1.1 Introduction

Sustainable urbanism as a means to achieve sustainability is a widely debated topic that has significant implications for historical urban built forms. As an urban built form, gated communities potentially influence the promotion of sustainable urbanism. The level of influence of such communities on sustainable urbanism has not been determined. As a South African municipality, eThekweni Municipality is committed to the sustainability of cities, and sustainable urbanism is one means to achieve this. This chapter introduces the study by setting out the background to sustainable urbanism and gated communities, as well as the study's objectives and research questions. The chapter ends by outlining the structure of the dissertation.

1.2 Background to Research Problem

Throughout the world, the constant battle between urban lifestyles and the natural environment has challenged planners and architects (Farr, 2008). In response to the negative impact of increased consumption of limited resources, the late 19th and 20th centuries witnessed the emergence of concepts and theories that acknowledged the need for a balance between urban lifestyles and the natural environment (Wheeler, 2004). These concepts and theories were anchored on the notion of sustainability.¹ Sustainable urbanism is one such concept. However, the achievement of this ideal is challenged by the various built forms established prior to the emergence of the concept. As built forms established prior to the unpacking of sustainable urbanism, gated communities utilize resources within and beyond their boundaries (Landman and Jurgens, 2006). This influences the promotion of sustainable urbanism.

South African cities have been shaped by past experiences that include the colonial and apartheid periods. These experiences define the sustainability of cities through the urban built form. As a result of the high levels of segregation, the built form clearly portrays an uncoordinated and fragmented urban fabric consisting of large restricted areas, including gated communities. In the post-apartheid era, sustainable city planning has been adopted in city governance as a way of promoting integrated development in previously fragmented cities as well as addressing the urban fabric imbalances caused

¹ Garden city movement – increasing green spaces and parks to allow people to 'breathe' in the city (Ebenezer Howard, 1898), Smart Growth – compacting people, promoting mixed use and regeneration of dilapidated buildings (UN Agenda 21, 1992), Radburn concept and neighbourhood concept – strengthening neighbourhood bonds and promoting walkability in neighbourhoods (Clarence Stein and Henry Wright, 1929; Clarence Perry, 1920).

by colonialism and apartheid. South African city planning has embraced sustainable urbanism measures, including the integration of land uses, environmental considerations, compactness, and place making under the umbrella term 'Integrated Development Planning' in an attempt to move towards sustainable cities. Gated communities challenge these efforts through their promotion of fragmentation, low density sprawl, and segregation (Landman, 2000). There have been no attempts to address these issues; therefore there is a need to understand gated communities' impact on the pursuit of sustainable urbanism.

1.3 Statement of the problem

In the South African context, two key periods define the rapid development and spread of gated communities: the apartheid era, pre-1994, and the post-apartheid period, post-1994. During apartheid, gated communities were developed to promote residential segregation on the basis of ethnic criteria (Jurgens and Landman, 2006). These communities were privately developed to accommodate a specific racial class in the upper middle and high-income range (Landman, 2000). Due to the dwellers' ability to pay, gated communities offered high quality infrastructure developed by professional planners and architects (Glasze, Webster and Frantz, 2006).

However, gated communities required large tracts of land; therefore the periphery of South African cities was the most suitable location. These communities subsequently spread across cities' peripheries, affecting spatial layout through segregation, low-density sprawl, and fragmentation of land uses. Gated communities consume resources beyond their boundaries and their need to be connected to urban centers challenged city planners following the introduction of Integrated Development Planning.

The introduction of Integrated Development Planning did not halt the growth of gated communities and they continued to expand rapidly. Indeed, this expansion was fuelled by the rapid increase in crime in South African cities (Jurgens and Landman, 2006). Together with security needs, class segregation also contributed to the mushrooming of gated communities, which offer upmarket developments for middle and high income earners. The communities developed post-apartheid continue to offer quality infrastructure and are predominantly residential. They continue to consume resources beyond their boundaries, thus impacting sustainable city planning (Landman, 2000). The fact that gated communities have the resources to develop exclusive, high quality developments, yet still seek external resources is a challenge for planners pursuing sustainable urbanism.

eThekwini is one of the municipalities that have gated communities on the periphery of urban centers, which were developed during the apartheid and post-apartheid eras. There is very little difference between the developments built pre-1994 and post-1994, except for the fact that in the latter period, crime has been a major motivation for such developments. Middle and high-income earners occupy gated communities that are designed as security estates and offer a wide range of activities, with residential as the predominant use; they are therefore also known as security villages (Landman, 2004). The security villages in eThekwini are located on the urban periphery, as they need large tracts of land and incorporate various natural elements, such as rivers and dams, to enhance their appearance and function. Nevertheless, the security villages in eThekwini consume resources within and beyond their boundaries, leading to varying internal and external influences on sustainable urbanism.

1.1.1 Case study: Mount Edgecombe Country Club Estate

One such security village that consumes resources within and beyond its boundaries in eThekwini is the Mount Edgecombe Country Club Estate (MECCE), which is located on the periphery of the uMhlanga region. uMhlanga is one of eThekwini's urban cores and is located approximately 17km north of the Central Business District. uMhlanga is highly urbanised with mixed-use developments and is located along one of the major transport routes (N2). Mount Edgecombe was previously a sugarcane plantation known as the 7th Earl of Edgecombe; in 1935 a country club specializing in golf courses, known as Hulett's Country Club was established. It was famous for its golf course, which was designed to incorporate natural features, including river streams, hills and biodiversity. In the 1980s the Country Club was developed into a gated community, which is now known as MECCE. The estate has two golf courses, shops and an increasing number of residential units. Chapter four elaborates on the case study.

Although gated communities tend to negatively affect the sustainability of cities through the consumption of resources within and beyond their boundaries, they also directly influence the adoption of sustainable urbanism as a concept. South African gated communities are active and are increasing rapidly. This study therefore builds on previous studies on the sustainability of gated communities by determining the level of influence exerted by such developments in the pursuit of sustainable urbanism in eThekwini.

1.2 Objectives

1.2.1 Aim/ Principal objective

This study seeks to examine the influence of gated communities in the pursuit of sustainable urbanism in eThekweni, using MECCE as a case study.

1.2.1.1 Objectives

1. To identify the indicators of sustainable urbanism using gated communities as an urban built form.
2. To determine the nature, extent and effect of gated communities in eThekweni Municipality.
3. To determine the indicators of sustainable urbanism as a means to sustainability in the eThekweni Municipality policy framework.
4. To determine the characteristics of MECCE and how it relates to the urban environment, measured against the principles of sustainable urbanism in eThekweni.

1.3 Hypothesis

The nature of gated communities (security villages) as enclosed developments that utilise resources within and beyond their boundaries influences the pursuit of sustainable urbanism in eThekweni. The influence of gated communities on sustainable urbanism varies within its boundaries (internally) and its surroundings (externally).

1.4 Questions to be asked

Using MECCE as a case study, what is the influence of gated communities in the pursuit of sustainable urbanism in eThekweni?

1.4.1 Subsidiary questions

1. Using gated communities as an urban built form, what are the indicators of sustainable urbanism?
2. What are the nature, extent and effect of gated communities in eThekweni Municipality?
3. To what extent does eThekweni Municipality incorporate sustainable urbanism as a means to sustainability?
4. In what ways do the characteristics of MECCE align with sustainable urbanism principles?

5. What conclusions can be made on the influence of MECCE in the pursuit of sustainable urbanism?

1.5 Definition of key terms

- **Natural environment:** relates to all living and non-living things occurring naturally on earth, including the ecological system in place (Curl, 2006).
- **Urban:** relating to or concerned with a city or a densely populated area (Farr, 2008).
- **Urban built form:** constructed building typologies that are defined by height, size and architectural style in an urban environment (Curl, 2006).
- **Urban morphologies:** the study of the form of human settlements including their formation and transformation (Curl, 2006).

1.6 Structure of dissertation

1.6.1 Chapter 1: Introduction

Chapter one introduces the topic and provides a clear description of the research background and problem as well as highlighting the research objectives, hypothesis and questions. This chapter presents an overview of the research study.

1.6.2 Chapter 2: Literature review and theoretical framework

This chapter examines different perspectives on gated communities and sustainability by reviewing the relevant literature. It also evaluates the theory of sustainable urbanism.

1.6.3 Chapter 3: Conceptual framework and Precedent studies

Chapter three builds on sustainable urbanism in practice while noting the key concepts leading to a more precise definition. It also sets out the indicators of sustainable urbanism using gated communities as well as eThekweni Municipality's understanding of sustainable urbanism. International and local precedents are presented in this chapter.

1.6.4 Chapter 4: Research Methodology and Case Study

Chapter four focuses on the research methodology used to gather data for this study. It highlights the type of research methodology, data sources and data collection tools, type of sampling, and how the

data were analysed. It includes information relating to the case study and why this case study was chosen.

1.6.5 Chapter 5: Findings and analysis

Chapter five presents an analysis of the data and the study's findings as well as international and local precedents. The data are analysed in order to evaluate and assess the case study on the basis of sustainable urbanism principles.

1.6.6 Chapter 6: Conclusion and Recommendations

Chapter six presents the conclusion to the study and makes recommendations as to how best to address the influence of gated communities.

1.7 Limitations

The study's limitations include:

- Qualitative research and the use of primary sources only enable a researcher to obtain information that the participants are willing to provide.
- The use of purposive sampling as well as the limited time frame resulted in limited access to information; thus the findings cannot be generalized to all gated communities in eThekweni as well as all those residing in gated communities.
- The use of a case study means that the findings are limited to the context of the case study presented. The impact of gated communities on sustainable urbanism will not be the same for all gated communities in eThekweni.

In order to address these challenges, secondary data, including international and local precedents, were used to further inform the study.

1.8 Conclusion

Sustainable urbanism is a relatively new concept that is seen as a means to sustainability. Gated communities, which are large, enclosed developments that pursue resources beyond their defined boundaries, impact the pursuit of sustainable urbanism. In South Africa, the development and spread of such communities have been shaped by historical factors. As gated communities expand rapidly as an urban built form, their implications for sustainable urbanism vary both internally and externally. This

study uses the MECCE, a security village in eThekweni Municipality, as a case study to determine the influence of such developments on sustainable urbanism. Chapter one laid the foundation by presenting the background to the research, and the research objectives and questions, as well as the hypothesis. Chapter two presents a literature review and the theoretical framework adopted for the study.

2 Chapter Two: Literature review and theoretical framework

2.1 Introduction

Gated communities, sustainability, and sustainable urbanism, as well as the relationships between these concepts, are widely debated topics. This chapter provides an in-depth review of different perspectives of gated communities, sustainability and sustainable urbanism. An evaluation of the key concepts and principles underpinning sustainable urbanism and gated communities is also provided as well as the indicators of sustainable urbanism using gated communities as an urban built form. Thereafter, the chapter provides a synthesis of the theoretical findings as well as international and local precedents relating to sustainable urbanism.

2.2 A perspective of gated communities

2.2.1 History and emergence of gated communities

The history of gated communities can be traced back to earth's earliest settlers. Blandy (2006) notes, that, the notion of gated communities is extremely broad and reflects the historical and contemporary context in which they appear. This section provides a brief overview of the historical development and definition of gated communities.

Gated communities, that involve the walling of large tracts of residential land, took form around 300BC when the Romans established 'gated' villages in England as a defence against external invaders (Blakely and Snyder, 1997). This was also common practice in other countries.² The ideology underpinning these communities was based on safety; communities used 'gating' as a way of protecting themselves from invaders and the unknown (Glasze, Webster & Frantz, 2006). Gated communities spread throughout most of the world including America, Brazil, South Africa, and India (Atkinson and Blandy, 2006). The early gated communities were predominantly residential (Landman, 2000).

The global chaotic growth of towns in the 19th and 20th centuries due to urbanization accelerated the growth of gated communities (Morris, 1994 cited in Goldsteen and Elliott, 1994). The nature of gated communities as exclusive developments affected city planning that aimed at integrated development or pursuing a sustainable city. Gated communities formed large, inaccessible pockets of development

² Rome; Chinese compound – Inka Kanha (Hyslop, 1990).

within cities and promoted segregation and fragmentation of land uses (Landman, 2000). Furthermore, the reason for their expansion shifted from the need for safety to other motivations including racial segregation, status, privacy, and potential returns from investing in such communities (Atkinson and Blandy, 2006).

The growth of gated communities has challenged planning theories based on sustainability and integration as the majority of these developments are private and exclusive (Atkinson & Blandy, 2006). Post-modernistic trends have accelerated gated community development.

2.2.1.1 *Postmodern urbanism and gated communities*

Postmodern urbanism, a current phase characterized by the transformation of design approaches to the urban environment, is considered an interface for urban planning and architecture (Ellin, 1999). The defining attributes of postmodern urbanism include the devaluation of public space; reduced confidence in holistic design in terms of context and rationality; a return to historicism; a renewed search for urbanity; and form following fear (Murray, 2004).

The decline in the public realm, together with an increase in physical control, surveillance and policing, and the growing privatization of public space are attributed to the triumph of individualism, single family dwellings and gated communities (Ellin, 1999). Ellin (1999) and Murray (2004) note that fear of others – form following fear – is a major contributor to gated communities in the post-modernistic period, particularly in areas with high crime rates. Gated communities located on the urban fringe have therefore created a new kind of separate development in the post-modernistic period (Ellin, 1999). Exclusionary and segregationist tendencies have planted their roots in postmodern urbanism, leading to the growth of spatially fragmented forms of development (Murray, 2004). Postmodern urbanism is thus a period characterized by a shift in urban planning and architecture to contextualism, regionalism, site/place, pluralism, the decline of the public realm, and privatization, all of which buttress the growth of gated communities.

2.2.1.2 *History of gated communities in South Africa*

Three key historical periods define the current state of South African towns. With segregation and fragmentation at the heart of most developments, the rise of gated communities was well-nigh inevitable as they easily created boundaries between various groups within the country (Jurgens and Landman, 2006). In order to understand the development and expansion of gated communities, this

section examines gated communities during the colonial period, the apartheid era and the post-apartheid period.

2.2.1.2.1 The colonial period and gated communities (late 1800s)

In the late 1800s, the Dutch and British took control of most South African land, forcing the indigenous people into slavery (Koplan, 2009). The colonial period divided the population into two main categories: the superior minority and the dispossessed majority (Koplan, 2009). During this period, gated communities were established solely for the purpose of security, as battles constantly erupted between these different groups (Spocler, 2012). Different groups and clans resided within a particular gated area that had restricted access. Most day-to-day activities were carried out within the gated community (Spocler, 2012).

As a result, large enclaves consisting of different ethnic groups and clans were established as a way of ensuring safety from outsiders. The indigenous people also established compounds, which acted as gated communities with restricted and monitored access. The need for protection from invaders and unwanted persons from different groups led to the establishment of boundaries with limited access (Spocler, 2012). The resources required to carry out day-to-day tasks were contained within the compound.

The way in which dwellers related to the enclosed development depended on the social structure of each group. Cultures varied and during the colonial period, freedom was a luxury that very few possessed. This widened the gap between those regarded as superior and the inferior which the apartheid period built on (Koplan, 2009).

2.2.1.2.2 The apartheid era and gated communities (Pre-1994)

The apartheid period heightened racial segregation in South Africa. The minority (superior) occupied large tracts of land, while the majority (indigenous people – inferior) were suppressed and deprived of resources (Jurgens and Landman, 2006). The apartheid city was therefore fragmented in nature and consisted of segregated racial groups.

During the apartheid era, modernism was at its height globally; the formation of apartheid cities was therefore highly influenced by modernistic urban planning ideologies (Jurgens and Landman, 2006). The Garden City Movement and the Neighbourhood Concept significantly influenced apartheid city formation. The urban built form for well-developed neighbourhoods was considered sound in relation to

development regulations guided by modernistic urban planning ideologies. The Neighbourhood Unit was considered a sustainable form of development during this period (du Plessis and Landman, 2002). This was reflected in gated communities that included social amenities and recreational facilities (du Plessis and Landman, 2002). The degree to which this concept was adopted in gated development was considered low as it disregarded walkability to educational facilities, shopping centres and business parks. However, during this period, gated communities were restricted to a few isolated locations for families sharing a particular interest, exemplified by golf estates, retirement estates, and equestrian estates (Spociter, 2012).

In order to enforce the segregation of the different race groups, buffer strips were established in the form of railways, valleys, and major roads (Seekings, 2010). Neighbourhood development varied from well-developed to poorly-developed and low and high density (Seekings, 2010). Apartheid policies, especially the Group Areas Act, restricted racial integration and neighbourhoods were developed for particular race groups (Landman, 2006).

Gated communities during the apartheid period were therefore developed by particular groups with a common interest and as a means to promote racial and class segregation (Spociter, 2012). However, the exclusionary nature of gated communities was limited in that they were predominantly residential and the occupants still had to carry out most of their day-to-day activities, including work, food purchases, electricity, sanitation and water, and employment outside their boundaries (Spociter, 2012). However, their magnitude was not as great as during the post-apartheid period as the fear of crime and the unknown and the need for class segregation were not as pronounced (Jurgens and Landman, 2006). Segregation and the fragmentation of the apartheid city nonetheless laid the foundation for the explosion of residential gated communities, post-1994, including the enclosure of existing neighbourhoods.

2.2.1.2.3 *Post-apartheid and gated communities (Post-1994)*

South Africa's political liberation witnessed an increased gap between the rich and the poor, challenging policies aimed at integration (Jurgens and Landman, 2006). The segregation and fragmentation evident in the apartheid city persisted in the post-apartheid city with a shift from racial segregation to class segregation in most urban developments (Seekings, 2010). This led to an increase in the number of gated communities.

The main reason for the mushrooming of gated communities in the post-apartheid era is insecurity, and fear of crime and the unknown (Landman, 2000; Landman, 2004; Jurgens and Landman, 2006), fuelled by social change (Seekings, 2010). These communities are no longer established on the basis of community but are regarded as an investment in a constructed community as a defence against unpredictability (Ballard, 2005).

In post-apartheid South Africa, class segregation has replaced racial segregation as groups of like-minded individuals come together to create a homogeneous community that is secure (Ballard, 2005). These communities reflect the state's failure to address crime and other issues (Ballard, 2005).

2.2.1.2.3.1 Post-apartheid gated communities and the South African policy framework

There is no national policy on gated communities in South Africa. The two main typologies that exist are security villages that are considered private developments, and enclosed neighbourhoods that restrict access to existing public roads. These differences mean that the policy and legal implications will also differ (Landman, 2003). Large security estates may require large tracts of Greenfield or brownfield sites for which zoning permission is required. Enclosed neighbourhoods are usually established by seeking permission from the local municipality to restrict/ prohibit access to existing neighbourhoods (Landman, 2003).

Although there is no national policy on gated communities, a number of planning and development laws directly affect the development of these communities in South Africa. These include the White Paper on Spatial Planning and Land Use Management (2001) and the recently repealed Development Facilitation Act (1995) that has been replaced by the Spatial Planning and Land Use Management Act (2013). However, these policy documents make no mention of "gated communities", "enclosed neighbourhoods" or "security villages" (Landman, 2004). As predominantly residential developments, gated communities are guided by the development and planning standards applicable to residential developments set down in the Spatial Planning and Land Use Management Act (2013).

Major cities in South Africa including Johannesburg, Durban, Pretoria and Cape Town have adopted policies relating to road closures for neighbourhoods and the erection of boom gates (Spocster, 2012). The Planning and Development Act (2008) applies to all forms of residential development. Landman (2004) identifies three main paradigms guiding development derived from South African policies post-1994: integrated development, sustainability and sustainable development, and safer settlements.

These are further discussed in chapter three that addresses some of the sustainable urbanism principles in practice.

Although gated communities have been in existence since the early 1900s, their sustainability has largely been dependent on the residential policy framework in place. With their focus on exclusionary practices, throughout history gated communities have made a limited contribution to sustainable means of development (Landman, 2000). However, post-apartheid cities have adopted key sustainable development principles. Sustainable development considerations for gated communities have been measured against limited benchmarks and are deliberated contextually in that each community seeks to solve a particular problem (Atkinson and Blandy, 2006). Gated communities provide limited access to resources within their boundaries and occupants are forced to seek the necessary means for their survival, including food, outside the community.

