UNIVERSITY OF KWAZULU-NATAL

THE EFFECT OF SPECIAL ECONOMIC ZONES ON LOCAL ECONOMIC DEVELOPMENT: A CASE STUDY OF DUBE TRADEPORT'S AGRIZONE

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ABSTRACT

There have been long-lasting effects on the South African economy due to the history of widespread discrimination. As a result, the democratic government was burdened with periods of low economic growth, a fiscal deficit, spatial inequalities, high poverty levels and excessive unemployment. In an attempt to address these challenges, the democratic government-initiated policies aimed at improving economic growth, reducing poverty and creating job opportunities in order to improve the standard of living of South Africans. Place-based approaches focus on the individual characteristics of regions and their place specificity, and proposes to go beyond the one-size-fits-all development approaches. In this light, many local governments have introduced Local Economic Development (LED) programmes as it has been recognised globally for its presumed potential to address socio-economic concerns and to promote development in local areas. It is within this context that spatial interventions such as Special economic Zones (SEZs) have gained prominence as key elements of the development terrain, as it can be used as an industrial tool for national development and support in underdeveloped regions. Dube TradePort (DTP), one of the two SEZs in KwaZulu-Natal, is a strategic infrastructure project. DTP is ideally located to attract new investment to the province, creates a highly competitive spatial and operational environment to accommodate international and domestic investment, particularly in manufacturing, assembly, and value-added logistics. the purpose of the study is to explore the contribution of DTP's AgriZone to local economic development. This study adopts a qualitative approach. There have been 4 interviews conducted with the tenants and management at the AgriZone. The type of interview used for this study was semi-structured interviews. The supporting data was obtained from a site visit and various documents. The interviews were transcribed, and content analysis method was used in order to capture and study the main themes. The study revealed some of the challenges faced by the participants at the AgriZone. These include the adverse climate and ambient weather conditions in Durban, lack product acceptance by the local consumers, limited crop varieties supported by greenhouses, the design and location of the greenhouses as well as logistic challenges. The challenges in terms of exports included high international standards in terms of quality, high import tariffs and the increase in the number of countries that joined the EU, hence there was no need to import these goods from South Africa as it was more expensive and had a longer travel-time.

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ACRONYMS AND ABBREVIATIONS

CO_2	Carbon Dioxide
CCA	Customs Controlled Areas
CEA	Controlled-Environmental Agriculture
DPLG	Department of Provincial and Local Government Affairs
DTI	Department of Trade and Industry
DTP	Dube TradePort
DTPC	Dube TradePort Corporation
EDTEA	Department of Economic Development, Tourism and Environmental Affairs
EIA	Environment Impact Assessment
EPZ	Export-processing Zone
ETDZ	Economic and technological Development Zone
EU	European Union
FAWU	Food and Allied Workers Union
FCCC	Framework Convention on Climate Change
FDI	Foreign Direct Investment
FTZ	Free-Trade Zone
GDP	Gross Domestic Product
GEAR	Growth Employment & Reconstruction
HEPA	High Efficiency Particulate Arrestance
HoH	House of Hemp
HTBZ	High-tech Development Zone
HVAC	Heating Ventilation and Air Conditioning
IDZ	Industrial Development Zone
IPAP	Industrial Policy Action Plan
ITAC	International Trade Administration Commission
LED	Local Economic Development
LEDC	Less Economically Developed Countries
MEDC	More Economically Developed Countries

NASA	National Aeronautics Space Administration
NDP	National Development Plan
NGP	New Growth Path
NSDP	National Spatial Development Initiative
OVOP	One Village One Product
PPP	Public-Private Partnerships
RLED	Regional and Local Economic Development
SAHPRA	South African Health Products Regulatory Authority
SASRI	South African Sugarcane Research Institute
SDI	Spatial Development Initiatives
SEZ	Special Economic Zone
SMME	Small, Medium and Micro Enterprise
SSA	Sub-Saharan Africa
TIS	Temporary Immersion System
UCLG-A	United Cities and Local Government of Africa
UKZN	University of KwaZulu-Natal
VAT	Value-added Tax

CHAPTER ONE: INTRODUCTION TO THE RESEARCH

1.1 Introduction

Local economic development (LED) has been increasingly recognised globally for its presumed potential to address socio-economic concerns and to promote development in local areas (Rogerson, 2016; Nel, 2001). It is one of the main development strategies that local government has implemented in South Africa as a way of achieving economic upliftment in the democratic era (Houghton, 2016). Rogerson (2010:481) states that "slow economic growth and poverty, combined with the changes in the national and international economic environment, and the effective inability of many central states to intervene at the local level have provided a fillip for locally based initiatives."

Social and spatial disparities are entrenched in South Africa and marginalised areas in the country have not benefitted from the growth of the country. It is within this context that spatial interventions such as Special economic Zones (SEZs) are gaining greater prominence as key elements of the development terrain (Nel & Rogerson, 2014). SEZs can be used as an industrial tool for national development and support in underdeveloped regions in South Africa in order to help create jobs, improve the value of manufacturing and attract investment (Nel & Rogerson, 2014).

This chapter provides an introduction to the study which consists of the background of the research topic, research problem, objectives, significance of the study, an overview of the research methodology and the structure of the dissertation.

1.2 Background

According to Nel and Rogerson (2016), LED strategies have progressively increased as a tool for development in the Global South, although LED strategies were practised widely and emerged in the Global North. Since the democratic transition in South Africa, there has been a vast change in development planning in the country (Rogerson & Rogerson, 2010). There have been long-lasting effects on the South African economy due to the history of widespread discrimination. As a result, the democratic government was burdened with periods of low economic growth, a fiscal deficit, spatial inequalities, high poverty levels and rising unemployment rates. In an attempt to address these challenges, the democratic

government introduced policies aimed at improving economic growth, reducing poverty as well as creating employment which will improve the quality of life of South Africans. It is within this context that many governments have introduced LED programmes (Nel, 2001).

There are many inequalities (social and spatial) that are deep-rooted in the country and attempts to encourage growth of the national economy have not benefitted the underdeveloped or marginalised regions (Nel & Rogerson, 2016). One of the initiatives that fall under LED to promote growth and development is SEZs. Dube TradePort (DTP), one of the two SEZs in KwaZulu-Natal, is a strategic infrastructure project. It is situated in Umsinsi Junction, La Mercy, Durban. It is the first perishables supply chain and a technologically advanced platform for farming in Africa. DTP consists of five business zones namely; Dube City, Dube TradeZone, Dube Cargo Terminal, Dube AgriZone (referred to as the AgriZone in this study), and Dube iConnect. The AgriZone focuses on agricultural development using high-tech, providing a greenhouse facility for growing crops. It also focuses on improving conditions for climate control and to provide optimal agricultural growing conditions. DTP is ideally located to attract investment to the province, and to create a competitive spatial and operational environment to provide investment (local and international), specifically in manufacturing and value-added logistics. This study will focus on the AgriZone within DTP and its contribution to LED.

Due to its labour intensity, agriculture is a key sector in providing employment opportunities (direct and indirect) which contribute to development. The AgriZone consists of a 16-hectare hydroponic growing system. More specifically, the AgriZone aims to advance the perishable sector within KwaZulu-Natal, which will thereby increase agricultural yields. The primary focus is to produce crops with short shelf-life which require instant airlifting to local and regional markets. DTP is a facility that provides support for producing, packaging as well as distributing products that are of high value via a supply chain that is efficient. The AgriZone provides a facility for propagating, growing, packing and distributing products in order to supply local, regional as well as global markets. The AgriZone consists of three glass greenhouses (five components), the AgriHouse (office space), the Dube AgriLab and a plant nursery. The Dube AgriZone also provides packhouses for each greenhouse. The packhouses provide equipment as well as a space for managing, washing, cooling, grading and packing products that will be supplied from the AgriZone. The facility provides room for products from within the AgriZone as well as from outside. The AgriZone offers a competitive

advantage as it is situated close to King Shaka International Airport (KSIA) and the Dube Cargo Terminal.

1.3 Research problem

There are various differences regarding the performance and success of SEZs globally. Thus, the developmental impact of SEZs is debated (Hajduga, 2013). Some authors view this in a positive light while others argue that SEZs are welfare reducing (Nel & Rogerson, 2014; Hajduga, 2013). Some of the key advantages of SEZs are employment creation, business development, enhancing development on a regional scale and establishing nodes of connectivity (Walsh, 2013). However, they can also be linked to contentious labour standards, inadequate local upskilling, low levels of investment and may encourage uneven development of a region (Nel & Rogerson, 2013; Walsh, 2013). There are also debates regarding the rationale and justification for using SEZs a tool for economic development as well as the extent to which SEZs contribute to LED (Hajduga, 2013). SEZs tend to be successful regarding certain objectives such as meeting short term goals of attracting foreign investors, however, evidence on longer term development goals is at best mixed (Jenson & Winiarczyk, 2014).

The allocation of the SEZs depends on a region's access to seaports or airports and as a result, peripheral areas become marginalised (Jenson & Winiarczyk, 2014). However, in terms of LED, SEZs should spread development to all areas, including to underdeveloped areas. Thus, these challenges need to be overcome. Another challenge that needs to be overcome is the lack of stakeholder negotiations and communication between the different levels of government which restricts the success of SEZ initiatives (Nyakabawo 2014). However, with an effective SEZ strategy South Africa can benefit through improved economic growth and the creation of sustainable job opportunities. The New Growth Path (NGP), the National Development Plan (NDP), and the Industrial Policy Action Plan (IPAP) accepts that the processing of agricultural products is key to increase the role of industrialisation (ITAC, 2016). This trend is especially true due to the decrease in the prices of mining commodities. The processing of agricultural products has, as its key component, upstream (it is connected to a wide variety of farming products and models) and downstream (goods earn added value after a processing step). Consequently, it will generate more employment opportunities which will result in increasing the quality of life of individuals.

1.4 Research objectives

The purpose of the study was to explore the contribution of Dube Trade Port's AgriZone to local economic development.

The research objectives were as follows:

- Explore the general practice of the tenants within the AgriZone in terms of how it functions (greenhouses/packhouses) and gather statistics on the performance of the AgriZone (greenhouses/packhouses).
- Identify the challenges that the tenants face that hinder development within the AgriZone.

1.5 Research questions

- What is the general practice of the tenants at the AgriZone in terms of how it functions and what are the statistics in terms of production at the AgriZone?
- What are the challenges faced by the tenants at the AgriZone that hinder development?

1.6 Significance of the study

The information generated from this study aims to add to the cumulative public knowledge of the effect of SEZs regarding LED in KwaZulu-Natal, South Africa. This study addresses the topic of LED based within DTP's AgriZone located in KwaZulu-Natal, South Africa. It aims to provide an in-depth understanding of the AgriZone. The researcher also aims to look at the performance of the AgriZone and the challenges faced by the tenants that hinder development or the progress of the AgriZone. The study focuses on the current farmers and management operating within the AgriZone at DTP. Therefore, it will provide new information for research as it aims to gain an in-depth understanding of its contribution to LED. The local government plays an imperative role as a facilitator in terms of provision of a favourable environment for business and infrastructure to contribute to joint decision-making. The information generated shall inform policy makers (including local government) about SEZs. Furthermore, there has been little research conducted regarding SEZs within KwaZulu-Natal, South Africa.

1.7 Research methodology

The study was conducted using a qualitative approach which was deemed the most appropriate research design given the aims and objectives of the study, as it is concerned with the meaning of the data obtained. Qualitative research afforded a better means of understanding people's perspectives of the various social human problems that come from them (Creswell, 2009). In order to explore the contribution of DTP's AgriZone to LED, a content analysis was considered the most suitable method in order to capture and study the main themes. The primary source of the data was obtained by the use of semi-structured interviews. The interviews were conducted with the tenants and management at the AgriZone. The researcher also made use of observation during site visits. The secondary data was obtained using official documentation and annual reports. Chapter 3 covers the methodology used in this study in detail.

1.8 Dissertation structure

The structure of this dissertation is as follows:

Chapter one: Introduction to the research

This chapter consists of an overview of the study and consists of the background of the study, the aims and objectives of the research, the significance of the study and an overview of the research methodology.

Chapter two: Literature review

This chapter consists of a summary of the literature that is relevant to the study. The information provided focuses on the key areas relating to LED as a place-based approach, particularly looking at SEZs, which was critical for the study.

Chapter three: Research methodology

This chapter consists of the research methodology that was used for the study. It provides an overview of the various research methods and justification for choosing a qualitative method for the study. The chapter also consists of the research paradigms, research approaches, and data collection and analysis process.

Chapter four: Findings and discussion

This chapter presents the findings of the study which was done using content analysis and provides a discussion on the findings.

Chapter five: Conclusion and recommendations

This chapter concludes the study by providing a summary of the key findings. Based on the findings along with the literature provided in chapter two, recommendations and suggestions are provided for future research.

1.9 Conclusion

High unemployment, spatial inequalities and poverty remain major challenges faced in South Africa making structural transformation a difficult task (Nel & Rogerson, 2014). The South African government has introduced the SEZ strategy to help spread development across the country. The views on SEZs vary around the world, partially because of the mixed results of SEZ programmes in different countries or economies. SEZs can be an effective tool to promote industrialisation and structural transformation; however, when implemented appropriately and in the right context (Nel & Rogerson, 2014).

This chapter provided an introduction to the study. In the next chapter, the researcher will provide an overview of the relevant literature related to LED and SEZs.

CHAPTER TWO: LITERATURE REVIEW

2.1 Introduction

As mentioned in chapter one, the purpose of this study was to explore the contribution of DTP's AgriZone to LED. As mentioned in chapter one, the purpose of this study was to explore the contribution of DTP's AgriZone to LED. The aim of this chapter is to provide review of the literature that relates to LED as a place-based approach to development, specifically relating to SEZs. The context of this chapter is concerned with LED and SEZs. It aims to present insight relating to what LED is and how it is used in the development process, particularly in the South African context.

2.2 Place-based approaches

Worldwide, international organisations and all levels of government have adopted an approach to economic development that identifies the need to use local resources (both physical and human) (Barca, McCann & Rodriguez-Pose, 2012). These approaches aim to develop strategies to promote growth in regions in order to enhance their true potential; the capability of places to develop based on using the local resources, i.e. human capital and innovative capacities (Tomaney, 2010). Thus, there has been an increase in thinking regarding the process of LED, which aims to develop locally designed strategies aimed at promoting growth by making use of unused economic potential in all regions. It emphasises a bottom-up approach. In addition to generating growth in local areas, spatial and development issues should also to be addressed. Industrial agglomeration has inherent advantages such as core development of areas and the distribution of wealth over a certain region (Tomaney, 2010; Nel & Rogerson, 2014). However, the new economic geography theory advocates that the location of industries have been determined by factors which not only bring about growth but also reduce poverty and inequality (Barca, McCann & Rodriguez-Pose, 2012). It is within this context that interventions (spatial) such as LED are gaining significance as crucial aspects of the development approach (Nel & Rogerson, 2016).