A number of policies may affect gated communities, ranging from crime to residential and spatial planning (Landman, 2004). As noted above, the increasing gap between the rich and the poor in South Africa's major cities has contributed to the rapid expansion of gated communities, promoting urban fragmentation and segregation (Robins, 2002 cited in Spocter, 2012). Although high crime rates accelerated the growth of gated communities, fragmentation and segregation was mainly based on class. The expansion of gated communities, post-1994 is thus defined by socio-economic factors shaped by historical events and high crime rates (Landman, 2000; Jurgens and Landman, 2006). Section 2.1.2.2 further elaborates on the typologies of gated communities in the post-apartheid city.

2.2.2 Defining gated communities

The definition of gated communities largely depends on the motivation for enclosure. In order to clearly articulate the term 'gated community' from a global perspective, there is a need to clarify the key reasons for such developments. An examination of countries that have a wide range of such communities or have experienced fast growth in gated communities also assists in understanding this concept.

2.2.2.1.1 A consolidated definition of gated communities

One of the major reasons for the development of gated communities is the "desire to be enclosed in a private collective territory" (Abdelhamid, 2005: 2). The expansion of gated communities in the late 20th

and 21st centuries was the result of increased crime rates in the surrounding areas.³ Enclosed residential community developments were at the heart of gated communities with restricted public access using gates, booms, walls and fences (Atkinson and Blandy, 2006). Gated communities employ security staff or CCTV systems that monitor access. Le Goix and Webster (2008) note that gated communities are also perceived as a form of enclave-style development that consists of privately governed neighbourhoods as they restrict access to the benefits found within to those residing in them. Blakely and Snyder (1997) cited in Mahgoub and Khalfani (2012: 54) observe that these communities include “physical privatization of areas with restricted entrance where outsiders and insiders exist”.

Gated communities can be grouped in a number of categories. Abdelhamid (2005) identifies two classifications: geographic classification and chronological classification. The former relates to gated communities that could be situated in town – mainly for security reasons – and those situated out of town – taking refuge from the polluted environment in big towns. The latter relates to occupation and includes gated communities consisting of houses that are permanent or secondary residences (Abdelhamid, 2005).

Grant and Mittelstead (2004) identify three main key types of gated communities; lifestyle communities, prestige communities, and security zones. Lifestyle communities have common amenities and cater to a leisure class with shared interests; these include retirement homes, golf and leisure estates, and suburban and new town developments. Prestige communities reflect a desire for image, privacy and control; these are enclaves for the rich and famous as well as the middle class (Blakely and Snyder, 1997). Security zones reflect fear and consist of fences and gates on public streets (Grant and Mittelstead, 2004).

However, gated community typologies are contextual; hence Abdelhamid (2005) and Grant and Mittelstead's (2004) classifications may not apply to all gated communities. These authors argue that gated communities consist of residential communities or housing estates with exclusive access as well as varying degrees of shared amenities and facilities. In the context of this study, a consolidated definition of a gated community is one that is predominantly residential and exclusionary in nature with limited amenities and facilities. For the purposes of this study, it is also important to discuss gated communities in the South African context.

³ Gated communities in Brazil and South Africa (Landman, 2002);

Gated communities in England as a response to crime and disorder (Blandy, 2007);

Fortress America: Gated communities in the United States of America (Blakely and Snyder, 1997)

2.2.2.2 *Defining gated communities in the South African context*

While there are different types of gated communities in South Africa, the two key types are enclosed neighbourhoods and security villages (Landman, 2004). The former refer to gated communities that are the result of enclosure of existing open neighbourhoods (Landman, 2012). Enclosed neighbourhoods are also known as 'city perches' or a 'barricade perch' (Blakely and Snyder, 1997). Access to these neighbourhoods is restricted and controlled by a few access points in the form of gates or booms. Depending on the model in place, some public roads and open spaces form part of the enclosure. The size ranges from small cul-de-sacs with less than 10 houses to large neighbourhoods consisting of 1 000 houses (Landman, 2012). Not all resources are contained within the enclosed neighbourhood; occupants have to leave their enclosed area to pursue day-to-day activities.

Security villages are private developments that consist of an enclosed area specifically developed for the purpose of being exclusive (Jurgens and Landman, 2006). Security villages range from townhouse complexes to large office parks and luxurious security estates (Landman, 2004). Security villages are usually located on the urban periphery where large tracts of land are available as well as various natural elements such as rivers and dams (Landman, 2004). They engage planning and architecture professionals to provide a lifestyle package and a variety of facilities and amenities for residents' enjoyment (Atkinson and Blandy, 2006).

Nevertheless, both typologies continue to seek resources beyond their boundaries, as they are predominantly residential and largely depend on key elements outside their boundaries including food, water, sanitation, and electricity. As a result of this dependence, there is constant interaction between those residing within gated communities and the outside world (Grant, 2010). Although enclosed neighbourhoods and security villages have similar features, security villages developed entirely for enclosure challenge sustainable urbanism principles. It is thus important to establish how the functionality of gated communities affects sustainable urbanism. The challenge posed by security villages will be further clarified after defining sustainable urbanism.

2.2.3 *Defining attributes: Gated communities as an urban built form*

It is clear that gated communities are diverse and largely contextual. Several variables and functions differentiate gated communities. Historically, these communities were predominantly residential and this became the focal point of many gated communities developed in the 20th and 21st centuries (Atkinson

and Blandy, 2006). The defining attributes of gated communities depend on context. This section examines the common trends and attributes found in gated communities developed in the 21st century.

As an urban built form, different types of gated communities require large tracts of land to develop residential areas for a particular group of people (Blandy, 2007). Blakely and Snyder (1997) argue that four key features define gated communities: functions of enclosure; security features and barriers; amenities and facilities included; and type of residents. Grant and Mittelsteadt (2004) add that tenure, location, size and policy are vital components in defining these attributes. Grant and Mittelsteadt (2004) formulated a table that explains each feature, shown in **Figure 1** on page 18. The table therefore acknowledges the various common attributes of gated communities. These key features are further discussed in the context of the study area in chapter four of this dissertation.

2.3 Gated communities and urban sustainability

The sustainability of gated communities in relation to urban environments has been widely investigated by scholars, many of whom have concluded that these communities are an undesirable urban built form in moving towards the sustainability of urban environments (Blakely and Snyder, 1997; Landman, 2000; Jurgens and Landman, 2006; Atkinson and Blandy, 2006; Grant, 2010; Landman, 2012). These different perceptions enable the researcher to clearly articulate gated communities' influence on concepts that predate sustainable urbanism. This is followed by a review of the literature on gated communities and sustainable urbanism.

2.3.1 Sustainability: Smart Growth (Compactness) and gated communities

Compactness is an essential ingredient of Smart Growth that has been the subject of much debate. In 1993, the United Nations Earth Summit Agenda 21 endorsed compact forms of urbanization as the basis for sustainable urban development (UN, 1993). The compact city hypothesis states that compact is more sustainable than sprawl. On the one hand, compact cities strive to reduce energy, potentially increase investment in public infrastructure, and preserve agricultural land and natural areas, as well as social diversity, together with cultural and economic development (Nabielek, 2012). On the other hand, Gordon and Richardson (1997) argue that compact cities pose a significant challenge to the environment through, for example, an increased number of high-rise buildings as well as potentially disregarding the need for sufficient greenery, quiet streets, and open spaces. Gated communities are regarded as promoting sprawl, which contradicts the compact city hypothesis (Blakely and Snyder, 1996; Landman, 2004; Atkinson and Blandy, 2006; Grant, 2010). Clearly, compactness as a condition

for sustainable urbanism is tainted by the nature of gated communities as predetermined enclaves dominated by residential land use.

Figure 1: Gated community typologies (Grant, 2004)

Figure 1: Gated community typologies (Grant, 2004)

	Physical	Economic	Social	Symbolic
Function of enclosure	secure people and property	enhance property values	give visual or spatial privacy	display status and power
	create identity for project		control those inside	control those outside
		protect club amenities		
Security features	<i>Nature of boundary</i>			
	wall	Fence - opaque	Physical fence - visually open	symbolic fence - electric
	low fence, chain, or bollard	fence - barbed	speed bumps or chicanes	pavement texture or colour
	False guard station	Mirrored glass on guard house	private property signs	no parking signs
	Hedge or vegetation	Topographic feature	water	desert
	Swing-arm gate	lift arm gate	slide gate	swing gate
	<i>Nature of security</i>		devices in road bed	guards at designated times
	Guards at all times	patrolling guards	card entry	code entry
	sub opener entry	surveillance cameras	armed guards	house alarms
Amenities and facilities	private roads	meeting place	activity centre	recreational facilities
	open space	landscape maintenance	quality design	commercial facilities
	institutional facilities	guards		
Types of residents	homogeneous by age	homogeneous by class	homogeneous by ethnicity, race and status	
Tenure	principal residence	secondary residence	seasonal residence	public housing
	fee simple ownership	condominium ownership	land lease	rental
Location	urban	suburban	exurban	rural
	infill	greenfield	resort destination	inner-city
Size	out-de-sec pod	neighbourhood (tens to hundreds of units)	village (hundreds of units, some commercial)	town (thousands of units and mix of uses)
Policy context	restricts gating	enables gating	growing area	stable or declining area

2.3.2 Sustainability: New urbanism (Walkability and mixed use) and gated communities

New urbanism is also a means by which cities move towards sustainability, at the heart of which is walkability and mixed use, which are also key considerations in sustainable urbanism (Farr, 2008). Grant (2010) argues that gated communities and new urbanism are two sides of the same coin as they strive to resolve similar planning issues. One of the major aspects of new urbanism is consumer choice, which suggests that gated communities are compatible with new urbanism (Blakely and Snyder, 1996). As a way of promoting new urbanism principles such as high density, gated communities could be seen to have better odds of attracting middle and high-income earners than new urbanist open plans, which favour compactness (Grant, 2010). Gated communities can potentially create space for inclusive communities of like-minded souls, although this is also noted as a form of fragmentation which isolates those within the gated community from those outside. Grant (2010) does not clearly articulate gated communities' implications for walkability and mixed use in light of new urbanism, but rather emphasizes the challenges they both address.

2.3.3 Sustainability: Place making and gated communities

Another important component of sustainable city planning and new urbanism is place making that seeks to promote healthier lifestyles through effective utilization of available resources (CNU, 2009). Place making is concerned with turning public spaces into the heart of cities through inspiring people to create and improve public spaces (Musterd and Kovacs, 2013). The importance of place making lies in its potential to improve relationships between urban dwellers, the built form and the natural environment (Musterd and Kovacs, 2013). In developing gated communities, planners consider place making to a limited degree; it is restricted to the gated community and does not extend to the greater urban context (Landman, 2004; Le Goix, 2012).

2.3.4 Urban sustainability and gated communities

Urban sustainability also acknowledges the importance of freedom of movement as well as creating integrated communities. Gated communities are in direct conflict with freedom of movement and inclusive, mixed communities as they restrict access to their defined boundaries (Blandy, 2006; Landman, 2000; Atkinson and Blandy, 2006; Landman, 2012). Although those residing within the gated community enjoy both internal and external benefits, restricted access challenges integration and creates pockets of enclosed spaces, leading to diverse movement patterns (Landman, 2000).

Landman (2004) and Le Goix and Webster (2006) acknowledge that gated communities have implications for urban sustainability. The quality of life offered by urban environments determines the sustainability of these environments, the level of respect for the natural environment and institutional sustainability (Landman, 2004). On the one hand, Landman (2004; 2012) argues that gated communities offer a better quality of life within, and at the same time potentially have a detrimental effect on the natural environment and sustainable urban governance. Landman (2004) adds that gated communities pose a challenge to integrated development and can lead to spatial fragmentation, social exclusion and reduced participation in relation to the institutional sustainability of urban environments (Landman, 2004). On the other hand, Le Goix and Webster (2006) argue that private urban governance that is common in gated communities has the potential to contribute to the sustainability of cities through financing urban growth, redeveloping aging neighbourhoods, maintaining social diversity, protecting non-renewable urban resources, and promoting integration. However, these are considered internal gains that tend to carry social costs and spill-overs into the urban environment as a whole. Le Goix and Webster (2006) argue that gated communities tend to disregard any negative implications beyond their boundaries.

Although Le Goix and Webster (2004) and Landman (2004; 2012) argue that gated communities' contribution to urban sustainability leans more to the negative side, their influence on sustainable urbanism as a form-based means to achieve sustainability is not articulated. It is therefore important to examine how the occupants of gated communities interact with the built form and whether or not this promotes sustainable urbanism.

2.3.5 Summary

While gated communities are largely contextual, the reasons for their expansion are similar and have been influenced by different historical periods. Postmodern urbanism, characterized by privatization and form following fear – of crime and the unknown – has directly contributed to the global growth of gated communities. It was noted that gated communities promote segregation and fragmentation, particularly in the South African context where historical socio-economic structures shape the urban environment.

Gated communities in South Africa are expanding and form part of neighbourhood prescriptions as they occupy prime, large tracts of land where a wide range of income groups, particularly the working class reside. Thus, gated communities are becoming the 'new residential neighbourhoods' of South Africa. Although these communities are seen as a solution to fear of crime and the unknown, historically and

globally they portray signs of interdependence with the outside world, particularly in South Africa. The relationship between gated communities and the outside world is characterized by occupants who seek key day-to-day activities, including work, education, food, electricity, sanitation, and water beyond their defined boundaries. Clearly, this has implications for sustainable urbanism, a concept that seeks to promote mixed use, integration and localized day-to-day activities.

While there is a rich literature on the sustainability of gated communities, the influence of these communities on sustainable urbanism as a form-based means to achieve sustainability is under-researched. However, the effect of gated communities' prevailing assumptions on some sustainable urbanism principles has been independently noted. The study therefore provides an in-depth examination of the influence of gated communities in the pursuit of sustainable urbanism in eThekweni Municipality while highlighting the benefits of sustainable urbanism as a form-based concept.

2.4 Sustainable urbanism in theory

Sustainable urbanism, a recent term in urban planning and architecture, has been perceived in light of sustainability. This section provides a brief description of urbanism, and the history and definition of sustainable urbanism. In order to understand sustainable urbanism, it is necessary to clearly articulate urbanism as a theory and thereafter define sustainable urbanism.

2.4.1 Defining urbanism

Urbanism is the way in which city lifestyles interact with the urban built form (Oxford, 2013). The link between city dwellers and the built form is determined by both built environment planning and the city dweller's activities in an urban environment. Urbanism therefore highlights the character of urban life. Wirth (1938) notes that, the sociological aspect of urbanism consists of the implications of urbanization and the spatial layout of urban land uses. Wirth (1938) adds that the way in which the spatial layout of the built form shapes city dwellers' lifestyles may have dire consequences for city dwellers including anomie if there is no balance between urban land use interaction and urbanization. From a historical sociological perspective, it is clear that a sense of cohesion and the implications of the built form are important features of both the physical and social aspects of a city.

Barnett (2011) notes that, the modern perspective of urbanism is not limited to one perspective, but a number, including green urbanism, traditional urbanism, socio-political urbanism, new urbanism and sustainable urbanism. However, from a planning perspective, urbanism would include the consideration

of urban lifestyles and urban morphologies as an approach to urban design (Curl, 2006). Krier (1979) stresses the importance of acknowledging the context in which urbanism is perceived; this should not be limited to one building but should include streets and urban spaces. Curl (2006) maintains that urbanism acknowledges and aims to improve quality, pleasure, beauty, and civilization within cities. Therefore urbanism from a planning perspective would focus on the built form and structure of urban areas as well as how they interact with urban dwellers, thus predetermining sustainable urbanism.

2.4.2 Historical development of sustainable urbanism

Worldwide, urbanization and population growth have placed enormous pressure on the urban built form, particularly in developing countries. The increase in demand and supply of the urban built form has potentially dire consequences due to limited resources (Mebratu, 1998). This emphasizes the need to consider the relationship between urban dwellers and the built form so as to ensure sustainability. Haas (2012) acknowledges the implications of population growth and rapid hybrid urbanization for city sustainability and the resilience of cities as well as the provision of adequate shelter for all. While, on the one hand, rapid urbanization and population growth lead to a contested search for more conventional and liveable lifestyles in urban areas (Haas, 2012), on the other, the use of motor vehicles, low density sprawl, and increased consumption of resources beyond local boundaries pose a challenge to achieving such lifestyles (Haas, 2012).

Sustainable urbanism is a global term that is perceived as a means to achieve sustainability through urban design. The definition of the sustainability of cities has evolved to acknowledge three key pillars; economic, social, and environmental (WCED, 1987). Planners and landscape architects are thus challenged to devise means by which sustainability can be achieved through the built form (Birkeland, 2002). They are required to have an in-depth understanding of how the built form relates to urban dwellers; this is known as urbanism (Slone *et al.*, 2008). The bigger challenge lies in formulating ways in which urbanism and sustainability could coincide (Farr, 2008). This resulted in the concept of sustainable urbanism (Adhya *et al.*, 2010).

2.4.3 Defining sustainable urbanism

Sustainable urbanism as a concept holistically explores sustainability and urban design by focusing on the processes that shape the urban built form and functionality. These processes include the consideration of “infrastructures, land developments, built landscapes, social networks, systems of governance and economics and facilities” that make up metropolitan regions (Ejigu & Haas, 2011: 11). The application of sustainable urbanism mainly focuses on small-scale interventions applicable to

urbanized areas, which potentially lead to a shift towards sustainable neighbourhoods, districts and regions (Newman and Jennings, 2008).

According to Ejigu and Haas (2011) (cited in Congress for the New Urbanism, 1999; Farr, 2008; Newman and Beatley, 2008), sustainable urbanism in its fullest form is perceived as compactness and increased density of buildings; creating urban environments that permit and encourage walking and cycling as well as mixed use; increased investment in public transit and transportation; creating systems that promote a self-sustaining agricultural system – localized food production, goods and materials; increased investment in sustainable and renewable as well as passive technologies integrated into the built form (examples include solar, wind, and storm water); and solar design utilizing the best modern materials like steel and glass that enable daylight to fill buildings. Adhya *et al.* (2010) suggest that a more recent and integrated perception of sustainable urbanism is a means to sustainability that considers the social, economic and environmental aspects of urban development. Sustainable urbanism is formulated on the basis of the key concepts that define its attributes, principles and thresholds (Farr, 2008). The principles and thresholds of sustainable urbanism identified in chapter three underlie this definition.

2.5 Conclusion

Gated communities are contextual in nature, making them difficult to define. This section illustrated the complex nature of gated communities and deliberated on gated communities in the context of South Africa as a background to gated communities in eThekweni Municipality. Gated communities in the post-apartheid city are a response to high crime rates, which in turn encourage segregation and fragmentation of communities. Conversely, sustainable urbanism seeks sustainability in urban design by considering social, economic and environmental sustainability. Chapter three elaborates on sustainable urbanism as a concept as well as discussing its key attributes.

3 Chapter Three: Conceptual Framework and Precedent Studies

3.1 Introduction

Sustainable urbanism is a concept derived from a number of preceding concepts including smart growth, new urbanism and green building design. In order to fully unpack sustainable urbanism, this chapter acknowledges various concepts that are applicable to the development of the key principles and thresholds. It focuses on sustainable urbanism in perspective, the South African context, and precedent studies to demonstrate the functionality of the concept.

3.2 Sustainability: Sustainable urbanism in perspective

Sustainability is a term that is used in development and acknowledges the conflict between urban development, human beings and the natural environment. Sustainability seeks to ensure that any form of urban development takes environmental, social and economic aspects into account (Janis, 2002). The International Union for Conservation of Nature (1991) describes a “sustainable activity as one that can continue forever” (Hill & Bowen, 1997: 225). Therefore sustainability is an end in itself; an objective that any development strives for. Sustainable development is at the heart of sustainability; it refers to “development that meets the needs of the present without compromising those of future” (WCED, 1987). Sustainability therefore seeks to meet people’s social and economic needs while preserving the environment and ensuring the continual existence of diverse biological systems (Mebratu, 1998). Sustainability is a means to achieve sustainable urbanism, which emanates from the key principles of sustainable development. It is therefore important to consider environmental, economic and social factors in the context of sustainable urbanism as these are the key sustainability pillars.