According to Turok (2010) and Rogerson (2010), there are two approaches to spatial development policies. Firstly, the gap between the core and periphery needs to be reduced which can be done by increasing investments in the periphery. The second approach

highlights development in local areas based on indigenous knowledge and resources (known as new regionalism or localism) (Turok, 2010; Rogerson, 2010). This approach is generally referred to as new regionalism or localism. It is believed that this approach will address the socio-economic needs of those in the economically deprived areas, as well as enhance the potential in all areas in order to become more competitive globally. In the South African context, Industrial Development Zones (IDZs) refers to the first approach towards development, while the National Spatial Development Programme (NSDP) speaks to the second approach and promotes development in urban areas (Rogerson, 2010).

The basic idea of place-based approaches is the development of an area which will be exploited by the construction of institution and investment opportunities that are not present in these areas (Barca, McCann & Rodriguez-Pose, 2012). These need to be exploited using both indigenous and outside assistance. Place-based approaches therefore aims at using existing knowledge, and focussing on the unique and contextual characteristics of an area. According to Barca, McCann and Rodriguez-Pose (2012), the sense of community ownership of the approach can be regarded as social capital which is imperative to development. Therefore, these approaches identify unused or dormant potential, which can be harnessed so that all parts of an area can be developed. The place-based approach contends that there are other means to development that need attention to detail and the institutional context. The development of local assets can be used through national policies as a foundation (Tomaney, 2010). This idea clearly recognises that, given adequate intervention, the potential for economic growth exists in any area. Fundamentally place-based development involves recognising, mobilising and exploiting local potential (Barca, McCann & Rodriguez-Pose, 2012; Tomaney, 2010). In addition to this, the areas of limitations or weaknesses need to be identified. Thereafter, strategies of transformation need to be adopted and used in these areas so that the shortcomings can be overcome (Rodríguez-Pose & Wilkie, 2017).

Researchers have identified two paradigms i.e. spatially blind and place-based approaches (Rodríguez-Pose & Wilkie, 2017). The central argument to these approaches questions whether all regions in an area have potential for economic growth. The spatially blind approach (also viewed as people-based policies) advocates access to opportunities for everyone, irrespective of their residential preferences (Rodríguez-Pose & Wilkie, 2017). This allows for the distribution of wealth to all and will not be based on total geographic

criteria alone. Spatially-blind polices target specific people or guarantee public goods to all individuals (Kraybill & Kilkenny, 2003). According to Barca, McCann & Rodriguez-Pose (2012), place-based approaches essentially have two main features. First, it assumes that the context (in terms of institutional, cultural and social) of geography matters (Barca, McCann & Rodriguez-Pose, 2012). Thus, a spatially blind approach is regarded as inappropriate. Second, the place-based approach involves using local knowledge, capital and institutions to implement policies that are advocated nationally (Barca, McCann & Rodriguez-Pose, 2012). Place-based approaches refer to strategies whereby the location of the recipient is a vital requirement for eligibility and therefore target recipients in specified places (Kraybill & Kilkenny, 2003). The location of who benefits from the institutions is of paramount importance. Therefore, the interaction between location and the institution should enhance economic development. Urban areas with different city sizes should exploit these resources that are unique to each city with the aim of optimal development. The place-based approach suggests that manipulating dormant potential can accelerate both the local and national economy. However, spatially blind and place-based approaches aren't always mutually exclusive as place-based approaches can also be aimed at certain sectors or people (Kraybill & Kilkenny, 2003). Spatially blind approaches represent one of the best ways to enhance economic growth and promote periphery development. However, negative factors in the periphery will hinder growth and therefore place-based approaches are required (Barca, McCann & Rodriguez-Pose, 2012).

According to Rodríguez-Pose & Wilkie (2017), the recommendations of place-based development approaches are twofold viz;

- The capacitating of communities to cope with the responsibilities of developing certain areas.

- The promotion of all levels of government need to be efficient so that coordination of this approach takes place between different levels of government and also spatially. This approach should ensure that resources are allocated adequately and that there is no duplication of actions that take place between the various levels of government.

Place-based approaches have numerous advantages and disadvantages. According to

Tomaney (2010), and Rodriguez-Pose and Wilkie (2017), the social and economic advantages of these approaches include the following:

1. An enhanced chance to compete globally: If the unique strengths and resources of an area are further developed, the area can compete globally. This is because the necessary infrastructure is already in existence and capital does not have to be spent to start afresh.

2. A socio-economic advantage is a more amicable relationship between the needs of an area and government policies. Local decision-makers need to be part of the implementation and monitoring process because they are more conversant with the local needs and priorities.

3. Place-based approaches do not only apply to areas with homogenous development. They address limitations and take advantage of opportunities that may arise even in areas with uneven levels of development.

The challenges associated with the place-based approach are now discussed. According to Wilkie (2017), place-based approaches are associated with the following challenges:

1. The scale of implementation: In large countries, governments find it difficult to address local issues on a municipal level. Although national policies do cascade to local municipalities, the unique and contextual issues at the local level are not comprehensively driven by the relevant stakeholders. Local municipalities may not necessarily be capacitated to carry out national government interventions.

2. In smaller geographical areas, a lack of capacitation on the path of drivers of the process has hindered the development process: Territorial strategies may not have resources to make progress. Furthermore, smaller local areas tend to be isolated from the centralised decision-making process.

3. Challenges in respect of coordinating government policies among the different tiers of government are also an obstacle: The failure of different tiers of government can

result in some areas being oversupplied while other areas may suffer from an undersupply. Horizontal coordination failures lead to uneven spatial development.

The table below summarises the arguments for and against place-based policies.

Table 2.1: Arguments for and against place-based approaches

Arguments for Place-Based Policies	**Arguments against Place-Based Policies**
1. Product differentiation	1. Generate mostly rents for the property owners in targeted places
2. Positive spatial externalities	2. Trap the poor in the underdeveloped areas
3. Knowledge spill overs	3. Mislead companies and decisions about migration
4. National efficiency	4. Allows for the delay of required changes
	5. Creates reliance

Source: *Kraybill & Kilkenny (2003)*

If the potential for economic growth is present, this potential should be exploited to ensure the benefits of growth and development is spread to those who live in these territories. Policymakers in local municipalities need to steer the potential to significant socio-economic growth as well as development. Economic development via place-based approaches can help to drive the process forward (Rodríguez-Pose & Wilkie, 2017). Rodríguez-Pose and Wilkie (2017) suggest two strategies to drive the process forward:

1. **Incorporating and creating a balance of development strategies:**

Place-based development strategies usually include involvement in one of the four development axes shown in the table below.

Table 2.2: Four basic development axes

Strategies intended to enhance the competitiveness of local firms	Strategies intended to advance capital (local human)
Strategies that intend to enhance investment attraction	Strategies intended to target infrastructural bottlenecks and the expansion of new infrastructure

Source: *Rodríguez-Pose & Wilkie (2017)*

These factors identify and represent the foundation of development in a territory. The quantity of interventions that should be undertaken depends on (i) the autonomy granted to each region in respect of power and authority and (ii) the starting situation in each region (Rodríguez-Pose & Wilkie, 2017). The type of intervention for the four strategies (axes) will determine the effects for future development. Therefore, the development of one axis will depend on the development of the other axes. The overall development of a territory may be influenced by conventional preferences for inward investment or infrastructure, which may fail if local skills and establishments are not considered (Rodríguez-Pose & Wilkie, 2017).

The cascading of development policies from national government to local municipalities has failed because of internal imbalances in these policies and strategies. Furthermore, this approach also identifies one dominant setback and tries to solve the challenges associated with it. Since place-based approaches involve participation of relevant stakeholders and also the accessibility of the policy and the territory it applies to, these approaches have been less susceptible to internal imbalances (Rodríguez-Pose & Wilkie, 2017).

2. Starting vigorous strategic planning

The implementation of place-based approaches is determined and driven within the context to which they are to be pursued. The success of this approach is determined by the aggressive planning which is made up of four elements namely (Rodríguez-Pose & Wilkie, 2017):

- A review of the conditions in a local area or situation analysis
- The participation and interaction of stakeholders
- Presentation of the aims of the strategy
- Objectives and the recognition of appropriate strategies and programmes

Generally, any assessment of a local economy will identify financial, technical and social resources that can be used. A positive environment will present opportunities for development, whereas challenges will result in management strategies to boost development. Local stakeholders need to be involved in the planning process (Rodríguez-Pose & Wilkie, 2017; Rogerson, 2014). It also involves identifying positive attributes that will drive economic growth as will managing challenges. An aggressive planning process will ensure adequate redistribution of resources. It will also ensure the approach is operational. Alternatively, if the approach is inadequately prepared for opportunities could be realised too late or even lost. Furthermore, action and intervention may not necessarily be appropriate and resources could be allocated disproportionately. Place-based approaches can be very beneficial for development (Rogerson, 2014). However, lack of capacitation locally, implementation challenges and a lack of local institutions could derail the process. Therefore, localities need to eradicate all challenges to ensure that the approach can be implemented successfully (Rogerson, 2014).

When place-based approaches fail, it is usually due to local barriers that prevent benefits from being derived. One way in which to overcome the barriers of capacity constraints and coordination failures (vertical) is the capacitation of locals to promote economic growth (Rodriguez-Pose & Wilkie, 2017). This, in turn, will lead to an increase in the standard of living of the local residents. Capacitation must include increased skilling and training, acquiring knowledge from experience and the passing on of knowledge from other individuals. National decision-making and the manner in which these decisions are coordinated between regions and localities is imperative. The binding of policies between different government levels and across the same levels is another way of addressing challenges. Identifying local industries and thereafter implementing policies that will enhance development will not necessarily be beneficial. Unique, contextual issues need to be addressed as well. The mere identification of local business is inadequate to determine legislation that will enhance their competitiveness.

2.3 What is Local Economic Development?

Place-based approaches to development are a global trend due to the decentralisation of these territorial strategies (Rodriguez-Pose & Wilkie, 2017). It has been progressively recognised that localities are imperative in terms of contributing to prosperity of the national economy.

The enduring competitive advantages in a global economy are often significantly localised, arising from concentrations of highly specialised skills and knowledge, institutions, rivalry, related businesses and customers. The growth of LED in South Africa is congruent with this change in thinking. However, the basic approach varies internationally (Rogerson, 2014; Turok, 2010).

As mentioned before, LED has obtained increasing acknowledgement globally, mainly because of its presumed capability to overcome socio-economic challenges and encourage development of local areas (Nel & Rogerson 2016). Globally, it has been noted that self-reliance in local communities have become a trend. According to Nel and Rogerson (2005), LED has also been associated with locally based interventions to address challenges associated with decentralisation and globalisation. LED is referred to as a process whereby the private and public sector work together to create sustainable development, which will also include removing obstacles that may hinder development (Nel & Rogerson, 2016; Houghton, 2016). The LED programme signifies a feasible and alternate approach to the common top-down strategies towards development, which have mainly been implemented to promote significant changes in terms of development at municipal or local level (Rogerson, 2014).

While there are many definitions of LED as it has changed vastly overtime, a common theme is that it should create development by promoting numerous local opportunities. Rogerson and Rogerson (2010) identify four key characteristics of LED programmes, i.e. the need for participation and social dialogue, territorial focus, mobilisation of local resources and building a competitive advantage and local ownership and management. The characteristics ensure that the public and private sector together with the use of local resources (both human and physical) simulate the economy and thereby create employment (Nel & Rogerson, 2005; Rogerson & Rogerson, 2010). These four characteristics are brought together to define LED as:

"a participatory development process that encourages partnership arrangements between the main private and public stakeholders of a defined territory, enabling the joint design and implementation of a common development strategy, by making use of the local resources and competitive advantage in a global context, with the final objective of creating decent jobs and stimulating economic activity" (Rogerson & Rogerson, 2010:467).

Some of the main objectives of LED are to provide an environment that is conducive to conducting business, foster partnerships between private enterprise and local government, developing human resources through skills development and improving the standard of living. LED intends to use the resources that are found in local areas in order to make use of innovation to improve infrastructure, small, medium and micro enterprises (SMMEs), Foreign Direct Investment (FDI) attraction, enhancing competition by ensuring efficient institutions and improved management regarding the process of development within a specific area (Rogerson & Rogerson, 2010).

Essentially, the LED programme or theory can be viewed as an aspect of development which focuses on a specific region. According to Rogerson and Rogerson (2010), there are three broad theories of LED:

- Theories located in development that is driven by the market in which firms are key items of analysis and the attractiveness of a locality is the object of public policy.

- Theories of local economic regeneration which puts emphasis on how focuses on how local areas are able to decrease lagging behind by making use of local entrepreneurial skills, increasing the potential of human resources as well as encouraging all-encompassing economic organisation.

- A range of theories of LED which centre on alternative local development. It is believed that there is an increasing number of communities unable to part-take in market-driven development due to the absence of ability and assets. It is also because individuals may be inspired by a search for a social or environmental existence.

Generally, LED programmes are rooted in one of the theories mentioned above. The mutual interest for creating robust economies and the provision of employment is what brings the theories together (Rogerson & Rogerson 2010). The complex nature of these range of theories, listed above, has shown that there are various relatable theories to LED yet there are none that explicitly provide an understanding framework to understand the compound associations that encompass this particular field. One consequence of this is that the link between LED practice and theory is at best limited (Rogerson and Rogerson 2010).

2.3.1 Stakeholders

Stakeholders serve as vehicles to carry economic growth forward, contributing towards entrepreneurialism and an increase (Nel & Rogerson, 2016). Urban development policy exhibits the idea that local government can develop economically, which will expand their income and asset inventory (Nel & Rogerson, 2007; Houghton, 2017). The fundamental idea is that wealth created in an urban economy can be used to uplift the poor income populace through social development, employment opportunities and economic empowerment (Houghton, 2017). In addition, available resources (human institutional, natural and physical) should be used in such a way so as to enhance employment opportunities as well as boost the economy in a sustainable manner (Helmsing, 2003; Houghton, 2017). Despite the economic focus of LED, it must be noted that growth should be accompanied by sustainable development which is vital in obtaining the socio-economic and environmental objectives (Rogerson & Rogerson 2010).

2.3.2 Partnerships

A recent trend in the cities of South Africa is on promoting business opportunities and investment, via projects that are created and promoted through partnerships (Houghton, 2017; Nel & Rogerson, 2005; Rogerson, 2010b). Municipal partnerships take the form of Public-Private Partnerships (PPPs). For this partnership to be successful, the goals of all partners need to be understood and affirmed by all parties. Building partnerships has the advantage of the private sector which includes dynamic leadership, availability of capital, technological skills and financial management knowledge and technologies, managerial efficiencies, infrastructure development and the entrepreneurial drive together with the awareness of social issues and the awareness of environmental sustainability, local knowledge, and employment creation issues faced by the government (Rogerson, 2010b; Helmsing, 2003, Houghton, 2017). Marginalised communities are the priority of the partnerships that adopt the LED programme which support various sectors within the economy (Houghton, 2017). Examples of partnerships can include, but is not limited to, service contracts and transfer concessions. One example of a successful partnership is the case of the Midlands Meander Association together with KZN Tourism which incorporated a variety of stakeholders to stimulate local tourism. This helped transform the Midlands Meander into one of the more sought-after destinations in South Africa (Rogerson, 2010).

2.3.3 Regional and Local Economic Development

LED has been criticised as being challenging in terms of oversimplification by individuals who recognised the necessity for a move from the local to the regional scale (Houghton, 2016). To this end, Regional and Local Economic Development (RLED) is progressively used by the local government (Houghton, 2016; Nel & Rogerson, 2014). This enables the benefits derived from LED programmes can be spread to a wider region and these regions can also benefit from connections between various areas. The RLED strategy in South Africa is primarily targeted towards the rural development and small-town regeneration to empower previously disadvantaged communities in order to become more active in the national economy (Houghton, 2016). Co-operatives in agriculture and other initiatives (tourism) have been focussed on in rural municipalities, while cities and small towns have focussed more on large-scale economic growth. Although the goals of LED worldwide are very similar, the priorities vary. In the third world countries, the priority is on alleviating poverty whereas in the more affluent global North the emphasis is on issues such as globalisation (Nel & Rogerson, 2016). LED practices seek to integrate and include the South African economy on the global scale, rather than just limit the reach to micro-business rural level (Houghton, 2016).

There is further consideration beyond the shifts between regions or cities in the country (can be seen in Durban) regarding LED that should be noted (Houghton, 2016; Nel & Rogerson, 2016). Durban's robust manufacturing base, infrastructure in terms of transport, the requirement for more job opportunities and the policy foundation for economic development provide a basis for RLED to benefit from value chains globally (Houghton, 2016). This allows for the opportunity to expand LED beyond the Durban metropole, to surrounding areas in the region, while still allowing the positive performance of the country on the global scale (Houghton, 2016). To realise this capacity for creating capital in the value chain, several interventions have to be enforced to create deliberate and successful economic development such as training, employing skilled labour and recruiting professionals (Houghton, 2016).

2.4 Overview of Local Economic Development practice

2.4.1 Africa

The emphasis on conventional research of LED in African countries was recognised early in

the 1990s with Sub-Saharan Africa (SSA) being significantly affected by decentralisation (Helmsing, 2003; Rogerson & Rogerson, 2010). However, LED practice is uneven as a large amount of research on LED focuses on South Africa. There is not much research regarding LED outside South Africa, however, this is changing at a considerable rate (Rogerson & Rogerson, 2010).

There is increasing popularity of LED across SSA by the activities of the United Cities and Local Government of Africa (UCLG-A), an organisation of bodies (including local governments) that represent a unified say for local governments. The UCLG-A classifies LED as a priority area for action as part of its vision to build unity amongst African countries (Rogerson & Rogerson, 2010). However, it must be noted that the implementation of LED is challenging and clear parameters to measure LED is a challenge (Rogerson & Rogerson, 2010).

In terms of location, LED research and practice occurs more in urban than rural areas. One of the imperative concerns for the urban parts of Africa is the improvement of the business environment in order to develop the private sector as this is vital for LED activity. In rural Africa, the concern is to enhance the local economies in a way that is systematic; thus, there is considerable attention on the tourism sector for development. As LED programmes are vital for rural towns and markets, interventions should support and empower smaller areas as desirable areas for feasible activities such as craft production (Rogerson & Rogerson, 2010). Malawi is the first country in Africa implement the Japanese concept of LED known as One Village One Product (OVOP). “It represents a self-reliant and community-based variation of applied LED which focuses on developing unique products linked to human resource development and capacity building” (Rogerson & Rogerson, 2010:473).

The main constraints to LED identified in Africa is the lack of government capacity, data shortcomings and crime. There are several challenges that must be resolved if the difficulties associated with sustainability within the African continent are to be overcome. The challenges that need to be addressed include food security issues, service delivery, trading informally and climate change (Rogerson & Rogerson, 2010; Houghton, 2016). For SSA as a whole the challenge that the government faces are a lack of finance as well as the skills and infrastructure that hinders and limits the capability of organisations to advance and apply strategies that are effective and efficient. Despite these caveats, research confirms that LED

as an approach to development is increasing in Africa (Rogerson & Rogerson, 2010).

2.4.2 South Africa

Since 1994, there has been a marked variation in development planning in South Africa (Rogerson, 2014; Houghton, 2016; Nel & Rogerson, 2005). Although LED principles originated in more economically developed countries (MEDCs), it has been adopted by less economically developed countries (LEDCs). This is particularly true for the LEDCs in Africa where common top-down approaches were unsuccessful in terms of making significant changes locally (Helmsing, 2003; Nel & Rogerson, 2016). There is not much research conducted on LED in developing countries however, since democracy, South Africa has risen in prominence as a country which has consistently implemented the LED programme (Nel & Rogerson, 2005; Nel & Rogerson, 2016).

South Africa's idea of LED planning concentrated on whether it should involve a competitive or social approach. National government suggests an integration of both approaches. The local governments' core function regarding LED is to address socio-economic challenges and to improve the standard of living in local (Helmsing, 2003; Nel & Rogerson, 2005; Nel & Rogerson, 2016). According to Rogerson (2010), retarded economic growth, impoverishment, differences in growth trends, and ineffective interaction between local and national government has created a stimulus for LED. South Africa, with its apartheid past and the disadvantages associated with it, is a reason to intervene at local levels to bring about a balance in the so-called playing fields. However, in trying to redress the intolerance that was created before 1994, the LED programme was created to develop local economies using local resources (Nel & Rogerson, 2005; Rogerson 2010). Results have been modest in terms of development locally, although there has been significant emphasis on this approach for over 20 years (Nel & Rogerson, 2016; Houghton, 2016).

2.4.2.1 LED policy in South Africa

LED has become a programme for reconstructing South Africa (post-apartheid) and has resulted in various changes in policy and practices (Houghton, 2016). Helmsing (2003), identifies changes in LED as twofold, i.e. (i) changes in developmental policy and (ii) changes in technology. Social and spatial differences not only exist in South Africa but have been exacerbated since 1994 despite state intervention (Nel & Rogerson, 2016). The widening gap from an economic point of view, has been increasing between urban and rural

areas. Thus, reform of LED is to develop communities that were previously disadvantaged; as a result, it has a number of features that are congruent to the RDP programme (Nel & Rogerson, 2016).

The RDP, which was introduced in 1994, highlights that the LED approach was initially satisfying the basic needs of people regarding food, water, shelter and clothing to ensure the development of an area. This process should also involve empowering the local stakeholders. According to the Municipal Systems Act (2000), it is law for the local government to employ joint development planning processes of which LED is a part (Nel & Rogerson, 2016; Nel & Rogerson, 2005). The perspective of strategic focus areas includes property development (mainly aimed at investment potential and SMME development), investment facilitation, improving the local business investment climate, encouraging local business, institutional development, upgrading skills and training, investment in business sites and premises, and cluster upgrading (Houghton, 2016).

At the onset of 2007, the Department of Provincial and Local Government Affairs (DPLG) advanced the cause for LED by prioritising community development projects. By the early 2000s, there was an LED Fund that focused on poverty alleviation projects. It was guided by the principles of pro-poor development (Nel & Rogerson, 2016). One of the debates in the country has been about whether LED should be a pro-growth strategy, a pro-poor intervention or both. A lack of clarity about this, has negatively impacted on local understanding, delivery and outcomes. It is evident that smaller centres encourage pro-poor strategies such as the informal sector, while larger centres support a pro-growth model for development. However, by only supporting pro-poor strategies often means that community-based intervention does not translate to economic growth (Nel & Rogerson, 2016).

LED is a key aspect of spatial development nationally as it is a place-based approach for development (Rogerson, 2014). The NGP recognised the need for policy initiatives to address the divergence of the spatial concentration of economic growth. It is considered that South African policy debates about spatial development have been about whether to adopt a pro-urban or pro-rural development approach (Rogerson, 2014). The NDP argues that whilst there are specific rural and urban challenges, the interdependencies are considerable, and South Africa needs an integrated approach to these national territory issues. It proposes movement towards transforming spatial arrangements to inform appropriate development

planning (Rogerson, 2014).

The desired results of LED are to, among others, alleviate poverty and create sustainable employment. The government (local) realised the role that they needed to take in order to improve the growth within their communities (Rogerson, 2010). Therefore, by exploring the local economy and identifying obstacles that stand in the way of growth and of investment, they are able to contribute to development in terms of job creation and economic growth (Nel & Rogerson, 2005). The benefits can be maximised if LED programmes are initiated according to the competitive advantage of specific areas e.g. in many rural areas the tourism sector is promoted; targeting domestic as well as international tourists can increase the impact of development within that area (Rogerson & Rogerson, 2010).

Many local governments have tried to implement LED programmes; however, the success rate varies. Although South Africa is known as a leader in terms of LED when compared to other African countries, it would be difficult to state that there has been significant improvement in all local communities (Nel & Rogerson, 2016). A lack of finance, a lack of skilled workers, the limited interaction between the public and private sector and a focus on social economic projects have been known as some of the reasons that the LED programme has achieved moderate results. However, the government acknowledges the limited success which LED has achieved and the need to strive for a more effective implementation of LED (Nel & Rogerson, 2016).

2.4.2.2 KwaZulu-Natal, Durban

Durban is a key example of LED activity in a major metropolitan city. The most prominent development of this example is SEZs as it exists in Durban. SEZs occur within specifically designated zones to be able to establish, monitor and grow LED. DTP is a designated SEZ surrounding KSIA and is a major project focussed on economic development. However, the purpose of the SEZ is not limited to boosting economic development within a city. DTP focuses on spreading the impacts of the SEZ within and beyond the city's boundaries. LED was characterised by only focusing on developed in marginalised or underdeveloped regions rather than catalytic projects in the urban sphere that involves collaboration between significant role players and generating long-term rewards (Houghton, 2016). LED programmes play a major role in reducing unemployment especially in South Africa with youth unemployment (currently at 55%) being the largest contributing factor that creates

concern in urban areas (Statistics South Africa, 2019). Thus, entrepreneurship is progressively known as a priority sector that can promote growth within the local economy and address unemployment challenges (Houghton, 2016).

2.4.3 Advantages

There are numerous economic and social advantages that come with the implementation of LED programmes. LED programmes can empower local communities and generate local dialogue. This is an example of a social benefit of the LED programme. Another advantage is that it assists in terms of accountability of institutions which develops civil society. The economic advantages of LED are its biggest strength. As LED approaches seek to embed economic activity in a territory and make economic activity dependent on the economic conditions and comparative advantages of that place, they generate sustainable employment in enterprises more capable of withstanding changes in the global economic environment.

2.4.4 Challenges

One major challenge that LED programmes face is the need to adapt planning with regards to global and national policy conditions (Rogerson, 2014). Some of the problems exist partially and result in LED being marginalised because of the ways in which LED has been institutionalised in the country. Examples of this include the incongruence between LED expectations and the reality facing LED promotion, the lack of consistency in terms of adopted meanings of LED and the ongoing insufficiency to achieve an LED mandate (Houghton, 2016; Rogerson, 2010). With this being said, the criticism of LED in South Africa focusses on the fact that LED is not sustainable and is risk collapsing once it is left unsupported. Successful LED programmes have been difficult to implement due to the inability to implement sustainable local economic growth, weak governance, inadequate implementation and incapacitated individuals who are steering the projects. (Rogerson & Rogerson, 2010; Nel & Rogerson, 2016). Despite these challenges, LED is a practice that is still promoted and implemented across rural and urban municipalities across the country (Houghton, 2016).

Researchers have highlighted several advantages and disadvantages of LED, accusing it of being impractical and challenging its feasibility, while some researchers consider LED to be instrumental in creating a relationship between people and the government, and claim it has

the potential to create sustainable investment and financial growth for locals (Rogerson & Rogerson, 2010).

2.5 Special Economic Zones

2.5.1 Definition

The definition of the concept of SEZs varies with different authors. However, a universal definition describes it as "a demarcated geographic areas contained within a country's national boundaries where the rules of business are different from those that prevail in the national territory. These differential rules principally deal with investment conditions, international trade and customs, taxation, and the regulatory environment; whereby the zone is given a business environment that is intended to be more liberal from a policy perspective and more effective from an administrative perspective than that of the national territory" (Farole, 2011:23).

The idea of SEZs is to identify certain regions within a country and to provide these areas with opportunities to develop further (Walsh, 2013; Zheng, Barbieri, Tommaso & Zhang, 2016). These opportunities will encourage local and overseas investors to locate facilities in these areas. In this way, export-orientated manufacturing will be enhanced which will provide employment opportunities. The laws within the SEZ are more market-oriented than those outside of the SEZ in order to encourage domestic and international investors to invest their capital in specific areas (Zheng, Barbieri, Tommaso & Zhang, 2016). It is believed that intensive investment in a specific area can bring benefits above and beyond the creation of jobs and places of production (Walsh, 2013). To obtain an understanding of the variety of definitions, a table is presented below, which captures the various definitions of researchers on SEZs.

Table 2.3: The definitions of Special Economic Zones

Author	**Definition of a Special Economic Zone**
Wang (2013:2)	SEZs are "contained geographic regions within countries, adopting liberal laws and economic policies to encourage foreign-invested manufacturing and services for export."
Farole (2011: 17)	SEZs are "spatially delimited areas within an economy that

	function with administrative, regulatory, and often fiscal powers that are different than those in the domestic economy."
Walsh (2013)	An SEZ is a geographically limited area governed by specific rules and regulations.
Leong (2013)	SEZs are localities with tax and business incentives, mainly set up to attract foreign investment and achieve technology transfer.
Hajduga (2013)	An SEZ in legal terms is an administratively separate part of the country's territory, within which a specific system of legal norms applies.
Nel and Rogerson (2013:205)	"a geographical designated area of a country set aside for specifically targeted economic activities which are then supported through special arrangements (which may include laws) and support systems that are often different from those that apply in the rest of the country"
Zheng, Barbieri, Tommaso and Zhang (2016)	an area in which the rules that govern local economic activities are different from those in the rest of the country.

Source: *Author's own creation*

All the above definitions have a common idea which is summarised by Zheng, Barbieri, Tommaso and Zhang (2016): Four principles were identified by them that explain what SEZs are, namely:

1. It is an area that has been geographically demarcated.
2. It is managed and administered by one authority.
3. There are physical benefits for investors (e.g. transport networks).
4. It has a separate customs area (duty-free benefits) and streamlined procedures.