3.2.1.1 *Environmental sustainability: sustainable urbanism*

According to Pugh (2000), environmental sustainability, also known as ecological sustainability, has two main agendas: the “Brown Agenda” (focusing on unsanitary living conditions, hazardous pollutants in the urban air and waterways, and accumulations of solid waste that, strives to create a more healthy environment), and the “Green Agenda” (that seeks to limits the amount of resources exploited in order to protect the physical environment and its resources). A balance between these two agendas is paramount in achieving environmental sustainability, which can be defined as human development that is harmoniously integrated with the environment to create a liveable habitat for all living things, taking precautions to utilize resources with the interests of future generations in mind (Pugh, 2000).

Environmental sustainability emphasizes the importance and preservation of ecological systems, as well as creating an urban built form that is integrated with the natural environment (Birkeland, 2002). From a sustainable urbanistic perspective, environmentally sound practices include ecological awareness and a low carbon lifestyle. Smart Growth as a concept acts as the environmental conscience of sustainable urbanism. It has its roots in the 1970s environmental movement in America (Szold and Carbonell, 2002). Smart Growth and the Green Building Movement (including biophilia) sum up the environmental perspective on sustainable urbanism.

3.2.1.2 Social sustainability: sustainable urbanism

Social sustainability looks at the social preconditions for sustainable development which is achieved when social equity is maximized and social exclusion is minimized (Pugh, 2000). In light of sustainable urbanism, social sustainability considers an appropriate mix of dwellings of different tenures, sizes and types, as well as a variety of recreational and community facilities, including service providers and commercial enterprises (Ejigu and Haas, 2011). The inclusion of these activities is vital in the establishment of a self-sustaining and balanced community (Adhya *et al.*, 2010).

3.2.1.3 Economic sustainability: sustainable urbanism

Economic sustainability refers to the equitable distribution of available resources as well as ensuring that business and employment opportunities are available (The Princes Foundation, 2007). In light of sustainable urbanism, economic aspects would include the creation of job opportunities within walking distance of people's residences and ensuring that they cater for the majority of community members. Economic sustainability is also achievable through establishing mixed-use developments, which complement the commercial case of sustainable urbanism (Birkeland, 2002).

3.3 Sustainable urbanism: urban design with nature

Farr (2008) proposed a new definition of sustainable urbanism in his book: *Sustainable Urbanism: Urban Design with nature*, which he perceived as laying the foundation for planners and architects that seek to promote the sustainability of cities. Farr (2008, p.42) defined sustainable urbanism as "walkable and transit-served urbanism integrated with high-performance buildings and high performance infrastructure". In arriving at this definition, Farr (2008) noted that the current lifestyle and nature of urban developments have dire consequences for the natural environment (various species) and the future of the planet.

Most developed and developing countries share similar lifestyles, with the former paving the way for the latter. European and American lifestyles are considered similar in nature; Farr (2008) argues that the robust range of life choices in America has resulted in a sedentary population whose health has deteriorated. The freedom to choose where to work, live, shop and play as well as government policies over the years has led to an increase in obesity as well as indoor lifestyles. The increased use of motor vehicle, elevators, and indoor comfort with artificial lighting and air conditioners has led to a much wider gap between the human species and other living systems. Wilson (1984) acknowledges the importance of sustaining the relationship between humans and other living systems and considers it highly beneficial to the human species. Furthermore, Farr (2008) argues that modern lifestyles through liberated life choices have resulted in a lack of human contact with nature and possibly blinded the human species to the damage it has caused to the planet.

In his book, Farr (2008) explores the possibility of urban design changing current lifestyle trends and promoting a better quality of life through sustainable urbanism. To fully unpack sustainable urbanism, Farr (2008) considered three main concepts: smart growth (compactness), green building movements (biophilia and environmental sustainability), and new urbanism (walkability and integration). These concepts act as anchors for sustainable urbanism as they share an interest in comprehensive economic, social and environmental development. It is therefore important to briefly describe these concepts and their contribution to the definition of sustainable urbanism.

3.3.1 Environmental conscience of sustainable urbanism: Smart Growth

Smart Growth is a theory that has its origins in America in the 1970s. It seeks to control development through concentration and avoiding urban sprawl. Smart Growth aims to achieve a sense of community and place, expand transportation, employment opportunities and housing choices, ensure equal distribution of development costs and benefits and preserve and enhance natural and cultural resources as well as promote public health (Szold & Carbonell, 2002). Although Farr (2008) argues that as an independent concept, it fails to acknowledge the potential of creating communities that are energy self-reliant as well as a sense of place, Smart Growth's contribution to sustainable urbanism is that it emphasizes densification (compactness) and environmental concerns.

3.3.2 Sustainability's urban design movement: Congress of the new urbanism

New urbanism, a post-modernistic concept, is considered part of the urban design movement through its promotion of walkable neighbourhoods with a range of housing and job types (CNU, 1993). As noted above, it therefore advocates for mixed use and walkability. In relation to sustainable urbanism, Farr

(2008) argues that the concept introduces the notion that everything should be of high quality, more efficient, mixed use, and within close proximity. However, the concept fails to perceive the potential value of economic diversity as it creates highly privatized and controlled places that are exclusive.

3.3.3 Green Building Movement

The Green Building Movement advocates for urban design that is in sync with nature and shapes better communities and lifestyles (Yudelson, 2007). Green building design emphasizes integrating design with nature. Biophilic design is a result of the Green Building Movement that seeks to ensure that buildings function as sustainable ecological systems. Farr (2008) argues that, although advocating for green design, this concept tends to disregard project location and context, which in turn affects the sustainability of the project. Thus, Farr (2008) notes that, its sole contribution is to ensure that building design is in sync with the natural environment.

3.3.4 The grand unification of sustainable urbanism

The possibility of altering lifestyles to move towards sustainability based on rethinking how we live, work, play and shop builds on the integration of the key principles of the above-noted concepts; Smart Growth, new urbanism and green buildings. Sustainable urbanism has the potential to reduce environmental harm and drastically improve the quality of life (The Princes Foundation, 2007). Sustainable urbanism would also involve the creation and support of communities designed for a high quality of life by encouraging people to walk and utilize public transport. Sustainable urbanism extends beyond these three individual concepts, as it favours a more holistic approach (Farr, 2008). The concept therefore shifts from independently resolving automobile dependent problems or a “resource squandering pattern of development” to a consolidated solution.

3.4 Measuring sustainable urbanism: emerging thresholds and principles

Farr (2008) identifies nine key attributes of sustainable urbanism: defined centre and edge; compactness; completeness; connectedness; sustainable corridors; biophilia; high performance infrastructure; high performance buildings; and integrated design. Farr (2008) considers each attribute as potentially acting as a benchmark and rule of thumb for designing sustainable neighbourhoods and corridors; the epitome of sustainable urbanism. Each attribute is discussed below.

Defined centre and edge refers to neighbourhoods that are defined by centres within walking distance and edges acting as boundaries of the neighbourhood (CNU, 1993). Centres may consist of a mix of

uses and higher density buildings are within walking distance. Centres should also potentially be able to provide daily needs and connect people socially (Farr, 2008). Farr (2008; 127) states that “one should be able to tell when they have arrived in the neighbourhood and reached its heart”.

Compactness acknowledges density and the use of high-rise buildings (Jabareen, 2006). The main aim of this principle is to strive for the establishment of a neighbourhood that is a walkable size (40-200 acres). Farr (2008) argues that sustainable urbanism seeks to promote middle and high densities at an average of seven dwelling units per acre.

Completeness refers to a diversity of land uses, building types, and dwelling types that are able to provide daily and lifelong utilities. These diverse dwelling types should consider the need for housing over a lifetime. All daily needs should be able to be met on foot which creates “universal independence at opposite ends of the age spectrum” (Farr, 2008; 45). Completeness should therefore discourage automobile usage within neighbourhoods and diversity in relation to land uses, building types, and dwelling types should be a primary consideration.

Connectedness considers the integration of transportation modes and land uses (Farr, 2008). In light of sustainable urbanism, a neighbourhood should provide abundant opportunities to walk, ride, cycle and potentially wheelchair around (Ejigu and Haas, 2011). Good transit services to adjacent neighbourhoods and regional destinations should also be accessible. Farr (2008) argues that internal connectedness can be achieved through sidewalks on both sides of the street, and the distance between intersections should be short. Speed control measures should also be in place to monitor automobiles and create safe walking environments. Travel lanes between curbs should be limited to a maximum of two.

Sustainable corridors are regarded as the backbone of sustainable urbanism as they are transit corridors that link neighbourhoods with districts and other regional destinations. Existing and proposed transit corridors are vital considerations for the location of sustainable urbanist developments. The population densities should be able to support a robust level of bus, streetcar, trolley, bus rapid transit, or light rail services (Farr, 2008). Therefore, the integration of transportation technology with density and the distribution of adjacent land uses are essential when defining the sustainability of corridors. Utility infrastructure is another important facet of sustainable corridors.

Biophilia is a concept coined by Wilson (1984) that argues in favour of connecting humans to nature. Human beings have a natural love for nature due to the “intrinsic interdependence between humans

and other living systems” (Farr, 2008: 48). In light of sustainable urbanism, biophilic design includes connecting people to nature and natural systems through urban design – natural daylight and fresh air indoors and landscaping pedestrian routes with mature tree cover. Furthermore, human settlements should be designed to promote visible and experimental resource flows as well as consider the interweaving “of riparian and wildlife corridors between and through neighbourhoods” (Farr, 2008: 49). It is vital to consider fencing, landscaping and grade-separated corridors in order to discourage animals from wandering freely within the neighbourhood. Roads should not cut through habitat corridors, but rather bridge over or tunnel under, ensuring connectivity for non-human species (Birkeland, 2002). Therefore, the link between human beings and other living systems on earth should inform any form of development.

High Performance Infrastructure is considered by Farr (2008: 195) as the core Best Management Practice (BMP) relating to infrastructure. This includes public right of way, encompassing street and sidewalk, underground utilities, storm water infrastructure, landscapes, and street elements. Cul-de-sacs are also considered more sustainable in residential neighbourhoods as they offer more access to units per unit of street length.

High Performance Buildings (HPBs) involve enhancing the environmental performance of buildings. Sustainable building design emanates from the Green Building Movement and refers to per-capita-based mandatory performance standards for both public and private codes at levels higher than conventional codes (Farr, 2008). Therefore, HPBs maximize operational saving of energy and minimize the environmental impacts of the construction and impact of buildings. HPB features include energy efficient or clean energy resources, an improved indoor environment, recycling and using renewable resources, and operational resource management. HPBs also focus on ensuring that the construction process is as efficient and least harmful as possible.

Integrated Design is a key component of the Green Building Movement; it regards the performance of a building as an all-inclusive system. Integrated design has the potential to improve a building’s performance without increasing costs. Farr (2008) notes that integrated design considers the reduction of performance costs more important than initial installation costs. Therefore, adopting materials and building strategies with the least performance costs is vital in integrated design (Birkeland, 2002; The Princes Foundation, 2007).

3.5 Sustainable Neighbourhoods

Sustainable neighbourhoods, a concept emanating from sustainability, strive to ensure that neighbourhoods are developed in a way that meets the social, economic and environmental aspects of sustainability. Neighbourhoods are defined as a “residential or mixed use area around which people can conveniently walk” (Barton, 2000; 5). Barton (2000) identifies three key facets of a neighbourhood: functionality, seen as a place, and locus for community. The coexistence of these three facets is vital to neighbourhood sustainability. Sustainable neighbourhoods would therefore act as the locus for a community, perceived as a place that has defined edges, and functionality guided by socio-economic and environmental considerations. Farr (2008) notes, that, the Neighbourhood Unit is the ideal concept to define sustainable neighbourhoods, and identifies the key neighbourhood attributes shown in **Figure 2**.

3.6 Indicators of sustainable urbanism using gated communities as an urban built form

Although the nature of gated communities as superblocks with limited access and private ownership potentially affects sustainable urbanism (fragmentation and segregation of the urban built form) (Landman, 2000), the global goal of becoming environmentally sound is still worth considering. The indicators of sustainable urbanism are therefore used to assess the form-based impact of gated communities. **Figure 2** also shows some of the key considerations in neighbourhood design in light of sustainable urbanism.

The principles of sustainable urbanism are directed towards neighbourhood development. In South Africa, large gated communities seemingly represent the new neighbourhoods of cities. The functionality of gated communities as fundamentally residential developments is largely dependent on the principles of urban design to ensure their sustainability. In the context of this study, sustainable urbanism as a post-modernistic urban design concept is therefore vital in ensuring that developments are moving towards sustainability. Therefore, the principles of sustainable urbanism act as indicators in the context of gated communities.

Figure 2: Sustainable urbanism: Sustainable Neighbourhood (Farr, 2008)

NEIGHBOURHOOD ATTRIBUTES		BRIEF DESCRIPTION
Neighbourhood definition	<ul style="list-style-type: none"> • Identifiable centre and edge to the neighbourhood • Walkable size 40 – 200 acres • Integrated network of walkable streets • Sites reserved for civic purposes 	
Neighbourhood completeness	<ul style="list-style-type: none"> • Close proximity to vital land uses including health facilities, community centres, education, convenience store, open spaces • Calculated as: Number of pedestrian destinations X proportional area balance of all pedestrian shed 	
Neighbourhood housing	<ul style="list-style-type: none"> • Diversity in housing typologies and tenure options 	
Car-free housing	<ul style="list-style-type: none"> • Mixed use, Transit service corridor • Encouraging means of transport other than automobile 	
Neighbourhood retail	<ul style="list-style-type: none"> • Corner stores, convenient centres and neighbourhood centres • Business practices 	
Economic benefits of locally owned stores	<ul style="list-style-type: none"> • Local advantages relating to labour, profits, charity and civic 	
Healthy neighbourhoods	<ul style="list-style-type: none"> • Greenery, Walkability, Connectivity, Lighting, Bike-ability, aesthetics, and convenience 	
Universal basic Home access	<ul style="list-style-type: none"> • One zero-step entrance • Passable interior doors • Usable bathrooms 	
Managing travel demand	<ul style="list-style-type: none"> • Residential and employment density • Diversity of land use types • Walkable design 	
Car sharing	<ul style="list-style-type: none"> • Community members sharing cars to work or similar day to day activities • Managing vehicle ownership 	

3.7 Summary

As illustrated above, sustainable urbanism as a concept involves many facets and there are different perceptions of these aspects. However, at the centre of these is urban sustainability. Farr (2008) identified the key thresholds and principles that create sustainable settlements. However, Adhya *et al.* (2010) argue that Farr's (2008) perspective on sustainable urbanism is form-based biased and that establishing a city on this basis is insufficient to achieve sustainable development. It is therefore argued that a more complete definition of sustainable urbanism would include consideration of social, economic and environmental sustainability. However, as noted above, the focus of this study is one of a built form bias; therefore gated communities will be evaluated from a neighbourhood perspective using the key sustainable urbanism principles identified by Farr (2008).

3.8 International and local precedents of sustainable urbanism

There are few international and local precedents of sustainable urbanism as the concept is still new and is not yet rooted in urban development. Therefore, the international precedents identified are largely in developed countries. However, a local precedent is also identified that potentially portrays key attributes of sustainable urbanism.

3.8.1 United States of America (Built infill): Glenwood Park Atlanta, Georgia

Glenwood Park is a residential development in Atlanta, Georgia that is perceived as the solution to sprawl and traffic congestion (CNU, 2011). The project seeks to promote walkability in an automobile addicted metropolis as well as soothe traffic congestion. The location of the project is largely beneficial as it is near a former rail line that was converted to a trail and transit could be constructed in the future (CNU, 2011). Furthermore, the project portrays a sense of community, walkable streets, and highly mixed use development comprising of offices, open space, and retail. **Figure 3** shows the layout of Glenwood Park in its entirety (CNU, 2011).

Figure 3: Glenwood Park Layout, Atlanta Georgia



<http://northatlantacommunities.com/glenwood-park-atlanta-ga-site-plan/> (Online). Date: 9 September 2014.

Some of the key attributes of the project are power saving and energy reduction, reduced mileage driven by residents, construction waste diverted from landfills, energy efficient office design, walkability between office and retail, and efficient storm water systems (Farr, 2007). In relation to sustainable urbanism, it is argued that the project has economic benefits in the form of locally owned stores, open spaces, storm water systems, density illustration, transportation, land use and technological integration, and walkable streets and networks. **Figure 4** shows high density and mixed-use developments that promote social integration in the community.

Figure 4: High density and mixed use in Glenwood Park



http://tobyandbrandon.com/wp-content/uploads/2013/12/glenwood_park.jpg (Online). Date: 7 September 2014.

3.8.2 England (Built Greenfield): Poundbury, Dorchester

Poundbury is a sustainable urban project at the west end of Dorchester built according to the principles of Prince Charles, highly influenced by New Urbanism (Prince of Wales, 2014). The objectives are an integrated community of businesses, shops, and diverse housing typologies including social and private housing (Prince of Wales, 2014). The development strives for a high quality environment, and socio-economic benefits. Key sustainable urbanistic thresholds include the economic benefits of locally owned stores, storm water systems, density illustration, walkable streets and networks, car sharing, car free housing, management of travel demand, and High Performance Infrastructure (Prince of Wales, 2014).

In relation to car sharing and car free housing, the high density urban quarter of Dorchester prioritizes people, and the close proximity of shops and leisure facilities as well as mixed use buildings facilitates walkability. Densification and mixed use have the potential to promote a sense of community,

walkability, car sharing and car free housing. **Figure 5** shows some of the key activity centres in Poundbury.

Figure 5: Poundbury Dorchester Arial view



http://www.adamarchitecture.com/images/project/Poundbury_aerial-AC019-01G.jpg(Online). Date: 7 September 2014.

3.8.3 Local precedent: Century City, Cape Town, South Africa

Century City is a 250 ha suburb located in Cape Town, South Africa. It is a mixed use development consisting of residential, retail, office, and entertainment (CCPOA, 2013). Century City is one of the commercial nodes of Cape Town located along the primary distributor (N1). Public transport systems are in place which allow for direct access to the node. Century City was built on a wetland which naturally cleans the water in the canals, providing a green lung in this high density development (CCPOA, 2013).

The residential component of Century City is a gated estate with high security and within walking distance of the shopping mall. The target market is largely middle and high-income earners (CCPOA, 2013). The typologies vary and most developments are more than two stories, increasing densification.

In relation to tenure, there is a wide variety of tenure options, including rental and ownership. There is also a common open space that makes provision for storm water filtration. The shopping mall within Century City comprises of a variety of commercial and business activities. In relation to sustainable urbanism attributes, Century City has mixed use, an open space system, efficient storm water systems, densification illustrated, walkable streets and networks, public transport systems, and a biodiversity corridor. **Figure 6** shows some of the Century City components that reflect sustainable urbanism including a storm water system linked to a natural wetland, mixed use development (canal walk) and high rise residential developments (CCPOA, 2013).

Figure 6: Century City residential development and mixed-use building



<http://mw2.google.com/mw-panoramio/photos/medium/20423465.jpg>(Online). Date: 7 September 2014.

3.8.4 Summary

In relation to the above precedents, it is clear that there are developments that consider key sustainable urbanism principles and seek to promote “walkable and transit-served urbanism integrated with high-performance buildings and high performance infrastructure” (Farr, 2008; p.42). Although developed at a time when sustainable urbanism, urban design with nature, was not clearly articulated, these developments show potential in becoming sustainable urbanistic developments. The international and local precedents therefore show the existence of projects with sustainable urbanism principles at heart.

3.9 Sustainable urbanism in South Africa: eThekweni Municipality’s policy framework

At present there is no legislation that embraces sustainable urbanism as a concept. However, different legislative principles reflect consideration of sustainable urbanism principles, which is evident in the key

paradigms discussed below. South African development policy post-1994 largely reflects neoliberalism and post-modernism trends. This section examines each paradigm in the light of gated communities.