2.5.2 Types of Special Economic Zones

SEZs cover a broad range of zones, such as free-trade zones (FTZs), export-processing zones (EPZ), high-tech development zones (HTDZs), economic and technological development zones (ETDZs), industrial parks, enterprise zones, customs-bonded factories and so forth

(Zeng, 2016; Zheng, Barbieri, Tommaso & Zhang, 2016; Wei & Leung, 2005; Leong, 2013). The table below presents a brief description of the main types of SEZs.

Table 2.4: Types of Special Economic Zones

Author	Type of SEZ	Definition
Zeng (2016)	Free-trade Zones	Refers to areas which are duty-free, duty-free areas and offers facilities for storage, trade and transport.
Zeng (2016)	Export-processing Zones	EPZs are normally fenced-in estates with strict customs controls and most of the products (normally over 80 percent) produced in these zones must be exported.
Zheng, Barbieri, Tommaso and Zhang (2016)	High-tech Development Zones	These are characterized by preferential policies (such as tax concessions), which are designed to cluster innovative services and promote innovation and industrialization of high-tech industries.
Zheng, Barbieri, Tommaso and Zhang (2016)	Economic and Technological Development Zones	Refer to smaller areas planned in the cities by local government and provided with an infrastructure system to absorb international investment in advanced manufacturing

Source: *Author's own creation*

For the purpose of this dissertation the difference between SEZs and IDZs will be discussed, as SEZs replaced IDZs due to the latter not fulfilling its potential. An IDZ refers to "a purpose-built industrial estate linked to an international air or sea port, which might contain one or multiple Customs Controlled Areas (CCA) tailored for manufacturing and storage of

goods to boost beneficiation, investment, economic growth and, most importantly, the development of skills and employment in these regions" (Nel & Rogerson, 2014:31). As highlighted above an SEZ is defined in South Africa as a "geographical designated area of the country set aside for specifically targeted economic activities which are then supported through special arrangements and support systems which are different from those which apply to the rest of the country" (Nel & Rogerson, 2014:28). IDZs must have access to an international port while SEZs and focus on industrial growth. IDZs were also located in small areas, compared to SEZs, which cover an entire city as geographically restricted areas (i.e. an industrial estate). SEZs, on the other hand, cover large areas (i.e. a city, province or region) and are established to attract firms for export-orientated manufacturing, but also allow for selling to the host nation's domestic market and include support service orientated sectors (Nel & Rogerson, 2013).

In terms of incentives, IDZ incentives have included exemption from value-added tax (VAT) and import duties, access to CCA, depreciation allowances, and a limited tax holiday. The proposed SEZ incentives include a 15% corporate tax rate, the latitude to design support measures as deemed appropriate for any zone, a building allowance (10% at DTP per year), an employment incentive, access to CCA and a tax allowance (Nel & Rogerson, 2014, DTP, 2019).

2.5.3 Features and objectives of Special Economic Zones

The following features make SEZs 'special':

1. SEZS have more accommodating economic laws for labour, land and foreign investment.
2. Public services: In many cases one stop-shop services keep with custom, registration and licensing.
3. Infrastructure: SEZs have advanced and efficient infrastructure such as transport networks
4. Fiscal incentives: investors in general and anchor investors in particular enjoy incentives such as tax reductions.

The main objectives of SEZs are to (Leong, 2013; Zeng, 2016):

1. Enhancing growth in the economy by the promotion of exports
2. Attract foreign investment and increase foreign exchange earnings and industrialization.
3. Increase employment to prevent unemployment spiralling out of control.
4. Transferring technology and management skills.
5. Supporting and complementing South Africa's economic reform policies.

The success of an SEZ will be determined by whether the above objectives have been met or not (Zeng, 2016). In the process of meeting their objectives, SEZs have also attracted FDI, accelerated economic development, helped economies compete globally, improved infrastructure development, created employment and improved technology (Nel & Rogerson, 2014; Sigler, 2014). It is believed that SEZs can attain industrial development in the following ways (Zeng, 2016):

1. Provide a concentration of public services in core areas
2. The astute use of government funds for infrastructure development
3. Speed up the process of agglomeration
4. Accelerate urbanisation by improving housing for workers

SEZs can offer economic assistance to governments while governments can attract investors in sectors that need improving. This can be achieved by removing obstacles to economic growth e.g. logistics relating to trade. The removal of these obstacles can easily be attained in a specified zone (Zeng, 2016). Furthermore, new reforms and polices can be piloted. In this way employment and income generation will be offered. Consequently, human development and poverty eradication will become a reality (Aggarwal, 2007). There are two types of advantages associated with SEZs. The direct advantages include the policy goals whilst the indirect advantages include employment equity, skills upgrading, regional development and human development (Luthuli & Houghton, 2015).

2.5.4 Lessons and experiences from other countries (Zeng, 2016):

- Using SEZs as a strategy to rectify failures in the economy
- Working with government
- Ensuring efficient services and in the process having a better business environment within the SEZ
- Implementing a realistic scheme that starts small
- Providing a level of autonomy at the local/zone level coupled with clear objectives, sound monitoring/evaluation
- Aiding technology transfer, diffusion and skills training
- Forging better linkages with local economy
- Practicing sound environmental management
- Establishing a good balance between industrial development and social/urban development

SEZs need to be integrated into a country's economy to be successful (Nel & Rogerson, 2013). It is also believed that positioning these zones near ports or universities will further boost their success. Despite them being many pros, there are also some cons associated with SEZs. These negative aspects include (Nel & Rogerson, 2014):

1. Poor and unfair working conditions
2. Insufficient space-over development
3. Development of only the core area
4. The economic implication of granting incentives
5. Integration into the global economy may not be equal

Other challenges in less successful SEZs include (Nel & Rogerson, 2014):

1. Lack of skills by the locals
2. An inadequate link to the national economy
3. Poor management skills
4. Not been proactive in the face of changes in the global economy

2.6 Spatial inequality (Global)

Throughout the world there is a pattern of spatial inequalities (Nel & Rogerson, 2009). The prevalence of spatial inequalities has always been a stimulus for the government to establish economic development programmes in those areas that are less developed. In this regard the European Union's (EU) Regional Development Fund looked at narrowing the GDP gap across regions in Europe. It is recognised that spatial inequality is an important dimension of overall inequality (Nel & Rogerson, 2009).

According to Nel and Rogerson (2009), four main reasons are identified that contribute to rising spatial inequalities in countries namely:

- Uneven distribution of natural resources
- Infrastructure development has favoured core areas
- Globalisation and trade liberalisation have benefitted the core areas while the periphery has enjoyed limited benefits
- Particularly in developed countries, concerns the global trend towards greater devolution/decentralisation. Globalisation and the widespread transfer of power downwards from central government to regions is a critical factor in rising levels of spatial inequalities.

To overcome spatial inequalities the following need to be considered:

1. Obstacles to the devolution of economic activity needs to be identified and removed
2. Spatial bias should be eradicated
3. National government should give all regions the same benefits

2.6.1 Spatial inequality (South Africa)

According to Nel and Rogerson (2009), spatial inequality refers to uneven development in geographical units and state intervention is needed to address spatial inequalities. In this regard, the South African government has embarked on strategies to manage spatial inequalities, the first step being to identify the causes. In South Africa, the causes of spatial inequalities include uneven distribution of resources, the apartheid policies of segregation, industrial and commercial decentralisation and also the impact of globalisation.

Spatial inequalities are inevitable. However, in the South African context, this challenge is exacerbated by the fact that people were marginalised in the previous homelands. Since 1994 South Africa's democratic embarked on numerous strategies and policies that spoke to alleviating regional imbalances. However, the for impoverished rural areas, there have not been much success (Nel & Rogerson, 2014). For this reason, the NGP and the government ministries of rural and economic development was established to ensure development in South Africa should address the impoverished, rural areas. However, this development should not deprive investment in areas that have the potential to take South Africa to levels of development that alleviate poverty and unemployment, while advancing industrialisation (Nel & Rogerson, 2009).

2.6.2 Spatial Economic Planning and Development in South Africa

A policy advocated in South Africa in the 2006 National Spatial Development Perspective, identifies what criteria of development (e.g.: infrastructure) is required in each area. It was with this in mind that a range of strategies, such as the Regional Industrial Development Strategy, have been introduced by the vast majority of municipalities in South Africa (Nel & Rogerson, 2009).

In 1996, the Growth Employment & Reconstruction (GEAR) policy further highlighted exported development (e.g. industrial concentration and export-led development), however, the economy has not galloped at a pace that would enhance job creation and poverty alleviation (Nel & Rogerson, 2014). The post-apartheid government introduced EPZs with the aim increasing export-led growth (Nel & Rogerson, 2014). However, this was criticised by trade unions it involved the abuse of labour (Nel & Rogerson, 2014). Towards the end of the first decade of democracy, SDIs (Spatial Development Initiatives) and IDZs were introduced (Nel & Rogerson, 2014). The South African government realised the advantages of being listed by an efficient transport network to Maputo in Mozambique. It is for this reason that the Maputo Corridor SDI was introduced, while other SDIs had limited success (Nel & Rogerson, 2014). The IDZs, which started with Coega, near Port Elizabeth, were established near an international port. The success of IDZs were used to compare the success of SEZs because there were parallels between the two. Some of the reasons for this underperformance of IDZs include the bias in their coastal location and the lack of involvement with various stakeholders. In addition, investor incentives were non-existent, total government ownership without private ownership and the absence of policy framework

jeopardised the success of IDZs.

In 2002, the government introduced the National Spatial Development Programme (NSDP). On the one hand, this programme encouraged core development in areas that have the potential to succeed, while on the other hand it also identified areas outside of the core areas with the potential to develop.

In 2011, the Department of Trade and Industry (DTI) highlighted that South Africa's economy was lagging behind other global economies (DTI, 2018). The DTI's priority concerns were twofold i.e. an increase in unemployment and a decline in the secondary (manufacturing) sector (DTI, 2018). Of particular importance was the decline in the secondary sector because this sector could also employ a large reservoir of unskilled labour. There has been limited methods and strategies to address spatial inequalities (Nel & Rogerson, 2009). With this in mind, the national government passed the Special Economic Zone Act in 2014. The main idea behind this act was to rejuvenate spatial planning with special emphasis on economic development (DTI, 2018; Nel and Rogerson, 2009). The purpose of SEZs was to find strategies for alleviating the deep-rooted and uneven economic development as well as to reconstruct the underperforming IDZs (DTI, 2018; Nel and Rogerson, 2009).

2.7 Global examples of Special Economic Zones

Worldwide, SEZs are viewed as a catalyst to entrench economic development and structural transformation, and accepting the idea of SEZs as an inherent recipe to economic development (Zeng, 2016; Wang, 2010). However, for an SEZ to reach its optimum benefit to a country, the contextual factors within that particular country need to be addressed (Wang, 2010). Therefore, the same guidelines cannot be similar for all counties. In this regard, the different roles and responsibilities of national government and the private sector and the stakeholders should be clearly defined (Zeng, 2016).

Since the success of the first EPZ (an offspring of the SEZ concept) in Shannon (Ireland) in 1959, many countries have used SEZs as an instrument to accelerate industrialisation (Zheng, Barbieri, Tommaso and Zhang, 2016; Nel & Rogerson, 2013; Zeng, 2016). During the 1960s and 1970s East Asia and Latin American countries have focussed the EPZ strategy

in trying to promote exports by attracting FDI in the secondary sector (Zeng, 2016). China's success encouraged numerous countries such as India, Iran, Jordan, Poland, Russia and South Korea to elevate the idea of SEZs to a global phenomenon (Zeng, 2016). SEZs have been adopted as a successful tool for economic enhancements in LEDCs (Nel & Rogerson, 2013). However, MEDCs in particular, UK and USA, have introduced the SEZ strategy in their economies. In the UK the strategy was implemented between 1979 and 1982 to stimulate investment in stagnant industrial areas (Zeng, 2016). The USA first introduced this strategy in Rustbelt States, which later spread to most of the states.

Despite the economic success enjoyed by SEZs and EPZs such as unemployment reduction and regional economic development, there has also been concerns such as unsatisfactory working conditions, limited skilling of local labour and exhorting costs associated with establishing these SEZs (Nel & Rogerson, 2013).

2.7.1 China

It is believed that SEZs are accountable for China's phenomenal economic success over the previous three decades. SEZs (Chen & Jameson, 2012; Nel & Rogerson, 2013). The Chinese experience has showed that the SEZ strategy needs to be adapted with changing trends worldwide (Brautigam & Xiaoyang, 2011; Leong, 2013; Nel & Rogerson, 2013). Hence, there is a need to ensure that SEZs evolve in respect to planning procedures in a way that incorporates other economic policies of reform (Wei, 2012; Sigler, 2014; Leong, 2013). The first SEZ was introduced in China in 1978 to expose China's development to the world, obviously with the intention of using the worlds buying power to develop the economy (Nel & Rogerson, 2013; Wei & Leung, 2005; Sigler, 2014). These SEZs were established near large urban areas in the coastal regions of China (Leong, 2013; Zheng, Barbieri, Tommaso & Zhang, 2016). The combination of an ideal location, careful policy planning in terms of infrastructure development, investor incentives, labour availability and in particular decentralisation of commercial and industrial activities are factors that have contributed to the success of the SEZ strategy in China (Chen & Jameson, 2012; Leong, 2013; Zheng, Barbieri, Tommaso & Zhang, 2016; Lonarkar, 2014).

Although the SEZ strategy has been highly successful in attracting FDI, the question remains whether SEZs have significantly contributed to local economic development. Some economists argue that instead of been steered by market trends, they are in fact grounded by

the local government (Zheng, Barbieri, Tommaso & Zhang, 2016). Hence, as mentioned earlier in the critique, the success of SEZs depend on contextual challenges in each zone.

2.7.2 India

Another success story of the SEZ strategy is India. While India gained independence in the 1950s, the legacy of their colonial past presented them with various challenges in terms of economic development (Hermansen, 2016). The effects of a negation balance and payment, insufficient foreign exchange revenue, poverty and a lack of exporting processed goods did at first hinder the success of EPZs, India's first EPZ was in Kandla in 1965 followed by Mumbai in 1974 and then Noida, Chennai, Cochin and Falta in 1985 (Hermansen, 2016; Leong, 2013). Since Indians were inadequately skilled in bureaucratic and administration procedures as well as strict labour laws and unsatisfactory infrastructure, a negative climate in respect of investment prevailed.

In 2000, India replaced the ideals associated with EPZ with SEZs (Nagayya & Rao, 2010; Nel & Rogerson, 2013; Lonarkar, 2014; Aggarwal, 2006; Leong 2013). SEZs were granted more incentives than its previous strategy. The main aim of the new SEZ included export promotion, attracting FDI and increasing the country's economic development. The SEZ Act was passed in May 2005. In addition to new SEZs been proposed, all existing EPZs were also converted to SEZs. By 2007, India had approved 234 SEZs. The high number of SEZs have raised concern and doubts about the success of this strategy in boosting economic advancement. In addition, to export promotion and creation of jobs, SEZs also addresses issues of poor infrastructure, procedural bureaucracy and rigid labour policies. From an Indian context, while SEZs have successfully negotiated the country through tough times and increased exports of processed goods, created employment and boosted infrastructure development, there have been some negatives as well (Aggarwal, 2006; Nel & Rogerson, 2013). These include a dense core area and large intolerance in that the periphery remains severely underdeveloped (Nagayya & Rao, 2010).

2.7.3 Malaysia

Malaysia's colonial exploitation lasted over 400 years until 1957, with unemployment reaching its peak in latter part of the 1960s (Le Roux & Schoeman, 2016). Malaysia, the first country to implement SEZs in Asia, introduced its first SEZ in Bayan Lepas FIZ in Penang

in August 1971 (Le Roux & Schoeman, 2016). The aim of this SEZ was twofold i.e. to accelerate industrial development and attracted human resources with skills in marketing, production and exporting of goods. This enhanced the process whereby domestic markets were encouraged to produce goods and, in the process, increase export of goods. (Zeng, 2016).

2.7.4 Indonesia

Political governance negatively affected Indonesia in terms of economic growth, as was the case in Malaysia (Le Roux & Schoeman, 2016). Indonesia gained independence from Holland in 1945 after being ruled for three and a half centuries by the colonial power. Prior to this, Indonesia was subjugated by Japan as there was a shortage of basic needs (Le Roux & Schoeman, 2016). Batam was the one of the key zones in Indonesia and was developed primarily for logistics and the distribution of oil and gas. Indonesia's development in industry, together with the associated advantage of job creation was enhanced by large amounts of investment (Le Roux & Schoeman, 2016). Indonesia's industrialisation has metamorphosised from EPZs to more recently SEZs. The local government as well as the business sector has been pivotal in the SEZs within the country (Le Roux & Schoeman, 2016).

2.7.5 Poland

SEZs were introduced in Poland in 1994 and EURO-PARK Mielec was the first SEZ established. The SEZ Act of 1994 considered the following aims: to develop the zone economically, transfer of technology onto these zones to boost exports from these zones, to enhance the competitiveness of goods and services that were produced as well as to generate more employment opportunities (Jenson & Winiarczyk, 2014). The main aim of the SEZ strategy in Poland, however, was to eradicate unemployment and to neutralise income differences across the country. (Hajduga, 2013; Jenson & Winiarczyk, 2014). The Polish example highlights a wide variety of investment opportunities particularly, the boosting of private businesses has been successful in the Polish SEZ (Jenson & Winiarczyk, 2014).

2.8 Lessons to be learned from the international practice of SEZs

Due to a continual metamorphosis of economies across the world, SEZs need to also keep abreast of such changes (Robbins, 2014). More modern changes include the rise of SEZs as

a strategy towards development as they provide a link to the local economy and are multifunctional.

The international success stories associated with SEZs have the following common features (Robbins, 2014):

- Government intervention must be sustained over an extended period of time.
- A transparent and effective legal system with effective institutions including one stop-shop services.
- Advanced infrastructure ideal locations.
- Emphasis on economic enhancement while contributing positivity to society.
- Development should be sustainable, particularly when considering the environment.

Throughout the world SEZs have encouraged economic growth and employment. Examples include Dubai, China, Korea, Singapore, Jordan, Bangladesh and Costa Rica (Zeng, 2016). These countries have accepted that the SEZ strategy is an imperative tool that enhances economic and industrial development. However, this idea must be supported by government and infrastructure should be of an advanced standard (Zeng, 2016). If the above features are inherent in a country, investors would certainly want to migrate into such zones. Perhaps the most crucial advantage that SEZs are associated with is the creation of employment opportunities. Many of the most successful SEZs in terms of employment creation were established in Asia (Aggarwal, 2007). Taiwan and Korea have been the two most successful examples while Indonesia, Malaysia, Thailand and Philippines in Asia are other successful examples of employment creation by SEZs (Aggarwal, 2007). In order to fully benefit from the zone programmes, governments and zone management need to consider the local comparative advantages as they target priority sectors (Nel & Rogerson, 2013).

While EPZs were established to attract foreign investment, SEZs were introduced to incorporate this feature with developing local entrepreneurs. SEZs should work in such a way that national development should support regional development and vice-versa. In terms of the international SEZ experience, success ranges from minimal to extraordinary (Nel & Rogerson, 2014).

2.9 Special Economic Zones in South Africa

In Africa, more than 20 countries have established SEZs. The first SEZ in SSA was established in Mauritius in 1971, which was considered a success (Nel and Rogerson, 2013). However, throughout SSA, the SEZ strategy has not achieved much success due to inter alia, insufficient planning and poor maintenance of zones, investment into the zones are inadequate and poorly developed infrastructure (Nel and Rogerson, 2013; Brautigam & Xiaoyang, 2011). Of particular relevance to Africa is incompetent government control, lack of both physical and human resources and the inability to implement policies (Zeng, 2016). It is for these reasons that the establishment of SEZs in Africa is poses risks. In general, Africa finds itself on the back foot compared to countries in other continents in terms of employment generation, exports and attracting investors. A staffing anemology is that in Africa there is an average of 35 businesses per SEZ where this figure escalates to over 300 in the Asian countries (Nel & Rogerson, 2013).

2.9.1 Challenges faced by African Special Economic Zones:

Although the African SEZs have seemingly made progress due to the potential offered by SEZs, there are numerous challenges that must be considered listed below (Zeng, 2016; Aggarwal, 2007):

Problematic legal, regulatory and institutional frameworks: There are either outdated or non-existent.

Poor business environment: This results in exorbitant costs in terms of licencing, registration, customs clearance.

A lack of strategic planning and a failure to adopt a demand-driven approach: These should incorporate national, regional and local government (municipalities) development.

Inadequate infrastructure: While this occurs in all zones, the degree to which infrastructure is lacking varies. There should be a close relationship between government and the private sectors in rectifying this concern.

A lack of operational know-how for zone management: There are insufficient skilled

managers to drive the process forward.

A lack of policy consistency, and a failure of host governments to maintain commitments to zones: Since the SEZ strategy is a long-term project, they may be influenced by new government which may not have the same commitment as previous governments.

A failure to address land acquisition and resettlement issues: Land that historically belonged to other individuals may be problematic if governments do not compensate those whose land was expropriated.

2.9.2 Special Economic Zones in the South African context

South Africa is faced with many socio-economic issues such as retarded economic progress, escalating levels of unemployment, the gap between the rich and poor, and entrenched poverty (Le Roux and Schoeman, 2016; Nel & Rogerson, 2013). SEZs are officially defined in South Africa as "a geographical designated area of a country set aside for specifically targeted economic activities which are then supported through special arrangements (which may include laws) and support systems that are often different from those that apply in the rest of the country" (Nel & Rogerson, 2013: 205). SEZs are regarded as a tool for trade and development by enticing foreign investment with tax reduction and other incentives (Nel & Rogerson, 2013). In order to speed up the process of establishing SEZs, the DTI produced the SEZ Bill in 2011 (Nel & Rogerson, 2014). SEZs are considered instruments that can create sustainable economic and industrial development. This would have the reciprocal effect of further developing the infrastructure and assisting the industries that would be the tenants in these zones. As a result, the underdeveloped periphery would then be exposed to commercial development (Nel & Rogerson, 2014). Therefore, SEZs have the ability to promote local municipalities as well as attracting national and international investors (Nel & Rogerson, 2013).

2.9.3 Special Economic Zones Act

In 2014, the SEZ Act No. 16 was passed by parliament which legalised the SEZ policy in South Africa (Nel & Rogerson, 2014). This act maintained that state intervention is imperative for development in the country. According to the act, SEZs are instruments that

enhances economic growth and exports. These goals will be achieved by encouraging foreign and local investments. Furthermore, the government and private sector should complement each other to attain the goals of national development (Nel & Rogerson, 2014). The act identifies four types of SEZs namely; free ports, FTZs, IDZs and sector development zones. The SEZ Act specifies that that the pre-existing but poorly achieving IDZs will be designated as SEZs (Nel & Rogerson, 2014). SEZs evolved from IDZs due to criticism on the effectiveness levelled against the latter (DTI, 2018).

A development model that emphasises sustainable development was proposed by the NDP. The key features of the NDP was job creation, economic enhancements and reducing the gap between rich and poor. The NDP and IPAP are instruments used by national government to further propagate industrialisation as this was fundamental in creating a sustainable work force (DTI, 2018). The new legislation on SEZs was drafted with an aim of redesigning and expanding the IDZ programme and providing a comprehensive policy framework (Nel & Rogerson, 2014; Luthuli & Houghton, 2015).

The South African government introduced the following SEZs in the country:

1. Coega IDZ (Eastern Cape)
2. Richards Bay IDZ (Kwazulu-Natal)
3. East London IDZ (Eastern Cape)
4. Saldanha Bay IDZ (Western Cape)
5. Dube Tradeport SEZ (Kwazulu-Natal)
6. Maluti-A-Phofung SEZ (Free State)
7. Or Tambo IDZ (Gauteng)
8. Musina/Makhado SEZ (Limpopo)
9. Atlantis (Western Cape, newly designated SEZ in 2018)

2.9.3.1 Dube TradePort

The Dube TradePort Corporation (DTPC) is steered by the provincial government. It promotes global trade by linking KZN with the rest of the world. It also combines office parks, leisure (e.g. hotels), refuse and primary economic activities (agricultural). The two zones that are granted with a SEZ status within DTP are the Dube TradeZone and the Dube AgriZone. The Dube TradeZone encourages the manufacturing of value-added goods in the

field of clothing and textile, motor vehicle and electronics (DTP, 2019). The shipping industry is imperative to its success with a link to the Dube Cargo Terminal. The Dube AgriZone is a highly scientific facility that uses the greenhouses for farming and horticulture (DTP, 2019). The KSIA ensures speedy transport of products. DTP comprises of 5 business zones namely:

1. **Dube TradeZone**: An industrial precinct for electronics, pharmaceutical and aerospace manufacturing
2. **Dube Cargo Terminal:** A state-of-the-art cargo handling facility
3. **Dube AgriZone:** A high-tech agricultural development which has the largest climate-controlled glass-covered growing area in Africa
4. **Dube City:** A business and hospitality precinct
5. **Dube iConnect**: A telecommunications platform & premier cloud service provider

There are a few factors that have been identified as a positive recipe for success regarding SEZs after reviewing the global as well as African experience of SEZs. Firstly, SEZs need to entwine with national economies policies and urban growth as can be learnt from the Asian experience (Nel & Rogerson, 2014). SEZs cannot be independent of the national economy. In addition, the private sector must be included.

The success of SEZs throughout Africa and even South Africa has experienced different levels of success. The success of SEZs depends on their ability to generate sustainable job creation and the promotion of value-added exports (Nel & Rogerson, 2014).

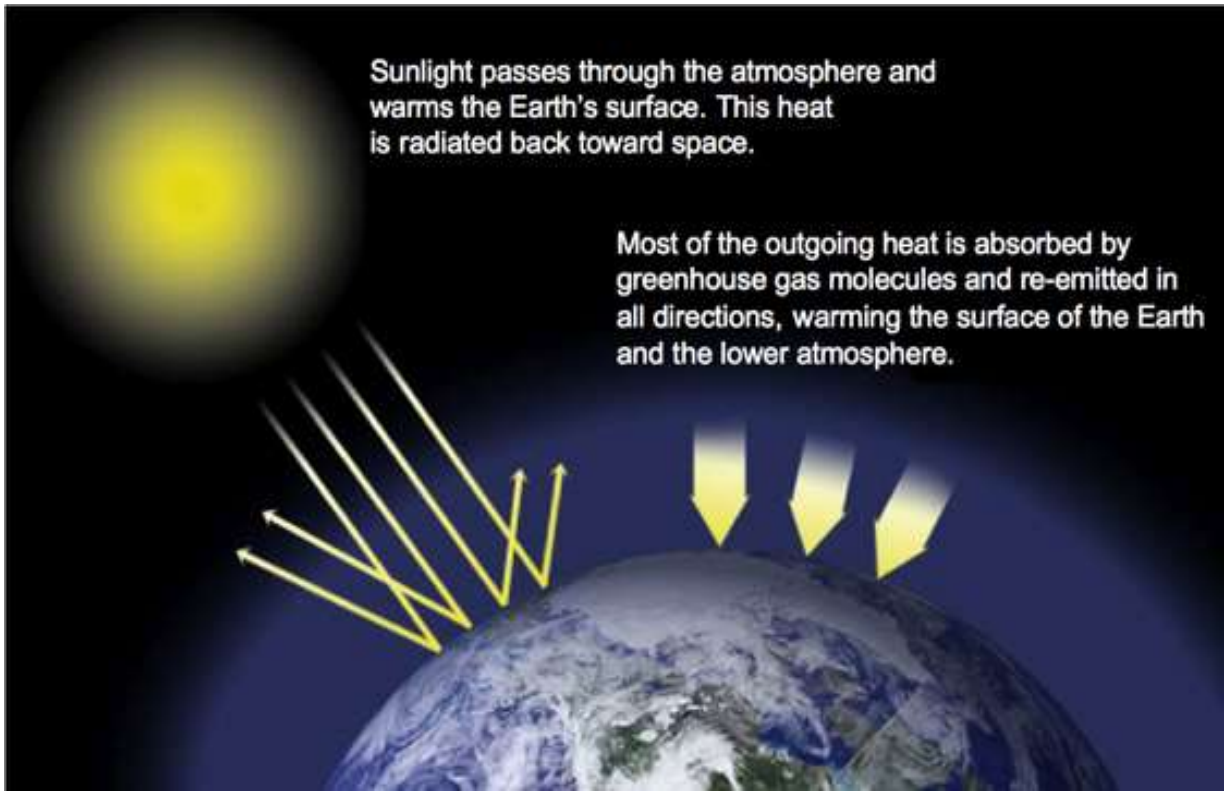
2.10 Climate and climate change

The notions of climate and climate change are often loosely employed and it remains unclear what exactly is understood by them (Werndl, 2016). Generally, climate refers to the average condition of the atmosphere measured over a period of time. The National Aeronautics and Space Administration (NASA) Global Climate Change (2019), states that climate change deals with altering the natural course of weather phenomena mainly by the overuse of fossil fuels. According to the Framework Convention on Climate Change (FCCC), climate change refers to extremes in climatic conditions caused by activities that are generated by humans (Pielke, 2004; Weber, 2010).

2.10.1 The greenhouse effect

The greenhouse effect refers to the trapping of insolation (short-wave radiation) (Schulze, 2007). The natural gases that are found in the atmosphere e.g. methane, carbon dioxide and water vapour have the ability of allowing short-wave radiation to the earth's surface (Schulze, 2007). However, these gases absorb terrestrial radiation from the earth's surface and they trap this long-wave radiation within the atmosphere. As a result, the temperature on earth becomes elevated because heat cannot escape into the higher atmosphere (Schulze, 2007).