3.9.1 Integrated Development

The majority of South African planning and development policies, including those of eThekweni Municipality, take integrated development into account. The type of integration included varies from socio-spatial to economic and institutional integration (Landman, 2004). Although these are all key considerations, for the purposes of this study spatial integration is most pertinent. Spatial integration refers to “the integration of previously disadvantaged areas with the more well-performing parts of the city, as well as areas with greater prevalence of social and economic opportunities” (Landman, 2004; 23). Integrated activity corridors and nodes are key considerations that potentially endorse sustainability principles, including efficiency, greater opportunity, convenience and accessibility as well as equality of access (Landman, 2004). The implication of integrated development for gated communities in eThekweni is that developers are obliged to consider ways to ensure that these communities do not become isolated developments.

In the context of sustainable urbanism, integrated development advocates for mixed-use development while ensuring that it is in sync with the environment. The key principles of new urbanism noted in sustainable urbanism that advocate for mixed-use development are evident in this approach. Integrated development planning in South Africa also acknowledges the importance of ensuring that compatible land uses are located in close proximity, as reflected in sustainable urbanism, which strives for connectedness and mixed-use development.

3.9.2 Sustainable cities and sustainable development

Sustainable cities emphasize the importance of the natural environment and advocate for the pursuit of an ecological city. Sustainable development is a global concept whose pillars were defined by the World Commission on Environment and Development (1987). Post-1994, South Africa acknowledged the importance of sustainable development including its main pillars. The South African policy framework for planning and development includes sustainable development and the desire to create

sustainable cities as key considerations. It emphasizes the need to strive for sustainability and the creation of sustainable human settlements (du Plessis and Landman, 2002)⁴.

In relation to sustainability, three categories have been identified: quality of life (social), environmental sustainability, and economic and institutional sustainability (Landman, 2004). Quality of life involves meeting the basic human needs of all South African citizens (du Plessis and Landman, 2002). Environmental sustainability refers to the preservation of ecological systems. Although these categories are different, Landman (2004) argues that they cannot exist in isolation as there is a relationship between the needs of the people, governance and the environment that cannot be overlooked. It is evident that these three key considerations noted in South African policy are also key components of sustainable urbanism.

3.9.2.1 *Environmental preservation: Durban Metropolitan Open Space System (D'MOSS)*

In relation to environmental preservation, eThekweni Municipality has established the D'MOSS, previously known as the eThekweni Environmental Services Management Plan. D'MOSS seeks to ensure that environmental biodiversity is preserved through an interlinked open space system. D'MOSS ensures that development does not encroach on the existing biodiversity of species and restricts any form of development in areas identified within the D'MOSS. D'MOSS also enables the formation of ecosystem goods and services including climate regulation, food production, pollination, raw materials for craft and building, cultural and recreational facilities, and nutrient cycling and waste treatment (eThekweni Municipality, 2011). The attributes of D'MOSS clearly reflect some of the key considerations of sustainable urbanism noted above.

3.9.2.2 *National Environmental Management Act (1998): Environmental Impact Assessment (EIA)*

In South Africa, all developments are required to comply with legislation, including the National Environmental Management Act (NEMA) that seeks to protect the natural environment. One of the key provisions of the NEMA is EIA. EIAs are carried out by an Environmental Assessment Practitioner who determines the environmental condition of the site as well as the implications of the proposed development (NEMA, 1998). However, the EIA is not limited to the natural environment; it also

⁴ Housing White Paper (1994); Agenda 21 adopted by South Africa 1996; The Housing Act (1997); Spatial Planning and Land Use Management Act 2013; Integrated Development Planning; National Environmental Management Act 1998

considers the socio-economic implications of the proposed project. The protection of diverse species and the integration of the development with existing ecological systems are vital aspects. Sustainable urbanism principles require that development considers the preservation of the natural environment as well as integration with existing ecological systems, which is evident in the NEMA.

3.9.2.3 Energy Efficient Housing in eThekweni

Energy efficient design in South African housing development is guided by government and non-governmental institutions. These bodies regulate residential development and strive for energy efficient design. They include the National Home Builders Regulation Council (NHBRC) and South African National Standards 10400 (SANS 10400). All builders and developers are required to comply with these standards. In addition to these standards, eThekweni Municipality has incorporated sustainable urbanism principles that seek to ensure that residential development promotes sustainability. The main considerations that align with sustainable urbanism include: passive thermal design – orientation of house and building materials, weatherisation and ventilation, ceilings, and walls and flooring (Klunne, 2002). SANS 10400 is a national policy that regulates construction and any building-related activities that all developers and contractors must comply with. In relation to councils established to regulate residential development, the NHBRC and the Green Building Council of South Africa (GBCSA) are the two key institutions that have adopted sustainable urbanistic principles. The NHBRC, a compulsory body, simply regulates contractors and builders to ensure home owners' protection (NHBRC, 2013).

Although these principles are not entirely environmentally sound if followed to the letter, non-governmental organizations (NGOs) have given more in-depth consideration to sustainable urbanism at the residential level. International and local NGOs that address energy efficient design include:

- *International Institute for Energy Conservation (IIEC)*: The IIEC supports sustainable home design through energy efficient design. It establishes sustainable home initiatives and supports residential developments through policy regulation (IIEC, 2014).
- *Sustainable Energy, Environment and Economic Development (SEED)*: This programme focuses on energy, the environment and development. It aims to augment communities and local municipalities' capacity to respond to energy and environmental challenges (SEED, 2014).
- *Sustainable Energy Africa (SEA)*: SEA implements SEED using a handbook, The Energy Book that guides professionals, development practitioners and communities in their attempt to

establish sustainable urban development. SEA promotes a global perspective of energy efficiency at the local level by ensuring that more effective energy choices are made (SEA, 2014).

- *Green Building Council South Africa (GBCSA)*: This is an independent, voluntary, non-profit organization established in 2007 that acts as the leading body in the “greening of South Africa’s built environment” (GBCSA, 2007). GBCSA promotes, encourages and facilitates green building design in South Africa through education, training and rating tools that certify Green Star SA projects. In relation to sustainable urbanism, GBCSA promotes in-depth consideration of sustainable principles as noted in Farr’s (2008) analysis of sustainable urbanism. Therefore, GBCSA adopts the key principles of sustainable urbanism through its appreciation of urban design with nature.

These organisations are not statutory bodies and therefore residential developments such as gated communities are not obliged to comply with their prescripts. However, their potential to transform residential development is worth acknowledging as they offer opportunities for energy efficient housing development at a local level which could potentially influence the development of gated communities.

3.10 Conclusion

It is clear that although sustainable urbanism as a concept has not been fully adopted in South Africa, there is a desire to create sustainable cities through sustainable development. Sustainable development approaches are evident in key metropolitan cities including Johannesburg, Durban and Cape Town (du Plessis and Landman, 2002). As noted above, sustainable urbanism is a concept that acts as a means to sustainability and therefore it may adopt similar principles and values as sustainable development. However, as Adhya *et al.* (2010) note, this is a new concept in developed countries. South Africa – which is striving to become a developed country – is likely to adopt the full concept in the near future. This chapter discussed sustainable urbanism as a concept as well as its formulation. As a developing country, South Africa’s policy framework reflects the key principles of sustainable urbanism. It is therefore important to examine the implications of South African gated communities for sustainable urbanism in order to promote the adoption of the concept.

4 Chapter Four: Research Methodology

Research is defined as a “systematic investigation to find answers to a problem” (Burns, 1997: 2). Kumar (2005) states that a research methodology is the way research is carried out and includes all the procedures used to describe, explain and predict a phenomenon. The research methodology guides data collection, and provides a framework to answer the identified research questions and test the hypothesis. This chapter presents the research methodology employed for this study and clarifies the background of the case study while highlighting some of the developmental trends that exist within the Mount Edgecombe Country Club Estate (MECCE).

Qualitative research was considered the most appropriate research methodology for this study. This enabled the researcher to solicit in-depth opinions from the interviewees as well as to describe the phenomenon in the local context (Dawson, 2009). In the context of gated communities and sustainable urbanism, qualitative research enabled the researcher to observe detailed personal perspectives and experiences while highlighting contextual and locational factors that relate to the phenomenon at hand. This laid the foundation for conclusions on the influence of estates such as MECCE on the pursuit of sustainable urbanism in eThekweni Municipality.

4.1 Case study: Mount Edgecombe Country Club Estate

4.1.1 Identification of a case study

A case study is one form of qualitative research. A case study is seen as relevant in the early stages of an investigation and has the ability to prove a hypothesis that may be tested systematically with a larger number of similar cases (Flyvbjerg, 2011). The case study was selected on the basis of categorical selection so as to ensure validity and the ability to prove the hypothesis. In the case of gated communities, especially security villages in eThekweni Municipality, the selection of the study area was mainly based on duration; the predominant use – residential; size – relatively large community to constitute a neighborhood (299ha); and location – in eThekweni Municipality and near a functioning urban centre. The relevance of duration and location is linked to sustainable urbanism as they dictate the ability of gated communities to preserve and adjust to changing sustainability principles and the challenges of incorporating sustainable urbanism principles. A security village located near an active urban core was selected because of the rapid increase in the growth of such villages as well as the need to determine their direct influence in the pursuit of sustainable urbanism regardless of how close

they are to the urban core in eThekweni. A case study with these qualities laid the foundation for establishing ways of integrating sustainable urbanism principles with the already developed built form.

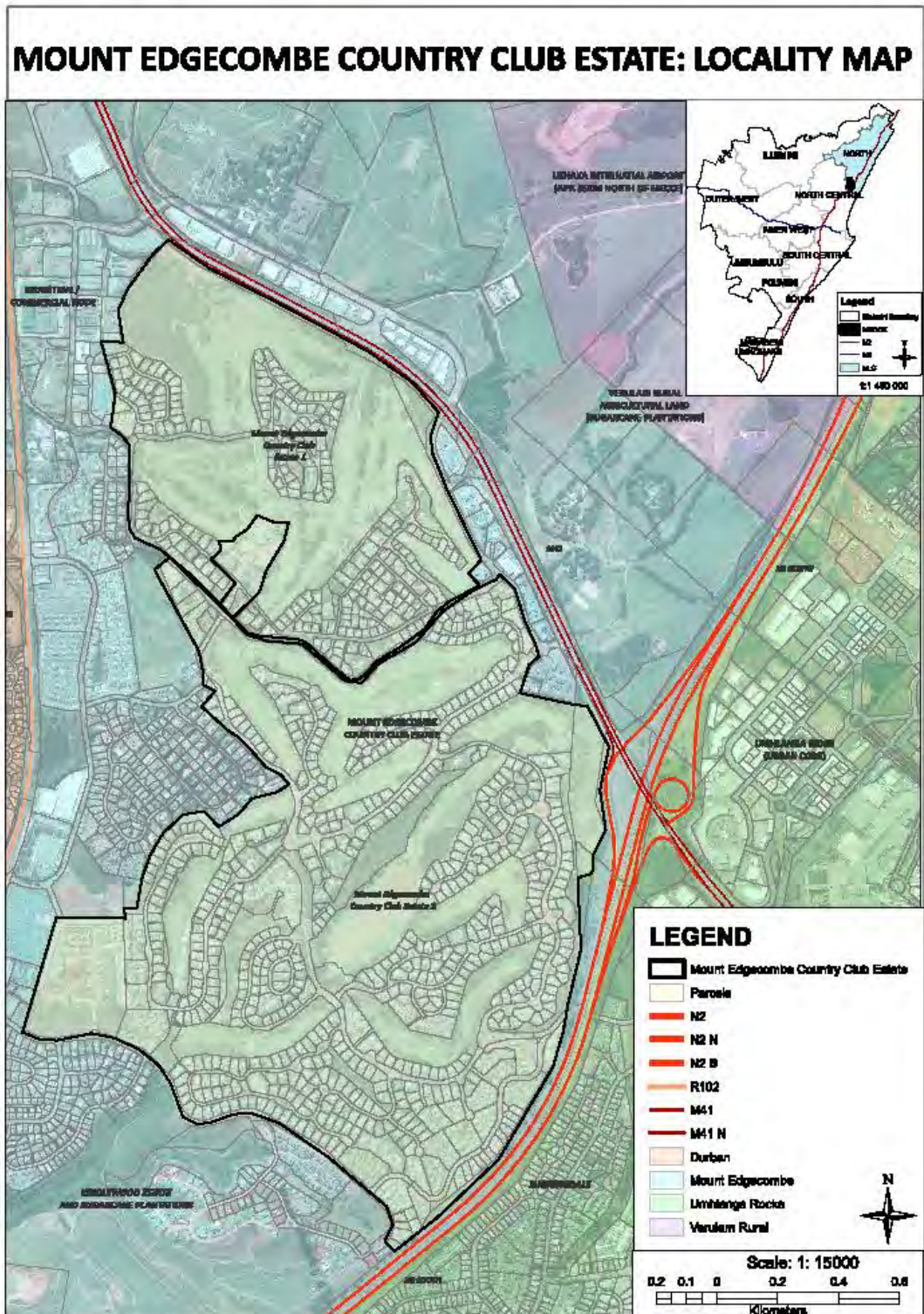
The nature and extent of gated communities within eThekweni Municipality varies, with both security villages and enclosed neighborhoods. Security villages are mushrooming on the peripheries of most South African urban centers and are largely inhabited by upper middle-income and high-income earners. The expansion of these security villages has attracted many other related land uses to locate nearby as evidenced by the spatial layout of the two key urban centers in eThekweni – Hillcrest and uMhlanga. Security villages dominate the periphery of these centers and their proximity to the urban core varies depending on the land available. Enclosed villages are mainly dominant in one urban center, Westville, and their rate of expansion is lower than that of security villages. Since security villages are fast growing, new developments influenced by varying sustainability principles, there is a need to establish their influence on the pursuit of sustainable urbanism. Having identified Hillcrest and uMhlanga as urban cores dominated by security villages, the selection of either was potentially able to provide information that could enhance the investigation of the phenomenon under study. uMhlanga Ridge was selected on the basis that it is a fully developed, functioning urban core that is surrounded by a number of gated communities in close proximity. The MECCE is one of the key security villages in the Northern area of eThekweni municipality (uMhlanga Ridge). This already developed estate fits the above-noted criteria and was therefore relevant to inform the study. Focusing on one case study enabled the researcher to undertake a detailed examination of a single class of phenomena.

4.1.2 Background to case study

4.1.2.1 Location of case study

Mount Edgecombe Country Club Estate is one of the security villages located to the north of eThekweni CBD, under the Northern region and is significant to this study as it has been functioning since the early 1900s; it therefore spans the apartheid and post-apartheid periods. The estate has two main residential sections: Mount Edgecombe Country Club Estate One (MECCE 1) and Mount Edgecombe Country Club Estate Two (MECCE 2) as shown in **Map 1**. The total size of the estate is approximately 299 hectares with a population of 7 323 (878.44 per km²). There are approximately 2 471 households (Frith, 2011). The spatial significance of MECCE is based on its close proximity to an active, growing urban environment, the uMhlanga Ridge town centre. The estate is located on the boundaries of the N2 highway and M41 (see **Map 1**).

Map 1: Study Area: Mount Edgecombe Country Club Estate



4.1.2.2 Mount Edgecombe Country Club Estate 1 (MECCE 1)

The growth of MECCE 1 was largely the result of demand for secure urban forms of development in eThekweni Municipality. During the apartheid era, MECCE 1 grew due to the type of estate it was – a lifestyle-oriented one. Developed in 1925, MECCE spans 94 hectares with a single 18-hole golf course and five residential villages comprising of 279 homes and a total population of approximately 715 people at 641.26 per km² (MECCE, 2014; Firth, 2011). There are approximately 389 females and 327 males and more than 80% of the population belong to the white population group (Firth, 2011). The golf course initially developed at MECCE 1 attracted many investors and as the laws of the time promoted segregation, the estate was the fruit of racial segregation. The five villages were developed in phases, preventing pocketed developments that might represent a management challenge. MECCE 1 can be classified as an upmarket, exclusive development that was highly influenced by racial segregation and lifestyle choices.

The principles of sustainability that supported MECCE 1's development during apartheid were mainly influenced by global modernistic trends relating to neighbourhood design, especially concepts such as the Garden City Movement and Neighbourhood Unit. The natural environmental buffers favoured by the Garden City Movement and the high appreciation of cul-de-sac roads in Neighbourhood Unit development were key characteristics of MECCE 1. Taking into consideration the surrounding area, MECCE 1 was strategically located as it sought to take advantage of existing socio-economic facilities including hospitals, shopping centers and business centers in the uMhlanga urban core. The extent of the services on offer was not at the current scale as the population threshold was considered relatively low during this time frame. One of the major challenges to adopting sustainable urbanistic principles at the time was the lack of awareness of planning theory that discussed the sustainability of urban forms taking social, economic and environmental factors into account.

The low threshold in MECCE 1 did not support the need for social and economic facilities to be located within the estate's boundaries, which resulted in occupants largely pursuing resources beyond the defined boundaries, including work and daily needs. MECCE 1 therefore became a lifestyle-oriented estate that its occupants mainly used for leisure activities. However, MECCE 1 showed a relatively high appreciation of the environment with open space systems that enabled the preservation of ecological systems and biodiversity within its jurisdiction. The management body, the Mount Edgecombe Country Club Estate Management Agency (MECCEMA) ensured that occupants adhered to estate regulations

for maintenance purposes and functionality. Once MECCE 1 was fully occupied, it could no longer be altered as it was comprised of individual landowners that had vested interests, which MECCEMA strives to protect.

4.1.2.3 Mount Edgecombe Country Club Estate 2

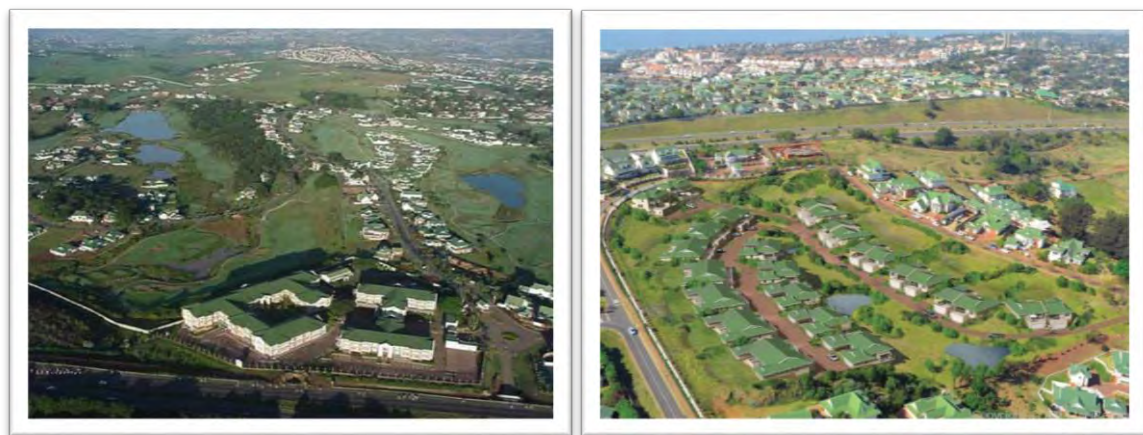
Once MECCE 1 was fully occupied, MECCE 2 was established. It incorporated a range of sustainability principles that were evolving during the post-modernistic period. MECCE 2 is adjacent to MECCE 1 and spans 205 hectares with a single golf course and nine residential villages comprising of 834 homes (MECCE, 2014). The current population is 5 476 (1 438.89 per km²) with 2 877 females and 2 599 males. The estate has the white race group forming part of the majority with 49% of the population falling under the white category and the 51% split into three different categories: Indian, Black and coloured (Firth, 2011).

The recreational facilities and storm water management as well as building typologies at MECCE 2 began to adopt more recent sustainability perspectives. The high demand for secure investments, security and a variety of recreational facilities enabled MECCE 2 to grow. The location was also attractive, as the immediate socio-economic surroundings were expanding rapidly, providing a diverse range of facilities to cater for high demand in the North Local Council region. However, the evolution of sustainability led MECCE 2 to establish a design and development handbook aligned with national policy changes as well as neighbourhood sustainability principles. In relation to the national transformation from racial segregation to promoting integration, MECCE 2 no longer used race as a criterion for selection. Financial capacity was the main determinant, leading to people from different race groups purchasing units. The nine villages were developed in phases to prevent pocket developments that may pose a management challenge. Subsequently, MECCE 2 was also developed with an appreciation of ecological systems and biodiversity indicating a potentially high level of environmental sustainability.