Figure 2.1: The greenhouse effect



Source: *NASA Global Climate Change, 2019*

2.10.2 Climate in Durban, KwaZulu-Natal

Africa has a variety of climatic regions. In fact, Southern Africa, has up to six different climatic regions including, semi-desert, desert, sub-tropical, temperate and Mediterranean (Hulme, Doherty, Ngara, New & Lister, 2001). The primary climatic element that is experienced in different qualities are rainfall and temperature. Durban is a coastal city in KZN and has the largest port along the east coast of Africa. Durban is situated on the 30°S latitude and therefore experiences a sub-tropical climate (Roberts & O'Donoghue, 2013).

Therefore, Durban experiences summer rainfall coupled with high humidity (NASA Global Climate Change, 2019). Winter is comfortable, due to the moderating influences of the warm Agulhas current which originates at the equator (Roberts & O'Donoghue, 2013). The effects of global warming on Durban's climate indicates that temperature will rise between 1.5°c to 2.5°c by 2025 and by 3°c to 5°c by 2100 (Roberts & O'Donoghue, 2013). This will affect the growth of the agricultural sector in the near future; therefore, precautions should be taken in order to minimise these effects.

2.10.3 Climate change in Durban: impact on agriculture and food security

Climate variation will negatively impact on agriculture and food security (Durban Climate Change Strategy, 2014). Farming in South Africa is influenced by the availability of rainwater during the rainy season. As a result, lower than normal rainfall during the wet season will result in smaller agricultural output unless other methods of irrigation are used. If temperatures are abnormally higher, the impact on the quality of food will be negative (Schulze, 2007). This may mean that more refrigeration facilities would be required to prevent the spoiling of fresh produce.

The negative impact of climate change and global warming cannot be underestimated. Precipitation (especially rainfall in South Africa), temperature variations and the water cycle are all affected by climate change (Schulze, 2007). Natural disasters (droughts and floods) will certainly decrease food security and all its associated challenges. Therefore, notwithstanding the fact that Durban has benefitted tremendously in terms of economic development since the dismantling of apartheid, the impact of climate extremes has to be factored in (Pielke, 2004). The Durban municipal climate protection programme has highlighted the urgency to ensure sustainable development while identifying climate elements that need to be addressed until the view of funding management strategies to cope with the challenges (Roberts & O'Donoghue, 2013).

2.11 Agriculture

The economic sectors in South Africa are the primary sector (agriculture), secondary sector (e.g. industry), tertiary sector (e.g. services) and the quaternary sector (e.g. advanced research) (Briones, 2017). The agriculture industry increased by 7.9% and contributed 0.2% to GDP growth in the fourth quarter of 2018 (Statistics South Africa, 2019). The primary

focus of agriculture is to reduce poverty by ensuring food security. Therefore, although its contributing to GDP has been low, agriculture is a vital sector in terms of overall growth and the alleviation of poverty (Briones, 2017).

Development economics entails the use of resources in a sustainable manner intending to obtain the main aim of improving the standard of living of individuals in the country (Ariatti and Chasomeris, 2015). Furthermore, Ariatti and Chasomeris (2015) identify farming as a tool to steer sustainable LED. This process must involve all stakeholders. Due to its labour intensity, agriculture is a key sector in providing employment opportunities both directly and indirectly, especially for indigent moral community. Worldwide, nearly one billion people are facing food security challenges, Africa contributing the most to this figure (Ariatti & Chasomeris, 2015). The world's population is growing geometrically while food production is growing arithmetically. In addition, climate change is a further threat to food production. Thus, sustainable agricultural practices need to be adapted and the amount of greenhouse gasses should be reduced to ensure food security (Beddington, Asaduzzaman, Clark, Bremauntz, Guillou, Howlett, Jahn, Lin, Mamo, Negra, Nobre, Scholes, Van Bo & Wakhungu, 2012).

2.11.1 Agricultural perspectives in Africa

The state of agriculture in South Africa has been the topic of debate by many researchers. The agricultural sector faces many challenges such as climate change. Most African countries experience challenges such as unsustainable farming practices, inefficient transport systems, climatic extremes and environmental despoliation. However, there are also many positive attributes that favour farming such as the large expanses of arable land. It is for this reason that agriculture can be seen as one of the means to reduce poverty. The agriculture sector needs to take a more assertive role on many African countries because of the exponential growth of the population. The fact that there are vast expanses of untouched farmland, suggest that producers in African countries should target the international market in addition to the domestic market (Cohen, 2005 in Cassim, 2014).

According to Cassim (2014), businesses are needed to enhance the growth of markets. The obstacles that businesses experience include poor infrastructure development, incapable government and incomplete development of business houses. The obstacles that hinder exports to agriculture products include trade barriers, local outsourcing of products and the

availability of a market for fresh produce (Beddington, et al., 2012). Many farmers are now producing value-added agriculture products for overseas export rather than just growing staple crops. Many African countries are also producing products with low shelf-life which is considered a means of alleviating poverty (Scoones, Devereux & Haddad, 2005).

2.11.2 South Africa

The NGP, NDP, and IPAP accepts that the processing of agricultural products is key to increase the role of industrialisation (ITAC, 2016). This trend is especially true due to the decrease in the prices of mining commodities. Most of Africa's poor are rural and rely largely on agriculture for their livelihoods (Scoones, Devereux & Haddad, 2005). Consequently, the agricultural sector can generate more employment opportunities and will result in improving the standard of living of people. With the increase in commercialisation farming products, the importance on industries that process these products and the role played by farmers is diminishing due to large firms in the agribusiness (ITAC, 2016). Contract farming and its associated link to farmers is activity that is taking place on both MEDCs as well as LEDCs. Therefore, contract farming must be seen as the bridge that links small-scale farmers to agribusinesses supply chain (Sautier, Vermeulen, Fok, & Biénabe, 2006).

2.11.3 Agricultural techniques

Throughout the world, obstacles such as climate extremities, population growth, urbanisation and the reduction in the availability of farmland, have become a growing concern for farmers (Maumbe, 2010). However, new and scientific farming methods and technologies seem to be the saviour of this sector. Controlled-Environmental Agriculture (CEA) which involves enclosing the physical environment with greenhouse facilities is one technique (Cassim, 2014). CEA takes place within an enclosed environment and it involves hydroponics. Sky-farming (vertical farms) is another technique that involves farming with a purpose-built multi-storey building. These methods will be guided by the type of produce being grown.

CHAPTER THREE: RESEARCH METHODOLOGY

3.1 Introduction

As already indicated in chapter one of the dissertation, the purpose of this study is to explore the contribution of DTP's AgriZone to LED. LED is a major development strategy exercised at the local level in South Africa as a way to attain economic progress in the democratic era (Houghton, 2016). It is expected that the data collected, and the findings of the research will add to the cumulative knowledge in South Africa in terms of SEZs and their effect on LED, specifically the AgriZone.

This chapter describes the qualitative research approach that was used in order to meet the objectives of this study. In this chapter the research paradigm, research approach, research design, data collection, data analysis, trustworthiness and the ethical considerations of the study will be discussed.

3.2 Overall research methodology

The research methodology describes the process of the way research is conducted i.e. the procedure to be followed when undertaking research (Chilisa & Kawulich, 2012). However, before deciding on the methodology, the research paradigm which informs the study needs to be considered (Creswell, 2014). Thus, the first step of conducting research is to consider the philosophical assumptions. When conducting research, it is important for researchers to consider the philosophical assumptions that they have, the research design which is associated to these philosophical assumptions and the methods that transform the approach into practice (Creswell, 2014). Researchers' have their own viewpoints about what compromises of the truth and knowledge which influence their choice of procedures (Creswell & Miller, 2000). These views influence one's thoughts and beliefs and provide a lens in which one views the world. According to Creswell (2014), the beliefs of people based on these assumptions will specify the type of research approach that the researcher will use i.e. a qualitative, quantitative, or mixed methods approach. This will be discussed in more detail using the concept of a research paradigm. According to Creswell (2014), paradigms are also referred to as worldviews, ontologies and epistemologies. For the purpose of this dissertation, the term paradigm will be used.

3.3 Research paradigms

A paradigm is a concept that refers to "a basic set of beliefs that guide action" (Creswell, 2014:35). Weaver and Olson (2006:460) refer to paradigms in more detail as "patterns of beliefs and practices that regulate inquiry within a discipline by providing lenses, frames and processes through which investigation is accomplished." This suggests that paradigms can be used as a means to match the requirements of a discipline with the procedures of obtaining and constructing the knowledge in that discipline. Paradigms are constructed by groups of academics with common or similar beliefs about the nature of reality and the way knowledge is created (Weaver & Olson, 2006). Paradigms be categorised using disparities in ontology, epistemology and methodology in their methods of conducting research as well as in their influence on construction of disciplinary knowledge (Weaver & Olson, 2006; Chilisa & Kawulich, 2012).

The term ontology is the study of reality and refers to how one views reality (Weaver & Olson, 2006; Saunders, Lewis & Thornhill, 2009). There are two aspects of ontology namely, objectivism and subjectivism (Saunders, Lewis & Thornhill, 2009). Objectivism suggests that reality exists whether we acknowledge it or not i.e. reality exists independent of one's comprehension of it (Saunders, Lewis & Thornhill, 2009; Gorman & MacIntosh, 2015). Thus, it is possible to explain facts through replicable methods. On the contrary, subjectivism suggests the perceptions and actions of people are what shape reality (Gorman & MacIntosh, 2015). Subjective ontology views facts as culturally and historically generated and is therefore subject to various behaviours, perceptions and experiences of the observer and the observed. Subjective ontology has a multiple approach to reality as individuals have their own unique experiences (Gorman & MacIntosh, 2015).

According to Bryman (2012), ontological assumptions influence the way in which research is conducted. This study uses the subjective ontology which favours the qualitative approach as the objective of the study is to explore the contribution of DTP's AgriZone to LED by finding out the perceptions of the individuals who were interviewed.

3.4 Research approaches

When conducting research, there are three approaches that can be used namely; quantitative, qualitative, and mixed methods (Bryman, 2012; Leedy & Ormrod 2014). Research

approaches can be regarded as the plans and procedures for research that comprise of steps from broad assumptions to specific (detailed) methods of data collection and analysis which include various decisions. The overall decision involves deciding which research approach should be used for the topic being researched. In order to choose a research approach, the nature of the problem being addressed, the experiences of the researcher and the audiences for the research need to be taken into consideration (Creswell, 2014). According to Creswell (2014), the research approach is responsible for connecting theory and research. The research designs, the specific research methods of data collection, analysis, and interpretation also determine the research approach to be used in a study (Creswell, 2014; Bryman, 2012). The three research approaches will be discussed in more detail below.

3.4.1 Quantitative approach

The quantitative approach to research is characterised by objective observations, precise measurements, statistical analysis, and verifiable truths. Statistics are generated using survey research making use of methods such as questionnaires and structured interviews (Dawson, 2002). This approach involves many participants but the contact with them is not in depth as in qualitative research. It focuses on measuring variables and providing an analysis of the results using methods that are statistical in nature (Creswell, 2014). Thus, it is an approach that investigates theories objectively by looking at the associations among variables. Thus, the research is independent of the researcher and can be generalised. Creswell (2014), suggests that the quantitative approach is generally associated with testing theories deductively, reducing bias, monitoring for alternate outcomes and generalising the results. If theory is an outcome of research then it is inductive (Bryman, 2012). The epistemology for this approach is objective. Quantitative research is broadly based on the ideals of positivism which assumes that reality exists independent of the researcher.

3.4.2 Mixed methodology

The mixed methods approach consists of an integration of both quantitative and qualitative approaches. The rationale behind this approach is that using both quantitative and qualitative approaches offers a better understanding of the research problem than if only the quantitative or qualitative approach was used. Quantitative research can be viewed as being on one end of a continuum while qualitative research being on the opposite end. The mixed method approach to research can be found in the middle of the continuum as it incorporates both

approaches into one study (Bryman, 2012). Thus, it draws strengths from each of the approaches simultaneously (Creswell, 2014; Bryman, 2012). Thus, researchers gather numerical data as well as narrative data in order to address the research problem of a study (Williams, 2007). This means that inductive as well as deductive reasoning can be used with this approach.

3.4.3 Qualitative methodology

The qualitative approach is used when the researcher wants to gain an understanding of a particular social phenomena. Qualitative research explores attitudes, behaviour and experiences through methods such as interviews or focus groups. Thus, there are less participants as opposed to quantitative research however, contact is longer and more in-depth (Dawson, 2002). Data collection for this approach is done in the participant's surroundings which allows the researcher gain a detailed level of the participants' perceptions from being exceptionally involved in their experiences (Creswell, 2014; Williams, 2007). The data analysis is based on inductive reasoning as the researcher interprets the meaning of the data gathered. Therefore, qualitative research builds new theories as it is a less structured approach to research (Creswell, 2014; Williams, 2007). The qualitative approach is suitable when key variables to investigate are not known by the researcher (Creswell, 2014). The quantitative approach suggests an objective measure of reality while the qualitative approach provides an understanding regarding the complex nature of the research question (Leedy & Ormrod, 2014). Qualitative research involves explaining, describing, analysing and interpreting the data that is gathered. The epistemology for this approach and this study can be described as interpretivist, and the ontology can be described as subjective (Bryman, 2012).

This study takes the form of a qualitative approach with the aim of exploring the contribution of DTP's AgriZone to LED. Qualitative research intends to understand the meaning and experiences of individuals and their social aspect of life through in-depth data collection methods, usually through interviews and observation (Leedy & Ormrod, 2014; Berg, 2001). In addition to the worldview of the researcher, the research design and the research methods; the decision on which research approach to use also depends on the research problem, the experiences of the researcher and the targeted audience of the research findings (Creswell, 2014). As indicated in the introduction, the purpose of this research is to explore the contribution of DTP's AgriZone to LED and thus the qualitative approach was deemed the

most appropriate for the study based on the reasons above.

A major difference between quantitative and qualitative approaches is that quantitative research involves numbers and questions that are closed-ended whereas qualitative research involves words and questions that are open-ended (Creswell, 2014). Qualitative and quantitative approaches should not be regarded as distinct approaches but instead but as different ends on a continuum. The table below shows the main differences between the quantitative and qualitative approaches.

Table 3.1: Difference between quantitative and qualitative research approaches

Quantitative Methodology	**Qualitative Methodology**
Deductive: Testing of theory	Inductive: Generation of theory
Epistemology: Positivist	Epistemology: Interpretivist
Objectivity	Subjectivity
Based on meanings derived from numbers	Based on meanings expressed through words
Results: Numerical and standardised data	Results: Non-standardised data requiring classification into categories
Many participants	Fewer participants
Statistical analysis	Conceptual analysis
Researcher detached	Researcher involved

Source: *Bryman, 2012*

3.5 Research design

Once the researcher has decided on the research approach, the researcher needs to decide on a research design within the approach. As mentioned earlier, this dissertation takes the form of a qualitative approach. Research designs can be referred to as the "types of inquiry" or "strategies of inquiry" within qualitative, quantitative and mixed methods approaches, and specify a certain way or direction for the process of conducting research and obtaining information (Creswell, 2014:41). There are many research designs for researchers using the

qualitative approach. However, there are five main areas that are commonly used in qualitative research namely; case study, ethnography study, phenomenological study, grounded theory study, and narrative (Leedy & Ormrod, 2014). A brief description of each will follow.

Ethnography focuses on the collective patterns of behaviours, actions and language of a certain cultural group of individuals in their natural setting over a certain time period (Creswell, 2014; Leedy & Ormrod, 2014). It is a research design that comes from the anthropological and sociological background. The data collection methods include interviews and observations. Ethnography emphasizes interpreting as well as describing cultural behaviour (Dawson, 2002). Ethnographic researchers involve themselves in the lives and cultures of the group being studied by actively living with the group for certain time period (Dawson, 2002). The researchers participate in a groups' activities while observing their behaviour. The focus of an ethnographic study is on the daily behaviours in order to identify social structures, beliefs, cultural norms and other factors.

Grounded theory refers to a research design from sociology in which the researcher formulates an abstract theory that is generalised a general, abstract theory of a process, and is grounded on the views of the participants. The emphasis in this methodology is on the generation of theory which is grounded in the data (Dawson, 2002). This means that it has emerged from the data. Methods such as focus groups and interviews are generally a preferred data collection method. The research requires that the theory must emerge from the primary data that is gathered rather than from the literature (Leedy & Ormrod, 2014).

Phenomenology refers to a is a type of inquiry whereby the researcher describes the lived experiences of individuals about a phenomenon as viewed by the participants. This involves trying to understand the perceptions of people in a certain situation (Leedy & Ormrod, 2014). The focus is on the participant's perceptions of the event or situation rather than the event itself. According to Creswell (2014), phenomenology has sound philosophical foundations.

Narrative research is a type of inquiry in which the researcher studies the lives of individuals and asks individuals to provide stories about their lives (Creswell, 2014). This information is then often retold by the researcher into a narrative. Thereafter, the researcher uses the participants' views along with their own views in order to provide a combined narrative.

Case studies can be found in many fields whereby the researcher provides an in-depth analysis of a certain program, event, activity or case (Creswell, 2014). Cases can be bound by time or an activity. With case studies, researchers gather in-depth information utilising multiple sources such as observations, interviews and documents over a specific time period (Creswell, 2014). This research design is useful when the understanding of an event is not well known. The data collection for a case study is extensive and draws from multiple sources such as direct or participant observations, interviews, archival records or documents.

The case study research design (type of inquiry) best suited the research problem for this dissertation. This design allowed for the researcher to conduct semi-structured interviews and gain in-depth information as well as and make use of annual performance reports and other documentation (secondary data).

3.6 Population and sampling

3.6.1 Population

According to Sekaran & Bougie (2016:236), "the population refers to the entire group of people, events, or things of interest that the researcher wishes to investigate." For this study, the population refers to all the individuals who are operating within the AgriZone of DTP. The manager of DTP AgriZone was contacted regarding all those who operate within the AgriZone and provided the details of the individuals. This formed the population for the study as the objective of the dissertation is to explore the contribution of the AgriZone within DTP's contribution to LED.

3.6.2 Sampling

Sampling is conducted differently in qualitative studies and often has a different purpose from that of quantitative studies (Neuman & Robson, 2014). Sampling refers to the process of choosing an adequate number of participants from the population in order to be able to generalise and represent the characteristics of the population when conducting research using the sample (Dawson, 2002). There are various ways to choose a sample, however the method used depends on the type of research and methodology used. Neuman and Robson (2014) mentions two namely; probability and non-probability sampling. Non-probability sampling is used in qualitative research and includes purposive, snowballing and quota sampling (Creswell, 2014). Probability sampling is generally used in quantitative research and

includes systematic, random, stratified and cluster sampling (Neuman & Robson, 2014). Probability sampling is used when the researcher wants to generalise whereas non-probability sampling is used when the researcher wants to describe a phenomenon (Dawson, 2002).

3.7 Data collection

3.7.1 Data sources

The following section discusses the data sources that were used in order to conduct the study. there are 2 types of data sources namely; primary and secondary data sources. A more detailed description of these sources will follow.

3.7.2 Primary data sources

Primary data consists of first-hand data sources which is generally obtained through field work. It is therefore directly obtained by the researcher, using interviews and observation, for a specific research question as it was previously unknown. Primary data consists of 4 main types namely; observations, focus groups, interviews, and surveys or questionnaires (Creswell, 2014). This study applied a qualitative approach as the aim of the study was to explore the contribution of DTP's AgriZone to LED. Semi-structured interviews were conducted in order to obtain data from participants regarding their perspectives on the AgriZone's contribution to LED and the challenges that hindered this contribution. Observation was also used as a method of collecting data.

3.7.3 Secondary data sources

Secondary data refers to the information that is gathered as a result of other people, organisations/establishments (i.e. information that is already gathered, not by the researcher of the study). This includes using information that has previously been gathered by others to justify the study at hand. For this study, secondary data was obtained with the intention of conducting an analysis and enabled the researcher to gain an understanding of the study within the context.

Some examples of the secondary data that was used include journals (online), theses, books, research papers, internet sources and government documents were used for this study. The

information gathered helped to understand LED as well as SEZs, and how they facilitate development as part of their objectives. It also enabled the researcher to gain a detailed understanding of the activities and operations of the AgriZone. The information gathered data assisted in understanding SEZs and LED and how they facilitate development as part of their objectives. It also enabled the researcher to gain a detailed understanding of the activities and operations of the AgriZone. The secondary data played a significant role for the data analysis section as it was used as a means to justify the need for the study and provided contextual information. Secondary data was also used was to gain an in-depth understanding of the research topic and what researchers have investigated in the past as well as to use the existing information to achieve the objectives of the study. It was also used to provide the literature review and the conceptual framework for the study.

3.7.4 Data collection tools

The concept of methods can be defined as a means that is used in order to gather data (Chilisa & Kawulich, 2012). These can be referred to as research tools as they are used in order to obtain data.

According to Lance, Dawson, Birkelbach & Hoffman (2010), various types of interviews exist in social research e.g. structured and unstructured interviews as well as semi-structured interviews. The researcher makes use of unstructured interviews when trying to obtain a complete understanding of the participant's perception. With unstructured interviews, the participants are able to discuss anything that is deemed important with minimum influence from the researcher. This type of interview can only be used for qualitative research. Structured interviews are used in quantitative research and can be conducted face-to-face, over the phone or using an electronic device. With structured interviews, the interview schedule has specific questions that are answered by all participants, thereby relatively simple to manage (Lance et al., 2010). Unstructured interviews are conducted with less organisation as there are no set questions and is relatively challenging to manage. Semi-structured interviews fall between structured and unstructured interviews and is a relatively flexible approach as it enables the researcher to gather additional or detailed information and allows the researcher to ask follow up questions. The interview schedule for this type of interview influences or directs the responses of the participants.

According to Lance et al. (2010), semi-structured interviews are the most commonly used

technique. For this type of interview, the researcher desires to find out precise data that can be associated and distinguished with other data collected from previous or further interviews (Lance et al., 2010). In order for this to be accomplished the exact questions need to be carried out in each interview. However, it is important to take into consideration flexibility (of the researcher) in order to obtain any valuable data that may surface (Lance et al., 2010). For this type of interview, the researcher produces an interview schedule which consist of a list of specific questions or a list of topics to be discussed.

The researcher interviewed 4 individuals who operated within the AgriZone including the management of the AgriZone. The participants were selected by contacting the manager of the AgriZone who provided details of those who were operating within the AgriZone. Three of the participants were farming within the AgriZone. The fourth participant was a management representative of the AgriZone. All interviews were conducted within the AgriZone during working hours. The type of interview used for this study was semi-structured interviews as it allowed a more flexible approach to obtain information while also providing some structure regarding the data analysis. All interviews were conducted face-to-face using a list of questions. The interview questions are shown in Appendix 2. All the interviews were audio-recorded once permission was obtained from the participants and the recordings of the interviews were transcribed after each interview. A major challenge regarding data collection was that there was a limited number of people operating within the AgriZone when interviews were conducted. The researcher also manually documented responses from the participants throughout the interview. Table 3.2 below presents the list of participants who were interviewed. Prior to conducting interviews, ethical clearance was obtained from the University of KwaZulu-Natal, Westville campus which is attached in Appendix 3.

Table 3.2: Participants interviewed

INTERVIEW	**PARTICIPANTS**	**ORGANISATION**
1	Participant A	Dube TradePort: AgriZone (Lebombo Cape)
2	Participant B	Dube TradePort: AgriZone (Lebombo Cape)
3	Participant C	Dube TradePort: AgriZone (Management)
4	Participant D	Dube TradePort: AgriZone (Qutom Farms)

Source: *Author's own creation*

According to Creswell (2014), the steps in data collection involve the boundaries that need to be set for the study, collection of data through interviews and documents and establishing protocol for recording the data obtained. In this case, the researcher conducted face to face interviews. During the process of research, the investigator may collect qualitative documents which the researcher did. Public documents such as the annual performance plan and other relevant documentation was requested and collected.

The research problem dictated that the interview method was the principal source of data collection for the study and a purposive sample of interviews was chosen from the DTP AgriZone. The researcher also used observation as a means to collect data. The emphasis of qualitative research was on quality rather than quantity concentrating on maximising the data obtained from the participants respondents instead of the number of participants.

3.7.5 Observation

When qualitative research involves the interaction of people, data collection is done using any of the three methods: open-ended interviews, observation by participants or written documents. The manner in which data is obtained for qualitative research is derived from fieldwork. During this process the researcher occupies his time in the sample area under study. In this way observation can be concluded, analysed and documentation and other library works can be conducted and also the interviewing of participants can be completed. At times, even the researcher can be involved in these activities. The observation process includes behavioural activities of participants as well as interpersonal interactions and organisation processes (Mulhall, 2003; Patton, 2005).

Together with observation and analysis of documents, qualitative interviews can be used as a primary strategy for data collection. For this research study both semi-structured as well as unstructured methods were used for interviews and observation. Data collection was administrated by research wherein participants were observed in their respective fields. Data obtained using the ocular senses is fundamentally used for observing settings, activities and people from the participant's perspective. When observation is used in conjunction with interview, the researcher will be able to identify certain information that the participants may not be aware of or perhaps even are not willing to talk about. Thus, will overcome any ambiguity between what people orally relate and what they really do (Mulhall, 2003).

Observation can involve any of or a combination of the following strategies. Firstly, the researcher can be alienated by observing from outside. Another strategy involves the researcher maintaining a positive presence without any interaction. Researchers could also engage in a very limited manner and only intervenes when clarity of issues need to be sought. The fourth strategy involves the researcher acting as a full participant. Primary data collection includes direct observation and collection of documents (Jorgensen, 2015).

3.7.6 Types of observation

Observation involves a structured or unstructured strategy. The research question will guide the strategy to be used. Observation is an unstructured manner in generally used to understand and interpret behaviour that is guided by culture. Its basic premise prioritises context and also the acquired information between researcher and research topic. Statement observation is systematic, and it deals with positivist paradigm (Mulhall, 2003).

3.7.6.1 Unstructured observation

Unstructured observation does not involve the use of criteria that the researcher may be guided by. They may have a notion what to observe but these notions and perception may alter as they obtain more data about the participants and the field (Mulhall, 2003).

3.7.6.2 Structured observation

Structured observation is a method that entails systematically and directly observing the behaviour of participants as well as the recording of that behaviour, according to formulated rules, in terms of categories that have been devised before data collection (Bryman, 2012; Patton, 2005). One of its main advantages is that it allows behaviour to be observed directly, unlike in survey research, which allows behaviour only to be inferred. The rules inform observers about what they should look for and how behaviour should be recorded. The rules are articulated in an observation schedule which is similar to a structured interview schedule with closed questions.

3.7.7 Triangulation

Generally, many researchers have one research technique that they use and it usually becomes the only approach to the research (Berg, 2001). Researchers assume that reality is

affected by the participants as well as themselves when observations are made of when observations are made of various situations. Therefore, each method reveals somewhat different features of the same symbolic reality. Every method is a different line of sight directed toward the same point. According to Berg (2001), by combining several lines of sight, researchers obtain a better, more substantive picture of reality; a richer, more complete array of symbols and theoretical concepts; and a means of verifying many of these elements. The use of multiple lines of sight is frequently called triangulation (Bryman, 2012). In each case, three known points or objects are used to draw sighting lines toward an unknown point or object. For this study, the researcher used interviews, observation and the secondary data collected to explore the contribution of the AgriZone to LED.

Triangulation was first used in the social sciences as a metaphor describing a form of multiple operationalism (Berg, 2001). For many researchers, triangulation is the use of multiple data-gathering techniques (usually three) to investigate the same phenomenon. The imperative feature of triangulation is not the simple combination of different kinds of data but the attempt to relate them so as to counteract the threats to validity identified in each (Berg, 2001).

3.8 Trustworthiness

According to Elo, Kääriäinen, Kanste, Pölkki, Utriainen and Kyngäs (2014) content analysis is frequently used to analyse and interpret the meaning of qualitative data. In order to determine the trustworthiness of a qualitative content analysis the following terms are used: credibility, dependability, conformability, transferability and authenticity (Elo, et al., 2014; Graneheim & Lundman, 2004). There are a number of uniform techniques in order to perform content analysis for quantitative studies however, for qualitative content analysis, this is not the case (Elo, et al., 2014; Creswell & Miller, 2000).

When determining the credibility of study, the criteria for reliability and validity are generally used. However, validity and reliability are commonly used in a positivist Such terms are mainly rooted in a positivist notion of research (Elo, et al., 2014). It is challenging to write about validity in qualitative research, however it is vital for qualitative researchers to show that the study is credible (Creswell & Miller, 2000). Thus, the term trustworthiness which is a criterion that is commonly employed in qualitative content analysis, is used to

show credibility of a qualitative study (Elo, et al., 2014; Graneheim & Lundman, 2004). The trustworthiness of a qualitative study is determined to ensure that the data collected is reliable and represents the true nature of the findings. When a researcher is conducting research that is inductive using content analysis, this is particularly imperative as categories are originated without a matrix for that is theory based but on data that was collected. In order to determine the trustworthiness of a qualitative content analysis the following terms are used: credibility, dependability, conformability and transferability (Elo, et al., 2014; Graneheim & Lundman, 2004). Authenticity was a fifth criterion that authors added to the list in 1994 (Elo, et al., 2014).

Bryman (2012), describes credibility as carrying out research with good practice and ensuring that the researcher has understood the social world correctly. Thus, it emphasises the research focus and the relevance of the data and analysis procedures to the research focus (Graneheim & Lundman, 2004). The credibility of this study was ensured by using information in the data collection procedures that relate to the AgriZone which is available on the website and official documentation that is available to the public.