The appreciation for the environment evident in the initial stages of development, demonstrate potential for environmental conservation. However, thresholds within MECCE boundaries have historically posed a challenge to the development of social and economic facilities within the estate and expansion could challenge sustainable urbanism principles. In comparison with municipal schemes, the development has historically been considered a low-density residential development. The protection of vested interests may pose a challenge to attempts to adopt sustainable urbanism principles such as

compactness and completeness. The following chapter presents the findings on MECCE and highlights these in light of sustainable urbanism so as to create a platform to determine the influence of gated communities such as these on sustainable urbanism. Sustainable urbanism considers the adoption of new practices including biophilia and high performance infrastructure and buildings to ensure urban sustainability; gated communities such as MECCE may have limited means to spatially adapt to these changes. The images below (**Figure 7**) show perspective views of MECCE.

Figure 7: Perspective views of MECCE developments



Available: <http://www.ecoman.co.za/images/MECCE2.jpg> (Online). Date: 15 October 2014.

4.2 Data sources and data collection tools

The data for this qualitative research study were mainly sourced from primary and secondary sources as they provided different perspectives on the subject under study. Data collection tools were used as instruments to gather relevant information.

4.3 Primary and secondary data sources

In order to determine the nature, extent and effect of gated communities on sustainable urbanism in eThekweni, a combination of primary and secondary data sources was used.

Secondary data sources were used to identify the indicators of sustainable urbanism using gated communities as an urban built form. The secondary data sources included published, printed and

electronic sources, mainly in the form of books and journal articles, government gazettes, the Internet, maps (for interpretation), and planning reports and articles relating to the MECCE and the precinct in which the estate is located (Northern region, Mount Edgecombe and uMhlanga urban core). Farr's (2008) work on sustainable urbanism was used extensively as he offered a fresh, current perspective that is highly regarded in the first world. The secondary data enabled the researcher to clearly identify different perspectives of sustainable urbanism as well as sustainable urbanism using gated communities as an urban built form.

Primary data sources enabled the researcher to obtain first hand data from surveys relating to the function of gated communities as well as eThekweni Municipality's perceptions of sustainable urbanism. Closed-ended questionnaires (obtaining specific information from the estate occupants), semi-structured interviews (questions but open for expansion), and direct (non-participant) observations were used to determine the nature, extent and effect of MECCE in eThekweni (Dawson, 2009). However, administering the questionnaires posed challenges due to estate policy that does not allow door-to-door interviews of MECCE occupants. The respondents included the key stakeholders: eThekweni Municipality (Northern Regional Coordinator), MECCE (THD Project Manager responsible for the development of MECCE/ THD Executive Director), and the MECCEMA.

4.4 Data sources

Organisation	Role	Source of information
EThekweni Municipality (Northern Region)	<ul style="list-style-type: none"> • Monitor and control development within the estate • Ensure that services including water, sanitation and electricity are provided • Establishment of eThekweni North Scheme and Mount Edgecombe Scheme 	<p>Primary: Interview with the Northern Regional Coordinator.</p> <p>Secondary: eThekweni North Local Council Scheme and government gazettes.</p>
MECCEMA 1 and 2	<ul style="list-style-type: none"> • Home Owners Association (HOA) • Establishment of the guidelines and principles relating to the estate – policy framework • Managing body responsible for the running and functioning of the estate • Ensure that the rules and regulations of the estate are adhered to 	<p>Primary: Interview with the current Estate Manager.</p> <p>Secondary: Internet sources – MECCE website and the Design and Development Rules Handbook.</p>
Tongaat Hulett Developments (THD)	<ul style="list-style-type: none"> • Agri-processing business • Land developers of MECCE (including the layout planning of the estate) • Responsible for the majority of the developments particularly in eThekweni and KwaDukuza Municipalities • Ensure that sustainability is at the heart of every development undertaken • Owns relatively large tracts of land for agricultural purposes • Has developed more than 2 000ha of serviced land for residential, commercial, industrial, resort and mixed use purposes 	<p>Primary: Interview with THD Project Manager responsible for the development of MECCE.</p> <p>Secondary: Internet sources – THD website.</p>
MECCE Occupants	<ul style="list-style-type: none"> • Occupants of the estate that utilise its facilities and amenities • Interact with the built form within the Estate. • Different occupants with financial ability to reside within the Estate. 	<p>Primary: Interviews with the estate occupants (Closed-ended questions)</p>

4.5 Sampling

Systematic sampling was used to obtain a sample of key stakeholders as well as a diverse range of perspectives from estate occupants, regardless of their reasons for locating there, and typology (Dawson, 2009). To ensure that the information obtained from MECCE was not biased towards one village/group, stratified sampling was used. The selection of suitable candidates such as heads of households' saves time and money and also provides more accurate results than other sampling methods. A total number of fifteen residents were identified and and three key stakeholders noted in section 4.4 (Data sources).

4.6 Data Analysis

Thematic analysis was used to analyse the data. The researcher identified the dominant themes among the data collected and provided descriptive explanations of the qualitative data. Themes were identified on the basis of recurrence, repetition and forcefulness (Owen, 1984). Recurrence was noted when at least two opinions from the interviews had the same thread of meaning. The process of thematic analysis involved:

- Conducting interviews using a recorder and a note pad to capture key elements of the discussion.
- Preparing the data for analysis which included converting all recorded and hand written interviews into logical and understandable text.
- Reading the text and noting items of interest; this included initial listening to the recordings and re-reading of the text while annotating any thoughts in the margin. This set the scene for the emergence of the key themes identified in the findings section, rather than establishing and using predefined themes.
- Sorting items of interest into proto-themes; this involved taking note of the initial themes based on the overarching theoretical perspective.
- Examining the proto-themes and linking them with the themes emerging from the field.
- Constructing the final form of each theme; this included the name, definition and supporting data that was re-examined for final construction.
- Finalizing the name of each theme and providing its description, including a few quotations from the original text to help clarify meaning where relevant.

The data was obtained from the key stakeholders through primary and secondary data sources. Although these data sources have disadvantages, they were sufficient for the purpose of the study. Chapter five presents the data analysis and the findings.

5 Chapter Five: Findings and Analysis

The data obtained using the methodology described in the previous chapter were captured and put into themes for interpretation and analysis. Thereafter, analysis was carried out using the overarching theoretical perspective so as to determine the influence of MECCE in the pursuit of sustainable urbanism in eThekweni Municipality.

5.1 Mount Edgecombe Country Club Estate Developer (Tongaat Hulett Developments)

5.1.1 Background of THD

Tongaat Hulett Developments (THD) is an agri-processing business that integrates land management, property development and agriculture (THD, 2014). THD acts as a land developer that deals only with land-related issues, including layout and subdivision of a particular site. THD has developed more than 2 000ha of serviced land for residential, commercial, industrial, resort and mixed-use purposes. THD collaborates with key stakeholders and seeks to undertake projects on a massive scale in order to “leverage synergies and opportunities across agriculture, land management and property development portfolios” as well as create sustainable, long-term value for stakeholders (THD, 2014). THD’s role within the Northern region is to undertake exclusive residential developments, including MECCE, as well as industrial development together with mixed-use urban development at uMhlanga Ridge Town Centre.

THD has a high appreciation of the natural environment and sustainability. This is reflected in their policies together with “green” issues, health, safety and socio-economic factors. THD therefore ensures that the environments created consider these elements. Each development has its own Environmental Management Plan (EMP) and a comprehensive Environmental Impact Assessment (EIA) is undertaken before development commences (THD, 2014).

5.1.2 Vision and objectives

THD’s vision encompasses global best practices that appreciate the value of creating relevant, holistic liveable environments that ensure that one can “live, work, play, pray and learn within the fair share of the Earth’s liveable resources” (THD, 2014: home page). The main objective is to create environments that promote safety, health, and minimal harm to the environment arising from development activities.

It is clear that THD is a post-modernistic company that seeks sustainability in all of its developments. The company's definition and perception of sustainability is also clearly one that constantly evolves to adapt to changing built environment sustainability principles.

5.1.3 The role of THD in the establishment of MECCE

According to the interview with THD project manager, THD's involvement in the development of the estate encompassed two main processes – the EIA and the application of the Planning and Development Act (PDA). The EIA noted existing environmental, social and economic aspects. As the land developer, THD was also responsible for putting infrastructure in place, including roads, footpaths, and storm water and boundary walls.

In terms of social sustainability, THD considers the Living Standard Measure (LSM) the main determinant of social sustainability. LSM is a marketing research tool that is used to categorise different populations in relation to their living standards using criteria such as degree of urbanisation and ownership of cars and major appliance. LSM consists of 10 groups with 1 being the lowest and 10 the highest. In the context of MECCE, the development was largely developed for people with a relatively high LSM, as high as 10.

Economic sustainability was based on the availability of economic opportunities and the mixed-use developments surrounding MECCE. Locating some economic facilities within MECCE was not feasible due to the limited threshold within the boundaries of the estate.

In relation to environmental sustainability, during the establishment of MECCE, linking open spaces and the preservation of various species as well as biodiversity were considered vital aspects. THD also ensured that a managing body was established (MECC, MECCEMA 1, MECCEMA 2) with regulations that acknowledge and protect the natural environment and biodiversity. Thus the preservation of the wetlands and natural ecological systems were core to the development of MECCE. The principles of sustainability considered by THD can be summarized as follows: safety and health; the preservation of the natural environment; access to recreational facilities; sustainable corridors; and place making. These all act as subsets of social, economic and environmental sustainability.

5.1.4 Conclusion on THD's perspective of MECCE

To conclude this section, THD's perception of sustainability is one that looks at a larger precinct extending beyond the boundaries of the gated community. With regard to MECCE, THD clearly took surrounding land uses into consideration and established the estate in close proximity to key land uses, enabling residents to meet their day-to-day needs within an 800m and three-kilometre radius. MECCE was also developed in such a way that it does not deny surrounding developments access to major routes within the North Local Council jurisdiction. It is clear that MECCE was strategically located to ensure close proximity to social, economic and recreational facilities. However, it is vital to note that at the time it was developed, new urbanism and sustainable urbanism had not yet evolved to their present levels in the post-modernistic period. Therefore THD adopted sustainable development principles that did not consider sustainable urbanism principles as a means to sustainability.

5.2 eThekweni Municipality

While eThekweni Municipality sees urban sustainability its main development goal, the principles adopted may not include all sustainable urbanism principles such as localised food production and High Performance Buildings and infrastructure noted by Farr (2008). The municipality also acknowledges the need for social, economic and environmental sustainability along with integrated development. The extent to which these three key pillars are considered is not entirely in sync with the sustainable urbanism principles identified by Farr (2008).

According to interviews held with the northern regional coordinator of eThekweni Municipality, the MECCE was approved mainly for security reasons, as it is perceived that this urban form can curb fears of crime in South Africa. The municipality acknowledged that its role is to monitor and guide development within the estate through the managing agency (MECCEMA). The onus is therefore on MECCEMA to ensure that any development applications comply with the municipality's conditions for development. The municipality is not responsible for servicing the roads within the estate. However, as per the agreement with the estate, it manages sanitation, water, solid waste and electricity. Occupants pay rates to the municipality based on the value of their properties. However, limited access to the estate poses a challenge in terms of maintenance of the servitudes owned by the municipality within MECCE.

5.2.1 Policy Framework: Mount Edgecombe Scheme (policy guide)

The former North Local Council established the Mount Edgecombe Town Planning Scheme to ensure that all developments in Mount Edgecombe align with the Structure Plan that seeks to create sustainable urban environments. In the town planning scheme, Mount Edgecombe is defined as a distinctive middle-sized town that caters for a variety of “residential, employment and recreational needs of lower, middle and higher income groups” (NLC, ND: 62). It is noted that the spatial structure of Mount Edgecombe is disjointed, with three focal areas, including MECCE. The main land use zones in Mount Edgecombe are sugar cane zones in the south, low income housing in the eastern and northern parts, residential and recreational areas in the center and industrial and commercial zones to the west of Mount Edgecombe.

In relation to MECCE, the scheme acknowledges that the estate is a high-income, low-density area that attracts investors. As a result, the municipality perceives MECCE as a revenue generating opportunity through residential rates generated by high property values. The Mount Edgecombe Town Planning Scheme notes that residential units have a maximum height of three stories and that housing in the area should not have open vistas over fairways and greens. It adds that MECCE is characterized by cluster housing and a broad residential building definition that includes a variety of land uses (residential club, lodge, and hotel). Therefore, according to the Mount Edgecombe Town Planning Scheme, MECCE has to maintain its low density character in order to create opportunities for up-market housing.

5.2.2 Conclusion on eThekweni Municipality’s perspective of sustainable urbanism and gated communities

None of eThekweni Municipality’s existing institutions and councils that govern sustainability directly relates to sustainable urbanism and gated communities. However, with the concept of sustainability constantly evolving, it is likely that the municipality will embrace global concepts such as sustainable urbanism. The information obtained from the interviews highlighted that gated communities are potentially exclusive developments, which benefit only those that reside within them. The municipality also argues that, in the post-apartheid period, gated communities have become tools to promote class segregation. Nonetheless, it is acknowledged that estates such as MECCE attract higher income groups and investors and increase property values, which has a positive effect on municipal revenue in

the form of rates. Furthermore, estates such as MECCE reduce pressure on the municipality to maintain internal roads and open spaces within the estate. The municipality therefore accepts gated communities despite their potential to create fragmented urban areas. It also acknowledges its inability to address security issues and therefore accepts gated community developments as a tool to create secure, liveable environments.

5.3 Mount Edgecombe Country Club Estate Management (MECC, MECCEMA 1, MECCEMA 2)

5.3.1 Introduction and Background

MECCE is governed by three management bodies; Mount Edgecombe Country Club (MECC), Mount Edgecombe Country Club Estate Management Association 1 (MECCEMA 1) and Mount Edgecombe Country Club Estate Management Association 2 (MECCEMA 2). The focus is on MECCEMA 1 and MECCEMA 2 as they act as Home Owners' Associations that stipulate the rules and regulations that ensure a defined level of residential functionality and the continued sustainable existence of MECCE. MECC, MECCEMA 1 and MECCEMA 2 were established in the early stages of the development, before occupants took up residence so as to set development guidelines and ensure that new occupants adhere to them.

5.3.2 Sustainability: vision and mission

MECCE is moving towards becoming an eco-friendly estate with a high appreciation of environmental concerns in urban development. This vision is clearly articulated in the estate's policy framework.

5.3.3 Policy framework of Mount Edgecombe Country Club Estate

5.3.3.1 *Design and Development Regulations Handbook*

Developments within MECCE are guided by the Design and Development Regulations Handbook exclusively designed for the estate and subject to the municipality's regulations, which include SANS 10400. The handbook ensures uniformity in development within the estate; protects property values and determines the level of sustainability potentially above the eThekweni Municipality's stipulated level, as well as ensuring a relatively high level of environmentally sound developments. It provides a clear demarcation of the estate and its subsections.

The handbook perceives sustainable urbanism principles as key considerations within the estate. These principles include sustainable neighbourhoods, sustainable corridors and biophilia. However, the level at which these are considered varies and may not necessarily be at the level that sustainable urbanism defines as moving towards sustainability. The handbook also has the potential to adapt to evolving sustainability principles including those that South Africa adopts, such as Agenda 21. The annual revised edition incorporates a high level of sustainability that aligns with global debates on gated development sustainability as well as eThekweni Municipality's policy framework.

5.3.4 Summative remarks on gated communities and sustainability

In relation to gated communities, MECCEMA argues that the high demand for such developments has led to a revolution in gated developments with increased awareness and consideration of sustainability. MECCEMA notes that, throughout history, as debates on sustainability evolved; so did gated developments. The examples of MECCE 1, an apartheid development, and MECCE 2, a post-apartheid one, demonstrate the transformation of residential units developed in the light of sustainability. For example, alternative energy uses were not considered in MECCE 1, whereas MECCE 2 has taken these into consideration and made exceptions for facilities such as solar heaters and jojo tanks for storm water collection. Therefore, MECCEMA's standpoint is that gated communities such as MECCE are internally sustainable and show potential to link with the rest of the built form through recreational facilities. Not only do gated communities such as these offer internal sustainability, but MECCEMA notes the benefits that accrue to local municipalities (increased revenue through property rates and a reduced burden in maintaining infrastructure within estate boundaries). In relation to sustainable urbanism, MECCEMA argues that the concept is not yet cast in stone as it is not fully addressed in the South African policy framework.

5.4 MECCE affiliate organisations

5.4.1 Ezemvelo KZN wildlife

Ezemvelo KZN Wildlife is a provincial agency that promotes biodiversity conservation and related activities in KwaZulu-Natal. Ezemvelo seeks to protect regions with rich biodiversity in South Africa, including the North Local Council of eThekweni Municipality. Ezemvelo's vision is to become a leader in biodiversity conservation. Quality conservation and ecotourism are at the heart of Ezemvelo KZN Wildlife. Based on the National Environment Management: Biodiversity Act No. 10 of 2004, Ezemvelo

defines biodiversity as the “variability among living organisms from all sources including, terrestrial, marine and other aquatic ecosystems and ecological complexes...”

5.4.1.1 Role of Ezemvelo in MECCE

One of the major areas of management is the UMhlanga Ridge, which incorporates MECCE. The existing wetland and biodiversity within MECCE is highly protected and monitored by Ezemvelo KZN Wildlife. Existing wildlife and biodiversity in MECCE comprises of: wetlands birds; plant species; snakes; mammals – bushbuck, monkeys, blue duiker, impala, and mongoose; amongst many other species. The environmental management handbook for MECCE is made available to all occupants and sets out the different species and their specifications in relation to size, number and how best to relate to them. Therefore MECCE supports Ezemvelo Wildlife’s efforts. **Figure 8** shows biodiversity conservation in MECCE including wildlife and natural environmental corridors.

Figure 8: Wildlife and the natural environment in MECCE



Available: <http://q-ec.bstatic.com/images/hotel/max300/940/9404487.jpg> (Online). Date: 15 October 2014

5.4.1.2 Summative perspective of Ezemvelo on MECCE

Ezemvelo acknowledges that gated communities have the potential to support biodiversity conservation. MECCE is considered to have a relatively high level of biodiversity and the managing body (MECCEMA) has ensured that biodiversity conservation is one of the key elements in estate management. Ezemvelo also acknowledges that enclosed spaces for biodiversity conservation have the potential to ensure effective management and monitoring of alien species considered hazardous to indigenous species.

5.4.2 Association of Residential Communities (ARC) in eThekweni

The ARC supports residential estate communities, Home Owners Associations and body corporates in achieving their vision, which is mainly classified as protection, maintenance, and enhancement of the value of their property together with residents' lifestyles. Membership of the ARC can assist in effectively addressing the internal socio-economic issues that confront estates such as MECCE, including the management of amenities, lifestyles, and estate employees. In relation to sustainability and sustainable urbanism, the ARC has the potential to promote awareness of sustainability as well as the social, economic and environmental aspects of sustainability. As a member of the ARC, MECCEMA is committed to promoting sustainability. It has established effective management systems that ensure the estate's continued functionality as well as creating opportunities for better lifestyles that include social amenities and recreational activities within the estate.

5.5 MECCE Estate Occupants

5.5.1 Household selection

Fifteen households were randomly selected from MECCE as the estate's rules and regulations restricted door-to-door interviews. These households were selected from different villages under the supervision and approval of MECCEMA. However, only 13 households responded to the close-ended questionnaire and these were used to make assumptions about the estate's occupants.

5.5.2 Fieldwork procedures

The rules and regulations prohibiting door-to-door interviews that would have enabled the researcher to guide the respondents through the questions led to a number of questions being omitted. One example is the household's economic status and day-to-day activities, which required a more definite response than that offered by the closed-ended questionnaire.

5.5.3 Analysis

The questionnaires were analysed using Microsoft Excel. All the responses were captured and frequencies were established that were used to create tables. The information was then interpreted and analysed and included in the themes established in this chapter.

5.5.4 Household information

The majority of households comprised 1-3 people (75%) with 25% comprising 4-6 household members. In relation to household roles, more men/fathers responded to the questionnaire. This therefore indicates low densities within MECCE households and the domination of fathers (**Table 1**). Most households were comprised of older people with either one or two children who attend nearby boarding schools.

Table 1: MECCE Household Status

HOUSEHOLD STATUS						
Household Role	Father		Mother		Other	
	9	80%	4	20%	0	0%
Total Household number	1-3		4-6		7 and Above	
	10	75%	3	25%	0	0%

5.5.4.1 Occupants: economic status

Fifty five per cent of the participants reported a relatively high gross income of above R40 001 per month, with the majority (46%) self-employed. This suggests that MECCE residents have a relatively high gross income. Most of the participants reside in close proximity to their places of work (**Table 2**). However, the predominance of self-employed people and pensioners suggests that many key household members operate within the estate and are able to utilise its resources more effectively.

Table 2: MECCE Economic Status

Legend:

M – Mother

F – Father

ECONOMIC STATUS													
	N/A		Within Estate		UMhlanga		Ballito		Durban CBD		National		Total Percentage
Employed	F	M	F	M	F	M	F	M	F	M	F	M	F M
	0	0	0	0	0	0	0	1	0	0	0	0	0 8%

Self-Employed	0	0	0	2	1	0	0	0	2	0	1	0	31%	15%
Pensioner	5	0	0	0	0	0	0	0	0	0	0	0	38%	0
Unemployed	0	1	0	0	0	0	0	0	0	0	0	0	0	8%
Total	38%	8%	0%	15%	8%	0%	0%	8%	15%	0%	8%	0%	69%	31%
Percentage	46%		15%		8%		8%		15%		8%		100%	

5.5.4.2 Occupants: location

With regard to location, the majority of the participants (75%) were previously located in KZN and moved to MECCE due to its relatively close proximity to social and economic facilities. Some (25%) were from outside the province and also moved to MECCE to take advantage of its strategic location. Moreover the findings indicate that security and lifestyle were the two key reasons why the majority of the households relocated to MECCE. Further probing revealed that all the participants intend to remain at MECCE permanently, which demonstrates the estate's ability to attract and retain residents. **Table 3** below shows the location attributes valued by the participants. Thus one can conclude that the ideal location of the estate and the social amenities, lifestyle and security it offers attracted the majority of the participants and created a platform for permanent occupation.

Table 3: MECCE Location and type of dwelling unit

LOCATION										
Location			Security		Lifestyle		Close to work and schools		uMhlanga Urban core	
	Permanent		9	56%	5	32%	1	6%	1	6%
	Temporary		0	0%	0	0%	0	0%	0	0%
Type of dwelling Unit	Attached		Other		Detached		Semi detached			
	2	15%	2	15%	9	70%	0		0%	

5.5.4.3 Occupants: tenure and typology

Turning to tenure and typology of units, the majority of the participants occupy detached units (70%) and the preferred type of tenure is freehold ownership (90%). This underlines the participants' intention of making the estate their permanent home. However, the availability of rental tenure creates a platform

for a mixture of tenure options within MECCE. According to the participants, most of the units are large units that accommodate an average of three people, mainly families and relatives.

5.5.4.4 Occupants: transportation

Transportation and access to day-to-day needs were cited by the participants as vital components and functionalities within the estate. Most of the respondents make use of private vehicles both within and outside the estate. Within the estate, other options include cycling; walking and golf carts (48%), which are utilised to access the different social amenities within the estate boundaries. Beyond the estate boundaries, a private car is the preferred mode of transport, for reasons of convenience and security, despite the close proximity to socio-economic amenities. This highlights fears of crime; the participants indicated that day-to-day needs are preferably met using a private car (93%) and very few (7%) walk. **Table 4** below illustrates these findings.

Table 4: MECCE Transportation options

TRANSPORTATION						
Transportation options	Within MECCE		Outside MECCE		Day-to-day	
Private Car	11	52%	13	100%	13	93%
Community bus/ shuttle	0	0%	0	0%	0	0%
Cycling	1	5%	0	0%	0	0%
Walking	5	24%	0	0%	1	7%
Other (Golf Cart)	4	19%	0	0%	0	0%
Total	21	100%	13	100%	14	100%

5.5.4.5 Occupants: social and recreational facilities

The participants reported that the social and recreational facilities offered by MECCE are highly appreciated and often used; the majority defined them as 'satisfactory'. The findings indicate that the recreational facilities are used on a weekly basis with the majority engaging in sporting activities. The

findings also revealed that events that promote social integration are not as well-patronized as other commitments, particularly economic activities, tend to occupy most of the residents' time. **Table 5** below shows the responses on social and recreational facilities. One can therefore conclude that there is a reasonably high level of interaction amongst the estate occupants.

Table 5: Recreational facilities and social events

	Weekly		Fortnightly		Monthly (2 weeks)		Not too often		Total	
Recreational facilities usage	8	62%	2	15%	2	15%	1	8%	13	100%
Social Events within MECCE	3	23%	1	8%	3	23%	6	46%	13	100%

While there are currently no agricultural activities within the estate, only 8% of the participants had an appreciation of agriculture beyond the estate boundaries. They highlighted that agriculture was currently not part of their activities within and beyond the estate boundaries.

5.5.5 Occupants: summation of responses

The findings of the study show that the dominant group within MECCE has high gross income levels and that many are pensioners or self-employed. The participants signalled their intention to make the estate their permanent home and expand their families in the long run. The close proximity to social amenities and recreational facilities within MECCE is appreciated. The preferred form of tenure is ownership with typically detached units, which reinforce the desire to permanently reside within the estate, representing a lifetime investment.

With regard to transportation, MECCE residents are largely dependent on private cars within and beyond the estate boundaries; this is greatly influenced by the fear of crime beyond the estate boundaries as well as convenience. However, walking, cycling and golf carts are also used within the estate to a limited degree. One can therefore conclude that two different lifestyles co-exist within MECCE and beyond MECCE's boundaries. Within MECCE, social and recreation facilities offer an upmarket lifestyle that is satisfactory to the occupants. Furthermore, security within the estate encourages other means of transport and a higher level of interaction with those residing within MECCE. Beyond the estate boundaries, fear of crime influences travel options, with the majority

preferring private transportation. Interaction with the urban built form beyond the estate boundaries is limited; the participants reported that this is limited to obtaining their day-to-day needs and sometimes for economic reasons.

5.6 Neighbourhood completeness: Social Amenities within and beyond MECCE

MECC manages the two golf courses, sports clubs (squash, tennis, fishing and bowling), and the clubhouse (conferences, weddings, venue hire, and restaurant). These facilities have a threshold that extends beyond MECCE boundaries. The MECCE 2 Estate Manager noted that occupants highly value and use these amenities. The facilities promote healthier lifestyles. The close proximity of MECC facilities to MECCE residents encourages alternative transport options to cars, including walking, cycling and golf carts. These facilities also offer opportunities for community interaction and encourage community members to socialise as well as step out of the shell created by the fear of crime and the unknown.

MECCEMA 1 and MECCEMA 2 offer a wider range of social amenities to their occupants that extend beyond MECC. MECCE offers the following amenities:

- Community centers with swimming pools and a jungle gym (strategically located within MECCE to ensure effective utilisation and within walking distance). **Figure 9** shows the type of community centers on the estate. The community centers are available for corporate meetings, parties, braais and other related social activities. They are reserved for MECCE residents and have to be booked in advance. There is a high level of usage and appreciation of these facilities (MECCEMA, 2014).

Figure 9: Type of community centres developed in MECCE



Available: http://1543843a4723ed2ab08e18053ae6dc5b.cdn.ilink247.com/ClientFiles/meccematwo/MountEdgecombeEstateTwo/Company/Images/6562_0961015851.jpg (Online). Date: 15 October 2014.

- The MECC Clubhouse offers world-class facilities that cater for a variety of group sizes in different function rooms. It can accommodate weddings, conferences and related social events. The clubhouse shown in **Figure 10** is open to anyone who can afford it and has an in-house restaurant that is frequented by both MECCE occupants and non-occupants.

Figure 10: MECCE clubhouse



Available: <http://mountedgecombe.com/mecc/wpcontent/themes/guesthouse/AIT/Framework/Libs/timthumb/timthumb.php?src=http://mountedgecombe.com/mecc/wp-content/uploads/2013/04/mecc-home-clubhouse.jpg&w=980&h=430> (Online). Date: 15 October 2014.

- Golf courses and related amenities including golf carts for hire, a pro shop, and a floodlit driving range within walking distance of estate occupants. These are open to anyone who can afford to pay for such facilities. The established golf courses also act as vibrant social amenities which attract many players from around the world. **Figure 11** shows the golf courses and their close proximity to dwelling units within the estate boundary as well as little interference with the biodiversity corridors.

Figure 11: Golf courses in MECCE



Available: <http://www.golfoncourse.co.za/images/MT%20Edgecombe%20Golf%20Club/Mount%20Edgecombe%20Country%20Club%202%20pic%2013.jpg> (Online). Date: 15 October 2014.

- The MECCE watercourses provide an opportunity for fishing and are open to members, who may not necessarily reside in the estate. The estate hosts annual competitions that attract many

anglers. The fishing course consists of two main courses with highlighted areas where members can fish. **Figures 12 and 13** show the two fishing courses and the opportunity presented for social integration and interaction between members residing in MECCE and those living beyond the estate boundaries.

Figure 12: Fishing related activities in MECCE



Available: <http://mountedgecombe.com/mecc/wp-content/uploads/2013/04/mecc-fishing-course-1-north.jpg> (Online). Date: 15 October 2014.

Figure 13: Fishing club members coming together for an annual fishing competition



Available: http://mountedgecombe.com/mecc/wp-content/uploads/2013/05/DX_4743.jpg (Online). Date: 15 October 2014.

5.6.1 Summative remarks on neighbourhood completeness: social amenities

It is clear that MECCE offers a diverse range of social amenities that enhance lifestyles within its boundaries. The relatively high usage of these facilities as reported by MECCEMA indicates that levels of social interaction and, potentially, social sustainability are of great relevance in MECCE. Some of these amenities are available to both occupants and non-occupants; this means that the exclusive nature of MECCE is minimized. However, these amenities still cater for a particular class of people, mainly those who can afford the type of lifestyles offered.

5.7 Connectedness: Transportation, accessibility and corridors

MECCE offers a wide range of travel options within the estate. Occupants cycle, walk, jog and use golf carts as a means of travel. **Figure 14** and **Map 2** show the different travel options and infrastructure within the estate.

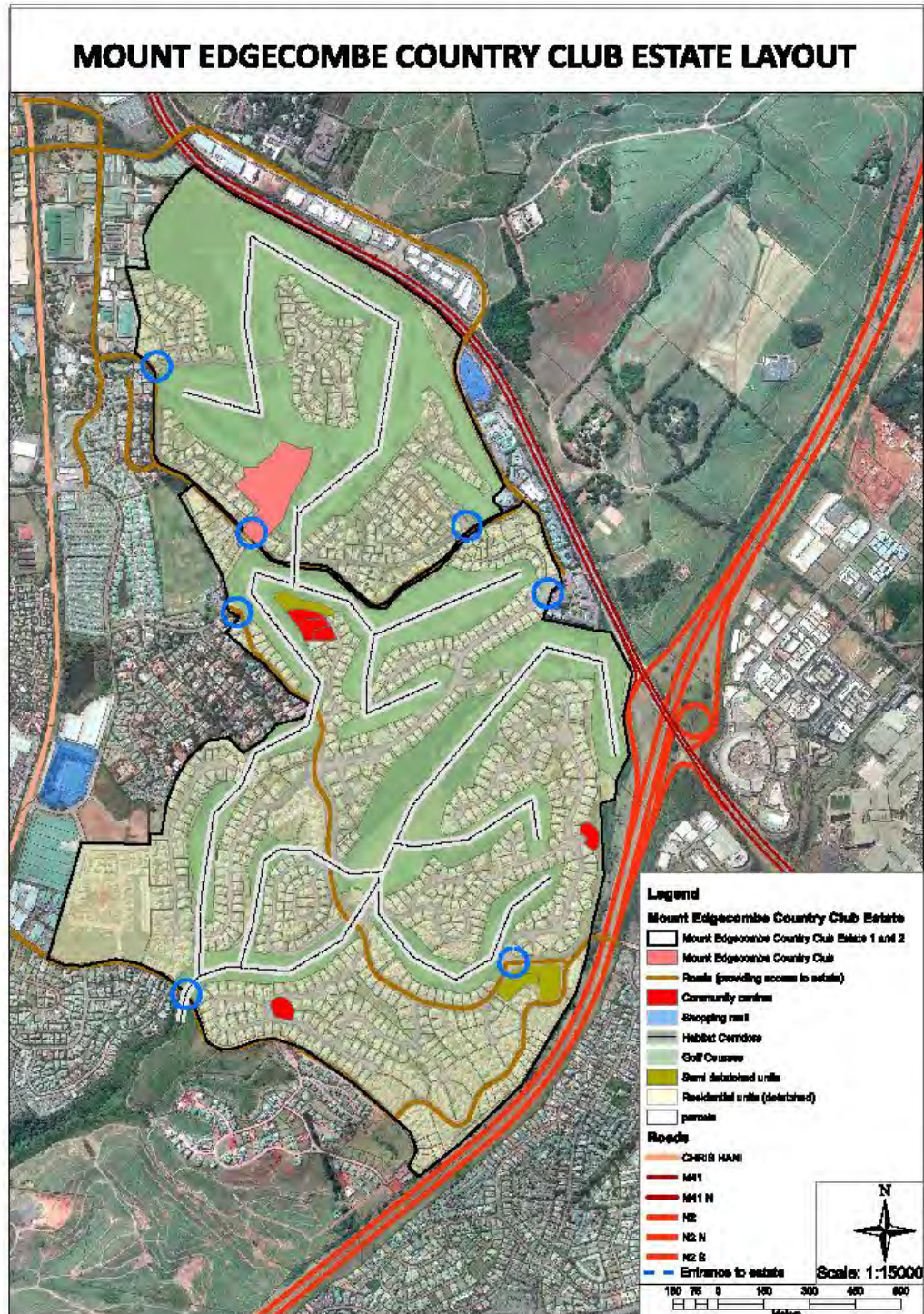
Figure 14: Different transport options within the MECCE

Infrastructure/ service	Attributes	Images of MECCE infrastructure
Roads	<ul style="list-style-type: none"> ➤ Existing paved double lane roads with storm water management system ➤ Speed control measures in place including speed humps and warning signs ➤ Turning circles used at most intersections and no robots ➤ Street lighting on paved roads (ESKOM powered) ➤ Road network system accessible to all residential sites ➤ Mainly cul-de-sac roads 	 
Footpaths	<ul style="list-style-type: none"> ➤ Paved footpaths throughout the estate ➤ Street lighting on some footpaths (ESKOM powered) ➤ Low traffic volumes encourage local roads to be used for jogging and walking ➤ Network system ensures ease of access to amenities within MECCE 	
Cycle and jogging paths	<ul style="list-style-type: none"> ➤ Along footpaths and golf cart paths ➤ Multipurpose - suitable for cycling and walking ➤ Jogging club promotes the use of these paths 	
Golf cart paths	<ul style="list-style-type: none"> ➤ Paved golf cart path for the convenience of those wanting to use the golf course and accessible to all social amenities within estate boundaries ➤ Accessible to all estate residents ➤ Also used for walking and jogging 	

Source: Researcher (20 November 2014)

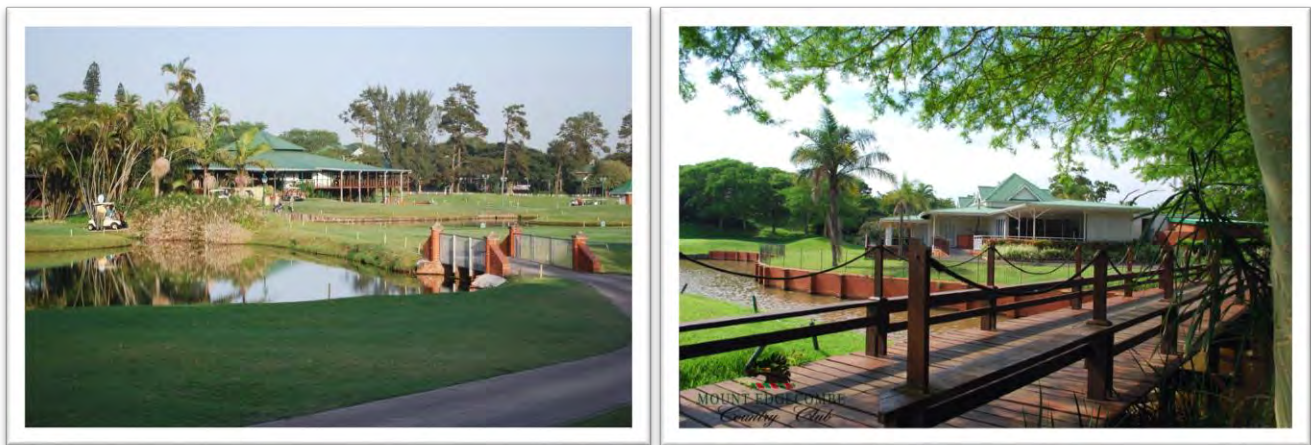
Map 2: Mount Edgecombe Country Club Estate sustainability corridors and access points

Map 2: Mount Edgecombe Country Club Estate sustainability corridors and access points



MECCE incorporates two key corridors identified as sustainable urbanistic corridors. These include biodiversity/habitat corridors and TODs as indicated in the map on page 70. From a residential perspective, sustainable corridors are monitored within estate boundaries. **Figure 15** shows some of the infrastructure that has been developed taking existing watercourses into account.

Figure 15: Pathway Bridge over stream



Available: <http://static.panoramio.com/photos/large/10347525.jpg> (Online). Date: 15 October 2014.

5.7.1 Summative remarks on transportation, accessibility and corridors

While MECCEMA recognizes occupants' appreciation of transit-oriented development within the estate, there is no form of public transport as the threshold is deemed insufficient. However, a number of buses owned by MECCE are used to transport employees within the estate. In contrast to MECCEMA's claims of a relatively effective internal transport system, eThekweni Municipality argues that fear of crime and the unknown in such gated residential developments discourage the use of forms of transport other than cars beyond the estate boundaries. As a result, estate dwellers may not opt to walk to facilities beyond MECCE boundaries even if these amenities are within 800m of the estate. Limited transit development options beyond the estate boundaries such as a lack of secure footpaths and cycle paths also pose a challenge to MECCE occupants opting for alternative forms of transport.

It can therefore be concluded that MECCE consists of potentially sustainable corridors and ensures the maintenance and effective utilization of transit-oriented developments within its boundaries. However, beyond the estate boundaries, factors such as fear of crime and lack of transit-oriented development

options encourage occupants to use automobiles as a means of transport despite the close proximity of social and economic facilities.

5.8 Economic aspects of MECCE and occupants

MECCE is a high-income estate that requires a relatively high level of maintenance. It employs approximately 2 000 people who do not live on the estate. These include gardening, house cleaning, golf course maintenance and many other related jobs. Public transport is highly utilized by estate employees but the route does not fall within the estate boundaries. MECCE has purchased buses that travel within estate boundaries, dropping off employees at their respective places of employment. These buses run according to a timetable. However, the estate has not made any provision for employee accommodation within close proximity of the estate. Employees are responsible for their own accommodation and the majority live far from MECCE.

On the other hand, MECCE occupants exploit employment opportunities outside estate boundaries. Notably, some of the occupants are investors and business people with the ability to manage their businesses using telecommunications within the estate. Others, particularly those under sectional title, are employees in uMhlanga Ridge, which falls within a 3km radius. There are also occupants that travel for business and use the airport on a regular basis.

5.9 Environment and biophilia

MECCE has a high appreciation for environmental considerations, reflected in biodiversity conservation and large plantations across the estate. The preserved biodiversity corridors are home to a variety of species and create an environmentally sound setting. MECCE garden design guidelines enable occupants to design integrated gardens that do not compromise the quality of the environment. The developed units reflect the high quality of the environments created. Tree species provide natural cover for roads and footpaths. The estate is generally cool and little or no cutting down of trees is permitted within MECCE boundaries. The biophilic element of human connectedness to nature is highly appreciated by occupants as many enjoy walking, running, and cycling in the estate's open spaces. **Figure 16** shows the quality of the natural environment that MECCE preserves.

Figure 16: Biodiversity conservation and high quality environment in MECCE



Available: <http://www.meccematwo.co.za/Gallery/ResponsiveGallery.aspx?PageId=145&CategoryId=0>

(Online). Date: 15 October 2014.

Available: <http://mountedgecombe.com/gallery/> (Online). Date: 15 October 2014.

5.10 Energy efficiency of home design in MECCE

As noted above, MECCE's level of energy efficiency is largely determined by eThekweni Municipality's regulations on residential development – particularly SANS10400. However, the design and development regulations handbook is compiled in a manner that considers sustainability of the built form and is not limited to the municipality's regulations. Energy efficiency in MECCE is set down in this handbook.

The handbook considers the following key energy efficient home designs: orientation of house – north facing units to utilise winter sunlight; building materials – use of standard building materials that are locally produced as stipulated in the design handbook; weatherisation and ventilation – use of patios and efficient windows in all rooms ensuring natural sunlight and ventilation; pitched roofs – storm water collection, prolonged life span and loft area space; fresh air ventilation panels in all units; insulation for regulating indoor temperatures; and the use of colours that blend with the environment and contribute to the regulation of indoor temperatures. **Figure 17** below shows some of the aspects relating to energy

efficiency. All the houses are similar in design and material as stipulated by the estate design handbook. Therefore, uniformity exists across MECCE dwelling units and a level of energy efficient home design is acknowledged.

Figure 17: A typical residential unit in MECCE (4 bedroom house)



Available: http://prppublicstore.blob.core.windows.net/live-za-images/property/542/11/1222542/images/property-1222542-42094612_e.jpg (online). Date: 20 October 2014.

In relation to natural resource efficiency, MECCE has recently endorsed solar panels as an energy source. This was influenced by eThekweni Municipality's policy framework, which encourages residential dwellers to use solar panels. The response is relatively low at present as it is considered an additional cost that few occupants are willing to embrace. No waste and solid water recycling is permitted within MECCE at present, as the municipality caters for these services. The potential for the estate to embrace such recycling is relatively limited due to its boundaries. However, MECCE does present opportunities for recycling plastic, glass and cans. Recycling bins are made available in close proximity to different villages within the estate. Recycling companies collect once the bins are full. It was noted that the occupants are actively involved in this project; bins are quickly filled with their respective materials.

In summary, sustainable urbanistic principles are evident at MECCE, but are largely dependent on eThekweni Municipality's policy framework. The design and development regulation handbook that is regularly reviewed demonstrates gated communities' potential to create units that are energy efficient.

As the management body, the MECCEMA has a relatively high level of influence on activities within the estate. However, the limitation is that existing environments beyond MECCE's boundaries that occupants engage with may not necessarily be able to adopt the same principles.

5.11 Compactness (density) and tenure type

In relation to compactness, the eThekweni Northern Region Scheme classifies MECCE as a low-density residential development. With the exception of MECCE, Mount Edgecombe has relatively high residential densities. EThekweni Municipality aims to promote compactness through surrounding developments, as the area is regarded as well-located land. MECCE has the ability to reduce plot sizes to under an acre, with the majority ranging from 500m² and 2 500m². The population density of the estate is approximately eight people per acre. There are approximately 1.5 dwelling units per acre without taking into consideration the existing wetlands and golf courses within MECCE boundaries. Thus the estate is estimated to consist of 4.5 dwelling units per acre, which is relatively low density.

MECCE also makes provision for simplex and duplex units, which potentially enable each unit to accommodate more than one household. The maximum permitted height of dwelling units is three storeys. Most of the units are detached, with very few semi-detached units under sectional title. However, the high costs of serviced sites in MECCE encourage occupants to build large houses capable of accommodating a relatively large number of people. Some developments within the estate are used for rental purposes, which may be on a monthly or daily basis.

5.12 Integrated Design

EThekweni Municipality notes that jogging paths, golf courses and existing amenities in Mount Edgecombe, including MECC for estate occupants and non-occupants, have the ability to create linkages and enhance the viability of open spaces. It is vital to note that in attempting to promote mixed residential developments, MECCE's primary goal would be to host the low-density residential aspect and contribute to Mount Edgecombe's integrated development goal. An integrated design also highlights the importance of integrating the environment, infrastructure and the built form. The findings of this study show a relatively high level of integration.

5.12.1 Location and immediate surrounding areas

MECCE is considered well-located land with the surrounding key land uses indicated in **Maps 3 and 4** below. These are the day-to-day services that are required and that fall within a three-kilometre radius of the estate. There are also convenience stores and shopping complexes within 800m. The shopping complex located at X, north of MECCE, is highly utilized by MECCE occupants to meet daily food needs. X represents the Flanders Mall that is home to upmarket, low order goods including a fast food court, video club, and retail store (Woolworths). A relatively high percentage of MECCE occupants use this facility on a daily basis. To reach these facilities, occupants prefer to use cars rather than walking or cycling because of the fear of crime beyond MECCE's boundaries. However, a few residents regularly walk to X.

Y, west of MECCE, is the Mount Edgecombe Plaza that offers similar facilities to those located at X, but with a more diverse range of cellular-phone related services, retail stores (Shoprite), fast food and banking services. These are also low order goods that mainly target middle class earners. MECCE occupants utilize these facilities on a weekly basis, travelling to and fro by car. This suggests that MECCE occupants are more inclined to use the upmarket facilities located at X than Y that targets middle and low-income earners in Mount Edgecombe.

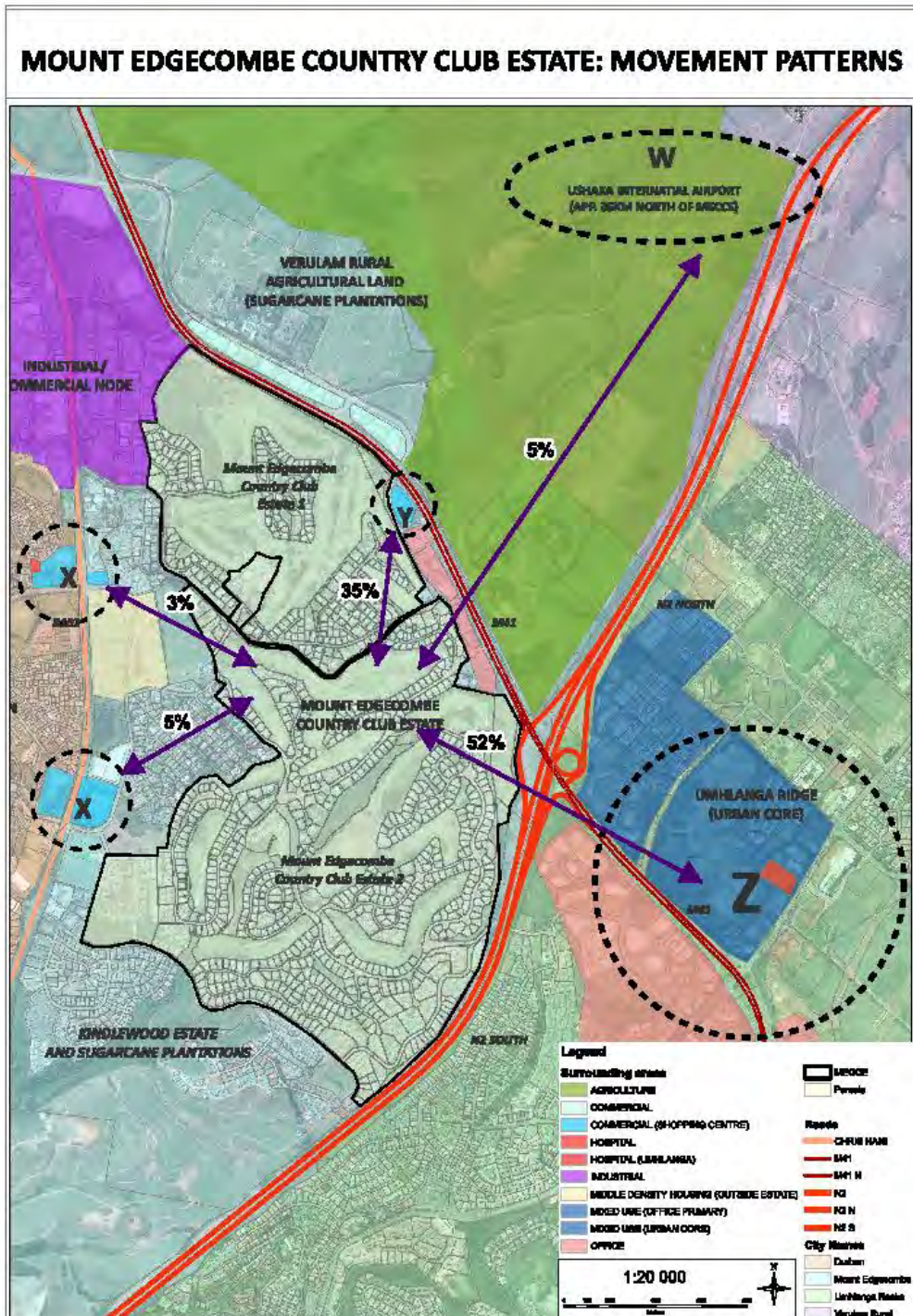
Z, east of MECCE, is a mixed use urban core that offers a wide range of services including both low and high order goods. Z, also known as the Umhlanga ridge core, has businesses centres and a large regional shopping mall, Gateway. MECCE occupants have a relatively high appreciation of Z with its new urbanistic form offering a wide range of socio-economic facilities that are sought on a weekly basis. Further down from Z is the coast. MECCE occupants are drawn to this area on a regular basis (weekend). The mode of travel is limited to cars as the national (primary road) road (N2) poses a challenge to walkability and cycling due to fast moving traffic and high volumes along the N2 and the M41 as shown in *Maps 3 and 4*.

W, the international airport, has also contributed to investors purchasing units in MECCE. The MECCE manager noted that some occupants travel to and from the airport on a weekly basis, using cars to get there, as the airport falls outside the three-kilometre radius.

To the south of the estate is agricultural land with sugarcane plantations currently being converted into a residential gated community – Kindlewood Estate. A few units are complete. MECCE has no relationship with this newly-established estate, although similarities can be noted in development style.

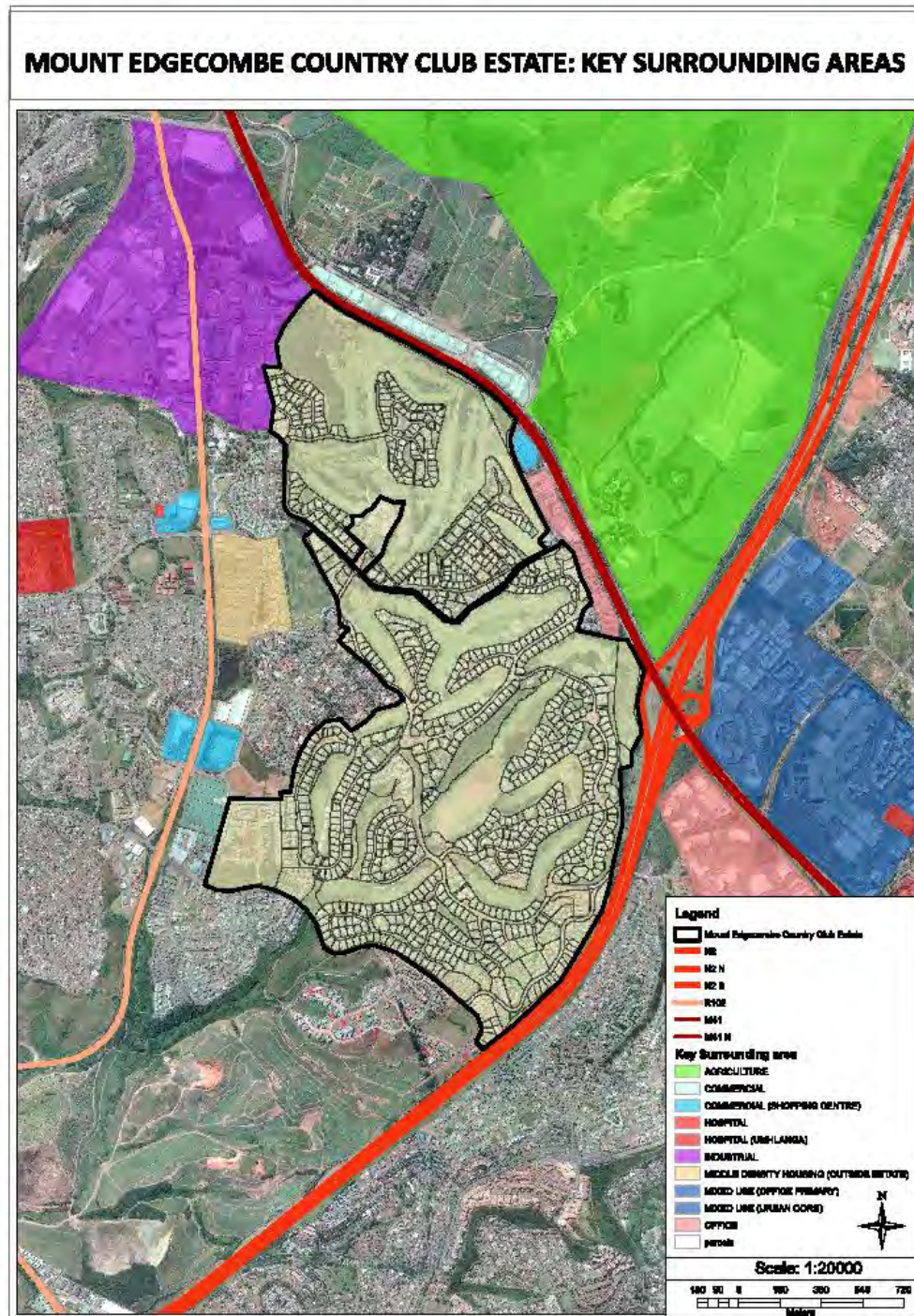
Map 3: Movement patterns

Map 3: Movement patterns



Map 4: Mount Edgecombe Country Club Estate: Key Surrounding areas

Map 4: Mount Edgecombe Country Club Estate key Surrounding areas



5.13 Analysis of results

The analysis is based on sustainable urbanism principles, using gated communities an urban built form, established in the conceptual framework, which acts as the overarching perspective. **Tables 6 and 7** show, the main themes established in the conceptual framework. Thematic analysis is a realist method to report the participants' experiences, meaning and reality (Braun & Clarke, 2006). Therefore the analysis of data is simply a summary of the findings on MECCE that relate to its compliance with sustainable urbanism principles. The following categories were identified to determine the level of services:

Table 6: Thematic analysis of sustainable neighbourhood principles (sustainable urbanism)

NEIGHBOURHOOD ATTRIBUTES	BRIEF DESCRIPTION	MECCE
Neighbourhood definition	• Identifiable centre and edge to the neighbourhood	Yes
	• Walkable size 40 – 200 acres	Yes (internally)
	• Integrated network of walkable streets	Yes (internally)
	• Sites reserved for civic purposes	Yes
Neighbourhood completeness	• Close proximity to vital land uses including health facilities, community centres, education, convenience stores, open spaces	Fair: within a 3-kilometre radius
Neighbourhood housing	• Diversity in housing typologies and tenure options	Limited internally
Car-free housing	• Mixed use, transit service corridor	Fair (limited services internally)
	• Encouraging means of transport other than automobiles	Fair (limited internally)
Neighbourhood retail	• Corner stores, convenient centres and neighbourhood centres	Yes (externally)
	• Business practices	Yes (self-employed)
Economic benefits of locally owned stores	• Local advantages relating to labour, profits, charity and civic	Fair (employment opportunities created)
Healthy neighbourhoods	• Greenery, walkability, connectivity, lighting, bike-ability, aesthetics, and convenience	Yes (internally)
Universal basic home access (including the disabled)	• One zero-step entrance	Yes (specific units)
	• Passable interior doors	Yes (specific units)
	• Usable bathrooms	Yes (specific units)
Managing travel demands	• Residential and employment density	No – limited threshold and self-employed (automobile dependent)
	• Diversity of land use types	Yes: within a 3-kilometre radius
	• Walkable design	Yes (internally) No and limited (externally)

Table 7: Thematic Analysis of sustainable urbanism principles

Sustainable urbanism principles	MECCE description
<i>Defined centre and edge</i>	<ul style="list-style-type: none"> • MECCE boundaries act as defined edges • There is no defined centre • A number of strategically placed community facilities act as nodal points for each section of MECCE
<i>Compactness</i>	<ul style="list-style-type: none"> • Low density at 1.5 dwelling units per acre (shortfall of 5.5 dwelling units for sustainable urbanism) • Large duplex and semi-duplex units • Detached and semi-detached units
<i>Completeness</i>	<ul style="list-style-type: none"> • Offers a wide variety of land uses highly; utilised within and beyond estate boundaries • Relatively low percentage of land uses offered in the light of sustainable urbanism • Automobiles still used to access these facilities
<i>Connectedness</i>	<ul style="list-style-type: none"> • High level of connectedness within estate boundaries – walkability, cycling and golf carts • Limited levels of connectedness beyond estate boundaries – high levels of automobile usage
<i>Sustainable corridors</i>	<ul style="list-style-type: none"> • Corridors through estate and to major transport corridors including the national highway • Opportunities for transit-oriented developments linked to MECCE not yet developed • Habitat corridors existing within the estate
<i>Biophilia</i>	<ul style="list-style-type: none"> • High appreciation of nature and natural systems as well as opportunities for occupants to connect with nature through social amenities and footpaths • High level of environmental appreciation by estate occupants and estate management • High levels of environmental preservation in MECCE • Limited to MECCE boundaries
<i>High performance infrastructure</i>	<ul style="list-style-type: none"> • A relatively high quality level of infrastructure including sidewalks, public right of way, encompassing streets and sidewalks, storm water infrastructure, landscapes, and street elements • No underground utilities; storm water connecting to municipal storm water • High use of cul-de-sacs which are sustainable
<i>High Performance Buildings (HPBs)</i>	<ul style="list-style-type: none"> • Residential units and energy efficiency limited to the status quo – dependence on municipal services including water, electricity and sanitation

	<ul style="list-style-type: none"> Limited number of units (less than a third) with solar panels and jojo tanks
<i>Integrated design</i>	<ul style="list-style-type: none"> Performance cost considerations relatively low due to the ability to pay for the required energy-reliant services Infrastructure quality levels limited to MECCE boundaries Key land uses located within close proximity of the estate Consideration of the need for social and economic facilities is evident in surrounding land uses

5.14 Conclusion

The findings of this study show that, MECCE has the potential to become a sustainable urbanistic neighbourhood internally. The management bodies play an important role in the ability of gated communities such as these to maintain an acceptable level of sustainability, despite the existence of the estate's two distinct historical periods – apartheid and post-apartheid. However, the level of sustainability relates to sustainable urbanism – sustainable neighbourhoods. The way in which MECCE functions largely reflects the South African context, namely, the mushrooming of such urban built forms and fear of crime. Internally, alternatives to automobiles are utilised, including golf carts, walking and cycling; this indicates a safe environment that does not, however, extend beyond MECCE's boundaries. MECCE occupants appreciate the preservation of the internal environment; this is evident in their willingness to abide by the rules and develop highly vegetated individual sites. MECCE also reflects a uniform and defined level of energy efficiency, amongst other sustainable urbanism aspects, in all of its built form developments. In relation to sustainable urbanism, the concept as perceived by Farr (2008) has not been adopted in its entirety due to a lack of knowledge of principles such as high performance infrastructure and buildings. However some of the key principles, including sustainable corridors, environmental sustainability, and social amenities are recognized within MECCE boundaries and a relatively high level of consideration is notable.

Estates such as MECCE have the potential to adopt key sustainability principles over time internally, but only to the extent to which they do not infringe on investors' vested interests. The existing golf course and other social amenities that are accessible to the general public build communities. The findings also revealed that MECCE occupants have a high level of participation in and appreciation of these facilities. Thus, social interaction exists in MECCE, but is limited to those that share a particular interest. Notably, the findings also reflect that a high percentage of those that live at MECCE were attracted by the social amenities on offer.

Although MECCE has a variety of social and economic facilities within close proximity (three-kilometre radius), the challenge remains to ensure sustainable urbanistic principles such as transit-oriented developments, which extend beyond the estate's boundaries. As noted by Landman (2004), the fear of crime and the unknown that exist beyond the estate's boundaries discourage alternative modes of travel other than automobiles, regardless of the close proximity of social and economic facilities. Consideration of the sustainable urbanistic principles that acknowledge the provision of economic facilities and transit-oriented developments is, however, largely dependent on threshold populations. MECCE has a relatively low population threshold to support such facilities and developments. The fact

that only those with the ability to pay high prices can buy into the estate limits the threshold within, as many investors do not necessarily reside in or carry out their daily activities within the area. This challenges the provision of social and economic facilities within and around the estate. The findings indicate that the limited activities undertaken by MECCE occupants within the immediate surroundings are due to many being self-employed and working outside of eThekweni boundaries. While the increase in MECCE's population has led to the development of a convenience centre within a 800m radius, occupants still prefer to use cars to access the centre due to fear of crime beyond the estate's boundaries. One can therefore conclude that while, on the one hand, gated communities such as MECCE have a relatively high internal level of appreciation of sustainable urbanism and sustainability, on the other, sustainable urbanistic principles such as sustainable corridors and transit-oriented developments are not effectively utilised by MECCE occupants beyond the estate's boundaries. The findings therefore suggest a distinct difference between settings, with a high level of internal sustainability and a challenge in promoting some sustainable urbanism principles such as environmental sustainability, continual sustainable corridors and transit-oriented developments externally.

6 Chapter six: Conclusion and recommendations

6.1 Introduction

This chapter presents a summary of the dissertation, highlighting the key themes emanating from the questions established in chapter one. The main aim of this study was to determine the influence of gated communities, principally large security villages, in the pursuit of sustainable urbanism in eThekweni North. This chapter includes reflections on the method of analysis and the findings relating to the case study, Mount Edgecombe Country Club Estate. It considers how the objectives and sub-objectives, questions and sub-questions were met. Finally, concluding remarks are presented on the implications of large security villages for sustainable urbanism as a concept.

While the primary goal of any form of development in South Africa is sustainability, its meaning and interpretation vary. One of the means to achieve sustainability is sustainable urbanism, a concept that is mainly used in developed countries. There is much debate in the literature on this concept. Farr's (2008) conclusion that it represents a form-based preference has been given significant weight in this study. This perspective suggests that sustainable urbanism relates to key attributes which can be used to measure gated communities as an urban built form. This approach enabled the researcher to determine the indicators of sustainable urbanism using gated communities as an urban built form as well as eThekweni Municipality's policy framework on sustainable urbanism. With regard to the former, the conceptual framework indicated that gated communities, particularly security villages, can be viewed as fulfilling the functions of neighbourhoods; therefore the principles of sustainable neighbourhoods in the light of sustainable urbanism were explored. With regards to the latter, the national policy framework indicates a relatively high appreciation of sustainability and sustainable development, which shares some of the key sustainable urbanism principles acknowledged in this study. The evolution of sustainability in South Africa, post-1994 included the adoption of key sustainable urbanism principles including sustainable corridors, biophilia, and energy efficient building designs. Environmental sustainability which focuses on urban design with nature is at the heart of sustainable urbanism. This is reflected in eThekweni Municipality's policy framework in the form of various regulations and systems, including NEMA and D'MOSS, that seek to protect the natural environment. It is clear that the municipality subscribes to sustainable urbanism principles to a moderately high degree, particularly with regard to the processes which all forms of developments have to comply with.

6.2 Reflecting on the analysis

Thematic analysis was appropriate for this study as it enabled the extraction of key information from the case study against the background of the sustainable urbanism principles acknowledged. This section provides a summary of the findings relating to the following sub-objectives of this study:

- The nature, extent and effect of gated communities in eThekweni North
- The key themes relating to gated communities and sustainable urbanism established from the findings
- Concluding remarks on the influence of MECCE in the pursuit of sustainable urbanism

6.2.1 The nature, extent and effect of gated communities

In determining the nature and evolution of gated communities throughout the world, especially South Africa, it was established that gated communities have always involved some form of segregation and fragmentation. It is argued that the nature of gated communities as enclosed developments with restricted access is one of the key attributes that exacerbate segregation and fragmentation, despite justifications for their existence. In the South African context, high crime levels have influenced the nature of gated community developments and accelerated their growth as well as their evolution. With regards to evolution, gated communities in South Africa have evolved in typology to the present time that is dominated by two key typologies: security villages and enclosed neighbourhoods, with the former having more influence in the post-modernistic period in terms of urban sustainability. As noted in the findings, to a limited degree, social, economic and environmental considerations form part of gated community developments, both internally and externally. The findings of this study further show that some of the attributes of gated communities, especially security villages, can be linked to sustainable urbanism both within and beyond the development. The themes established in the chapter on the findings were used to highlight the nature, extent and effect of gated communities and were summarised as follows:

6.2.2 Positives of Mount Edgecombe Country Club Estate (MECCE)

The findings of this research study echo Metwally & Abdalla (ND), Landman (2004), Grant (2007), Mahgoub & Khalfani's (2012) acknowledgement that gated communities offer what residents seek: a clean and comfortable environment, peace and quiet, privacy, parks, green open spaces, convenience, security, prestige and social homogeneity. There is high demand for gated communities in the South

African context where fear of crime is prevalent. In relation to sustainable urbanism principles, MECCE offers the following advantages:

- A sense of community and security as well as integrated ways of promoting transit-oriented development limited to walkability, golf carting and cycling. Security is a major consideration.
- Accessible recreational facilities and social amenities that reflect a level of social integration not limited to the estate boundaries.
 - Instead of establishing an impenetrable large estate, the split of MECCE 1 and MECCE 2 as well as the establishment of MECC ensure accessibility and provide a through road, although to a limited degree.
- The close proximity of socio-economic facilities in the immediate surroundings offers shorter travel distances for MECCE residents, thus establishing the estate as one catering for the high income housing component of integrated housing in Mount Edgecombe.
- Preservation of vital sustainable urbanistic principles internally over long periods of time, particularly environmental, through the management agency ensuring that nature is highly preserved and a platform for residential appreciation is recognized.
- Easy communication regarding sustainability with estate occupants through the agency; this establishes yet another platform to ensure the evolution of the interpretation of sustainability internally, particularly in relation to dwelling units – energy efficient design of units.
- A lifetime investment that can be passed on from generation to generation.
- The ability to attract investors and protect investments within its boundaries.
- Encourages outdoor activity together with natural sunlight and fresh air as occupants constantly interact with the amenities MECCE offers as well as the natural environment. This promotes biophilia.

6.2.3 Negatives of Mount Edgecombe Country Club Estate (MECCE)

- Existing walls and boundaries create a level of exclusion. Enjoyment of all that the estate has to offer is limited to those who are able to pay for the privilege of residing in MECCE. Essentially the estate acts as a superblock that is not easily accessible. This has the potential to perpetuate inequality within cities.
- There is limited growth and expansion of the estate, in relation to an increase in density and more sustainable urbanistic forms such as high performance infrastructure and high performance buildings.

- The threshold established in MECCE is limited; this challenges the provision of the civic services highlighted by sustainable urbanism.
- The fact that the residents continue to pursue resources beyond the estate's boundaries challenges sustainable urbanism principles; this underlines the importance of localizing access to key resources as well as sound management of such resources.

6.3 Concluding remarks and potential of MECCE (recommendations)

Although they offer close proximity to social amenities, the functionality of gated communities will constantly be challenged in the South African context in the attempt to promote sustainable urbanism as the fear of crime continues to discourage estate occupants from walking beyond the estate boundaries. However, newly established Urban Improved Precincts (UIPS) in urban cores such as uMhlanga have the potential to create secure pathways that enable estate occupants to walk to social amenities.

A sense of community exists within gated communities; the findings show that these developments create space for inclusive communities and draw like-minded people to the social amenities and recreational facilities on offer. Therefore, gated communities such as MECCE have the ability to build social capital internally. However, at the macro scale, social integration is challenged in the eThekweni North urban core as fear of crime drives gated community dwellers to exercise their freedom only within their boundary walls.

Gated communities offer investment opportunities and investors may not reside on the estate or close to it, but simply seek units as profit generating mechanisms through rental or as holiday homes. Therefore, gated communities' thresholds may not necessarily be large enough to support local corner shops and other key social amenities within the estate. Thus, the provision of socio-economic facilities will largely depend on the threshold population outside the estate.

Gated communities show potential to encourage the middle and upper classes to live in higher densities as they provide a platform for shared social amenities and recreational facilities together with open site plans.

Gated communities could be used as tools to shape and revolutionize housing development at neighbourhood level due to their financial means and through bylaws that only permit a particular kind

of development at a much more effective scale than the municipality. This could be used as a platform to pioneer the evolution of sustainable forms of residential development, including:

- Efficient energy building design and functionality, including green building design.
- Zero net energy housing development.
- Localized agricultural activity (localised food production), including community gardens.
- Recycling, reuse, and reduction of energy consumption at residential level, particularly electricity, and grey water and sanitation.
- Civic centres within walking distance, which are not limited to the estate boundaries but are also accessible to the general public and immediate surrounding community. These could be used to break the continuing stretch of gated community walls.
- A communal parking square within the estate to encourage transit-oriented developments, including cycling and walkability within MECCE boundaries.
 - This could include car sharing and a community bus linking the estate to the urban core in a more sustainable manner.
 - Low carbon efficient cars, including golf carts, could be used to travel to the immediate surrounding areas.
- The integration of different income groups within the estate boundaries would increase social and economic sustainability.

While this is not an exhaustive list, the adoption of these measures could lead to sustainable urbanistic development that addresses the relatively high demand for gated communities.

6.4 Conclusion

The uniqueness and context of each gated community poses a challenge to reaching general conclusions on how gated communities influence sustainable urbanism. The selected case study, MECCE, shows that, while such gated communities may function as sustainable urbanistic developments internally, their constant interaction and consumption of resources beyond the estate's boundaries challenge sustainable urbanism at the broader urban scale. This research study has identified the qualities that gated communities such as MECCE preserve over long periods of time and how elements of environmental sustainability in the light of sustainable urbanism are established through such developments. Furthermore, gated communities have the ability to create a sense of community as well as creating a mind-set among residents that highly appreciates the preservation of

the environment. In contrast, the study demonstrated that even though gated communities are developed in close proximity to urban cores, external factors such as fear of crime in the South African context could cause occupants to negatively interact with the urban built environment. In conclusion, the principles of sustainable urbanism acknowledged in this study are highly appreciated in gated communities such as MECCE internally, although challenged externally in the wider urban context. Moreover the disparities that exist in South African cities, particularly inequality and fear of crime, challenge the way in which gated communities in close proximity to major urban cores relate to their immediate surroundings.

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8 Appendix 1:

8.1 The eThekwini Municipality (Open ended Questionnaire - Interview)

1. What is eThekwini municipality's perspective on sustainable urbanism as a means to sustainability?
 - a. policy framework
2. What is the municipality's perspective and role on gated developments?
 - a. Policy framework on gated communities, project approval, and sustainability of such developments
 - b. Are there any further regulations guiding the development of this Estate outside legislation?
3. For what reason does the municipality approve gated developments?
4. What is the current functioning role of the municipality within the Estate?
 - a. What services does the municipality provide? For example, water, electricity, and sanitation.
5. Was the project considered as forming part of the IDP? (in terms of zoning)
6. Does eThekwini municipality have or intend on establishing institutions/bodies that will promote sustainable urbanism, particularly energy efficiency with regards to homes in eThekwini?
 - a. In what way does or will eThekwini encourage or incentivize these institutions/ bodies promoting sustainable urbanism?
7. What is the future vision for gated communities in relation to promoting sustainable urbanism in eThekwini?

8.2 Mount Edgecombe Country Club Estate Developers (Tongaat Hulett Developments)

1. How would you define sustainability, in relation to neighbourhoods and urbanism?
 - a. Social, economic and environmental.
 - b. Urban agriculture
2. What role did you play in the establishment of Mount Edgecombe Country Club Estate?
3. Do you, as an organization, subscribe to and comply with any institutions promoting sustainability in neighbourhood development and homes?
 - a. Sustainable Energy, Environment and Economic Development (SEED)
 - b. International Institute for Energy Conservation (IIEC)
 - c. Sustainable Energy Africa (SEA)
 - d. Green Building Council South Africa (GBCSA)
 - e. The Southern African Association for Energy Efficiency (SAEE)
 - f. South African National Energy Development Institute (SANEDI) – my green house
4. What is your perspective on gated communities as a professional in the built environment?
5. What policies or regulations from eThekweni municipality did you have to comply with in the planning and development of this Estate?
6. What sustainability principles, relating to sustainable urbanism, did you consider in the pursuing the development of the Estate?
7. As developers, what future do you perceive for gated communities in relation to promoting sustainable urbanism and integration?
 - a. Social, economic and environmental

8.3 Mount Edgecombe Country Club Estate Architects And Planners

1. How would you define sustainability, in relation to neighbourhoods and urbanism?
 - a. Social, economic and environmental.
 - b. Urban agriculture
2. Do you, as a built environment specialist, subscribe to and comply with any institutions or councils promoting sustainability in neighbourhood development and homes?
 - a. Sustainable Energy, Environment and Economic Development (SEED)
 - b. International Institute for Energy Conservation (IIEC)
 - c. Sustainable Energy Africa (SEA)
 - d. Green Building Council South Africa (GBCSA)
 - e. The Southern African Association for Energy Efficiency (SAEE)
 - f. South African National Energy Development Institute (SANEDI) – my green house
3. What is your perspective on gated communities as a professional in the built environment?
4. What policies or regulations from eThekweni municipality did you have to comply with in the planning and development of this Estate?
5. Did you encounter any challenges in attempting to integrate the principles of sustainability (sustainable urbanism) with the development of the Estate?
6. What is your view on global debates about gated communities being unsustainable?
 - a. Promoting segregation, fragmentation and sprawl
 - b. Creating pockets within urban agglomerations
7. In what way do you see Mount Edgecombe Country Club Estate contributing to the integration in urban environments?
 - a. Social, economic and environmental integration
8. What future do you perceive for gated communities in relation to promoting sustainable urbanism?
 - a. Social, economic and environmental

8.4 Open Ended Interview Questionnaire (MECCEMA 1 and 2)

1. As an Estate, how would you define sustainable urbanism, sustainability, in relation to gated communities?
 - a. social, economic and environmental
2. How big is the Estate and what is its potential capacity in relation to the number of occupants?
3. Are you aware of any institutions or bodies governing sustainable urbanism and seeking to promote sustainability of homes?
 - a. Sustainable Energy, Environment and Economic Development (SEED)
 - b. International Institute for Energy Conservation (IIEC)
 - c. Sustainable Energy Africa (SEA)
 - d. Green Building Council South Africa (GBCSA)
 - e. The Southern African Association for Energy Efficiency (SAEE)
 - f. South African National Energy Development Institute (SANEDI) – my green house
4. What is the vision of the Estate in relation to sustainability?
 - a. Are there potentially any social or economic facilities to be included within the Estate? (recreational, corner stores, commercial and business)
 - b. Is there any further consideration of urban agriculture in the near future? (roof top gardens and communal gardens)
5. In what way does the estate promote walkability, cycling and transit oriented development (public) within and beyond the Estate boundaries?
 - a. *Opportunities, relating to modes of transport, presented by the Estate (Within the Estate)*
 - b. Any consideration of linking the Estate with uMhlanga urban core
 - i. (to ensure walkability and cycling)
 - ii. A community bus extending beyond the boundaries of the Estate
 - iii. Car sharing
6. What future do you see for gated communities in relation to promoting sustainable urbanism and integration within the Estate and beyond the Estate boundaries?

8.5 Close Ended Questions For Residents In Mount Edgecombe Country Club Estate

PLEASE TICK THE APPLICABLE/ RELEVANT OPTION.

1. Household role?

OPTION	TICK BOX
1. Father	
2. Mother	
3. Child	
4. Helper	
5. Relative (Other)	

2. What is the number of people living in the house?

OPTION	TICK BOX
1. 1-3	
2. 4-6	
3. 7 and above	

3. What is your occupation? (economic status)

OPTION	TICK BOX
1. Unemployed	
2. Pensioner	
3. Student	
4. Self-employed	
5. Employed	

4. If employed, self-employed or student, where is the location of occupation? (IF NOT APPLICABLE, NEGLECT QUESTION)

OPTION	TICK BOX
1. Within the Estate	
2. UMhlanga urban core (Gateway)	
3. Ballito	
4. Durban CBD	
5. Other (Please Specify)	

-
5. What is the total monthly gross income of the household?

OPTION	TICK BOX
1. 0 – R10, 000	
2. R10, 001 – R20, 000	
3. R20, 001 – R30, 000	
4. R30, 001 – R40, 000	
5. R40, 001 and above	

LOCATION:

6. Where were you previously located? (Please state)

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7. What is the main reason for locating here?

OPTION	TICK BOX
1. Security/ safety	
2. Lifestyle choice	
3. Close proximity to work and schools	
4. Close proximity to uMhlanga urban core	
5. Close to friends and family	
6. Other (Please specify)	

8. Are you considering locating in this area permanently or temporarily?

OPTION	TICK BOX
1. Permanent	
2. Temporary	

9. What type of apartment do you live in? (PLEASE STATE TOTAL NUMBER OF HOUSE ROOMS)

OPTION	TICK BOX	TOTAL NUMBER OF ROOMS
1. Attached unit		
2. Semi Detached		
3. Detached unit		
4. Other		

10. What type of tenure rights do you possess?

OPTION	TICK BOX
1. Rental	
2. Ownership	

TRANSPORTATION OPTIONS AND DAY-TO-DAY NEEDS

11. What mode of transport do you often use?

a. Within the Estate

OPTION	TICK BOX
1. Private car	
2. Community bus/shuttle	
3. Cycling	
4. Walking	
5. Other (Please specify)	

b. Outside the Estate

OPTION	TICK BOX
1. Private car	
2. Community bus/shuttle	
3. Cycling	
4. Walking	
5. Other (Please specify)	

12. In relation to day to day needs (food and services), where do you obtain these?

OPTION	TICK BOX
1. Within the Estate (corner store/ convenient centres)	
2. UMhlanga urban core (Gateway)	
3. Durban CBD	
4. Ballito/Stanger	
5. Other (Please specify)	

a. What means of transport are used to access these?

OPTION	TICK BOX
1. Private car	
2. Community bus/shuttle	
3. Cycling	
4. Walking	
5. Other (Please specify)	

SOCIAL AND RECREATIONAL FACILITIES: (Including - Sports Clubs/ Parks/ Golf/ Restaurants/ Gymnasium)

13. How often do you use the recreational facilities within the Estate?

OPTION	TICK BOX
1. Weekly	
2. Fortnightly (2 Weeks)	
3. Monthly	
4. Not too often	

14. How often do you attend social events within the Estate?

OPTION	TICK BOX
1. Weekly	
2. Fortnightly (2 Weeks)	
3. Monthly	
4. Not too often	

15. How would you rate the recreational facilities offered within the Estate?

OPTION	TICK BOX
1. Very satisfactory	
2. Satisfactory	
3. Poor	
4. Very poor	

AGRICULTURAL ACTIVITIES

16. Are you involved in agricultural activities within or outside the estate?

OPTION	TICK BOX
1. Yes	
2. No	

If yes, please specify.....

17. Are you satisfied with living in a gated community? (PLEASE STATE REASON FOR SATISFACTION)

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THANK YOU FOR YOU PARTICIPATION!!!