According to Bryman (2012), dependability refers to the manner in which the data is managed and stored. This means that there should be records of the data collection process that can be easily accessed. The electronic data for this research was stored on a disc and kept under lock and key along with the hardcopies. According to the University of KwaZulu Natal Policy, the data will be stored at the university for a maximum of 5 years and thereafter be destroyed.

Confirmability is concerned with objectivity and the relevance and accuracy of data (Elo, et al., 2014). Although it is impossible to be completely objective regarding research in the social field, the researcher should act in good faith (Bryman, 2012). For this study, the researcher ensured that the results obtained from the data analysis was not interpreted using the personal beliefs of the researcher. The interviews were all recorded and transcribed shortly after the interviews were conducted to ensure the participants responses were representative of the findings.

Transferability refers to a study being unique regarding the research topic (Bryman, 2012). Qualitative research focuses on the quality rather than quantity regarding the number of

participants in a study. Thus, it is important to provide a distinct description of the content or culture. Bryman (2012:392) refers to this as a "thick description" as the details of the study is significant and will enable audience of the research to make a decision regarding transferability of the research (Graneheim & Lundman, 2004). This study is unique as it focuses on only the AgriZone within DTP in the form of a case study, therefore the study provides a detailed description of the research that was conducted within the AgriZone.

3.9 Ethical considerations

The research followed all the procedures of the UKZN Policy to ensure ethical standards were carried out when collecting data and composing the study. Informed consent letters were given to all participants which informed them of the topic, the nature of the research that was conducted, the topic and also informed participants that they were allowed to withdraw from the research at any time. The informed consent form also asked participants' permission to record the interviews that was conducted. The researcher requested permission from the manager of DTP's AgriZone to conduct research within the AgriZone, and a gatekeeper's letter was received by the researcher which allowed the researcher permission to the facility. Interviews were only conducted after obtaining permission.

3.10 Data analysis

The qualitative research approach has flexibility in terms of the techniques and procedures for analysing data (Leedy & Ormrod, 2014). The analysis process involves making sense out of image and text data. The researcher made use of content analysis approach. This is a flexible method that can be used and applied to various kinds of unstructured textual information (Bryman, 2012). Bryman (2012:289) describes content analysis as "any technique for making inferences by objectively and systematically identifying specified characteristics of messages."

Content analysis in qualitative research can be done in an inductive or deductive way (Elo, et al., 2014). The inductive and deductive approaches to content analysis consist of three main stages namely; preparing, organising and presenting the findings. The organising stage in the inductive approach includes coding, creating themes or categories and abstraction. This study used the inductive approach to qualitative analysis. "Content analysis is systematic because all relevant material is taken into account, a sequence of steps is followed

during the analysis, and the researcher has to check the coding for consistency" (Elo, et al., 2014:8).

Creswell (2014) suggests the following steps when analysing qualitative data which the researcher made use of:

Step 1: The researcher should engage in the preparing the data for analysis by organising the data for this process. This involves transcribing the interviews, typing field notes as well as sorting the various types of data.

Step 2: The data is the read many times by the researcher in order to reflect and gain a general understanding of what the participants are expressing. The researcher may use the field notes and make notes of the general ideas that emerge from the participants' responses.

Step 3: This step is more detailed than the previous step as it involves organising the data into texts or general groupings. This is known as coding. Creswell (2014:247) explains coding as "the process of organising the data by bracketing chunks (text or image segments) and writing a word representing a category in the margins." This step involves creating a list of ideas that emerge and thereafter group the similar ones and create codes.

Step 4: The coding process can be used once again in order to provide description of the individuals and setting of the research. The codes generated can then be used to generate themes for the process of analysis. These themes are used and are known as major findings of the research. This study takes the form of a case study therefore requires a detailed report of the setting and an analysis of the data for themes (Creswell, 2014).

Step 5: This step involves how the qualitative narrative will be organised or structured from the themes and description generated in the previous step. According to Creswell (2014), the most used approach is the narrative passage.

Step 6: This is the final step in the analysis process and involves formulating an interpretation of the data. In this step the findings may be compared to previous findings and either confirm or diverge from these findings. The interpretation can be done in various ways in order to match research designs.

In summary, the data analysis was done using a content analysis using the inductive method. The data was analysed by separating the data into different codes. Thereafter, the themes were generated which were reflected as key findings in the research. The data analysis is explained further in chapter four.

3.11 Research limitations

One limitation of the study was contacting all those who farm within the AgriZone. However, the manager of the AgriZone was contacted and provided details of those who were tenants at the AgriZone's greenhouses and packhouses. The number of people who are operating at the AgriZone were very few as all the farmers did not grow their crops at the AgriZone greenhouses. However, the packhouse was used to be store, packed and transport products to the stores and local community. Since the number of people who were operating within the AgriZone was limited, an attempt to interview participants who previously operated within the AgriZone was made, without any success. Thus, it is possible that the research did not represent a variety of responses as there were not many people operating within the AgriZone. Although this is a limitation to the research, it must be noted that all those participants who were operating within the AgriZone was contacted and interviewed, and secondary data was gathered (the statistics on performance) to strengthen the study. The researcher also attempted to interview the provincial government that governs DTP; however, no response was received after many attempts. The researcher used the data that was obtained via semi-structured interviews, the analysis of documents and observation during the fieldwork at the site. Thereafter, the researcher used triangulation of these three types of data as a means to validate the findings. The researcher used the information that was obtained to provide information on the AgriZone as a case study and the findings are therefore unique to this specific case.

3.12 Conclusion

In this chapter, the researcher presented the research design and methodology that was used to attain the purpose of the research. The research methodology was based on the type of research problem in relation to the design of the research, the methods of data collection, the analysis of the data and the significance of the study. This was based on the aim, the research problem and the objectives of the research after reviewing the appropriate literature. The research was conducted in a manner that was systematic using a qualitative methodology

approach. The next chapter will go into the analysis and findings of the study in detail.

CHAPTER FOUR: FINDINGS AND DISCUSSION

4.1 Introduction

As indicated in the previous chapter, the research problem and the focus of the study determined that conducting interviews was the key method of collecting data. In addition to conducting interviews, the researcher also used observation as a means of data collection. This chapter presents the findings of the study using the data gathered by the researcher with the aim of obtaining the objectives of the study (explore the general practice of those operating in the greenhouses and packhouses at the AgriZone, gather statistics on the performance of the AgriZone and to identify the challenges faced by these participants), with the overall objective being to explore the contribution of Dube Trade Port's AgriZone to LED. As mentioned in chapter 3, a qualitative approach was used, and the data was analysed using content analysis.

This chapter is divided into 3 main sections. Section 4.2 provides an overview of the AgriZone and also includes information that the researcher obtained by method of observation which contributes to some of the themes identified. The general practice has been explored through each of the tenants that currently operate at the AgriZone which answers the first objective. Section 4.3 presents some of the statistics relating to the performance of the AgriZone which this research was capable of finding; this also deals with the first objective. Section 4.4 answers the third objective and identifies the challenges faced by the participants within the AgriZone. These objectives together achieve the main purpose of the research.

To begin this chapter, a description of the AgriZone will be provided as the study aims to gain an in-depth and detailed description of the AgriZone.

4.2 Overview of the Dube TradePort AgriZone

4.2.1 Physical aspects of the AgriZone

With a value of R434 million, the DTP AgriZone is an agricultural facility situated in La Mercy, KwaZulu Natal (South Africa). This facility consists of state-of-the-art agricultural technology and forms part the of the DTP SEZ. It supports the largest climate-controlled

glass-covered growing area in Africa. It was established in 2012 (officially became part of the SEZ) and aims to increase the growth of the KwaZulu-Natal's fresh produce sector, and allows higher agricultural output, consistent production and quality, and efficient pest and disease control. The DTP AgriZone is a 64-hectare (ha) site situated adjacent to KSIA. The primary focus of the facility is to distribute fresh agricultural products immediately to domestic and export markets. The DTPC functions as landowners of the platform and leases it out to subsidiaries who act as it's tenants. The picture below presents a map of the AgriZone.

Figure 4.1: Map of Dube TradePort

Source: *DTP, 2019*

4.2.1.1 Phase one

The development process of the AgriZone is divided into phases. The current phase one development consists of an extensive 16-ha of greenhouses, areas solely dedicated to post-harvest packaging, a central packing and distribution centre, a nursery and a plant tissue culture laboratory (Dube AgriLab). Since its establishment, the AgriZone has created many job opportunities. The key physical aspects of the site are currently three greenhouses broken down into five components, a pack-house and distribution centre (post-harvest handling facility), a tissue culture lab (Dube AgriLab), a nursery (misting tunnels,

potting sheds and staging arena), and support infrastructure and services (administrative office building and municipal infrastructure). The AgriZone is operated by two tenants: Lebombo Cape (Pty) Ltd and Qutom Farms (Pty) Ltd. During fieldwork, it was found that there will be new tenants operating at the AgriZone. The pictures below provide a view of the AgriZone at DTP.

Figure 4.2: Dube AgriZone

Source: *Fieldwork*

Figure 4.3: Greenhouses at the AgriZone

Source: *Fieldwork*

Figure 4.4: Dube TradePort AgriZone

Source: *DTP, 2019*

4.2.1.2 Phase two

The 90-ha phase two of the AgriZone is set for development however, only one third will initially be used. The standards of operation applicable to phase two require the development of local small-scale farmers from the surrounding areas and a larger focus on exports and job creation. Additionally, the second phase will consist of facilities that are used for production but are not as technologically advanced as those in use. The phase will also consist of distribution and packaging facilities.

The Dube AgriZone is one of the main commercial hubs of the DTP and is administered as a separate programme shown in Table 4.1 below. Currently, the Dube AgriZone has completed its first phase and is in the preliminary stage of implementing its second phase. The table below shows the structure of the programme (AgriZone) with the strategic objective of each. This table is then used to show the performance of the AgriZone (in terms of indicators) for the period 2016-2018 which answers to objective two.

Table 4.1: Dube AgriZone Programme structure

PROGRAMME 4: DUBE AGRIZONE	
Sub-programme	**Strategic objective**
Dube AgriZone Services	To provide reliable, effective and efficient services
Dube AgriZone Sustainable Farming Initiatives	To ensure that it is used to promote sustainable farming initiatives and businesses
Tissue Culture Facility (Dube AgriLab)	To manage, operate and maintain the AgriLab
Landscaping & Rehabilitation	To assist in providing maintenance services for the record of decision
Dube AgriZone Expansion	To identify and conclude agreements with suitable operators

Source: *DTP, 2019*

4.2.1.3 Facilities: Greenhouses

Integral to Dube AgriZone's 16-ha first phase is an intensive hydroponic growing system.

This incorporates three greenhouses, 160 000m^2 in extent, the largest climate-controlled growing area under glass in Africa. Attributes include highly sophisticated climate control, a water re-circulation system for irrigation, heating and carbon dioxide (CO_2) systems, a fogging system for humidity control and the provision of both screens and natural vents at the top of the structures, each of which is 6 metres in height. All these factors combined, significantly contribute towards climate control and optimal agricultural growing conditions. Independent farmers use the greenhouses to produces fresh fruit and vegetables as well as other horticultural products. The main tenant at the AgriZone is Qutom Farms which uses hydroponics in their agricultural practices. They produce cucumbers which are distributed nationally to Woolworths, FreshMark and Food Lovers Market.

Figure 4.5: Greenhouses

Source: *Fieldwork*

Figure 4.6: Greenhouses

Source: *Fieldwork*

4.2.1.4 Packhouses

Dube AgriZone has three packhouses which service the greenhouses. These greenhouses are operated by independent farmers. The packhouses help with the processes after the products are harvested, including pre-cooling, cleaning, grading, labelling and packing. This is done in such a manner that there are to be sold in supermarkets. The packhouses vary in size from 1800m^2 to 2500m^2 and also provide packaging production lines and related equipment, office space and short-term cold storage facilities. The largest of the packhouses contain equipment such as photovoltaic solar panels in order to cut the dependence on energy from the national supplier.

Figure 4.7: Packhouse at DTP

Source: *DTP, 2019*

4.2.1.5 Distribution centre

A high care of fresh fruit and vegetable packhouse and distribution centre spanning 4200m^2 is found in the AgriZone. This centre is used to meet the demands of major chain stores. The facility has a series of ripening rooms designed to promote ripening of harvested goods. It serves to stage, process and package individual and mixed vegetable packs and fruit, together with their distribution, on behalf of the AgriZone farmers and other South African farmers. A cold storage unit is also available. The Packhouse and Distribution Centre has passed audits by Woolworths. The building is equipped with photovoltaic panels, installed on the roof to reduce its reliance on energy from the national grid. The facilities have a competitive edge because of its strategic location, as it is close to KSIA and Dube Cargo Terminal. Lebombo Cape is currently a tenant making use of one of the packhouse and distribution centre at the AgriZone in order to pack, label and distribute fruit and vegetable produce within the country. The company operates from the packhouse and distribution centre. Lebombo Cape's produce is supplied to major food retailers and procurement companies Woolworths and FreshMark.

Figure 4.8: Packhouse at DTP

Source: *DTP, 2019*

4.2.2 Occupancy

The Dube AgriZone engages in a number of environmentally sustainable practices namely:

- Harvesting of rainwater
- Use of solar power
- On-site waste management
- The growth of indigenous plants to regenerate the surrounding area

In order to maintain sustainability and competitiveness, the AgriZone provides farmers with opportunities to increase output yield per hectare, consistently produce quality products, control and manage pest and diseases and crop production all year. Another site measuring 92-ha has been identified at DTP. The Environment Impact Assessment (EIA) has been granted to SiVEST Environmental Division (Pty). Phase 2 will encourage open field farming, plastic greenhouses and renewable energy plants. Phase 2 will be done on a temporary basis because the site has been designated for KSIA's second runway, therefore the facilities will need to be relocated.

4.2.2.1 Agrilab

The Dube AgriLab covers 5300m^2 and experiments with plant tissue culture, a hardening facility and a despatch warehouse. This laboratory is administrated by the DTPC. The AgriLab is able to create and support protocols within the facility and can produce most varieties of plants. The AgriLab services the needs of KZN farmers. The AgriLab is also

the only commercial tissue culture laboratory in KZN. It makes available 3 million plantlets annually. This figure is expected to reach five million annually and is affiliated to the South African Sugarcane Research Institute (SASRI). Propagation using tissue culture is one of the best ways to eliminate virus in planting material, while yielding vigorous young plants of new varieties. NovaCane® is a project developed by SASRI and refers to plant varieties propagated through tissue culture. Bamboo is one of the most important agricultural plants worldwide, generating key non-wood forestry products. One of the main challenges with bamboo is over exploitation in rural and industrial economies, which will lead to depletion of bamboo resources in years to come. To cope with the ever-increasing demand for bamboo, micropropagation via tissue culture offers a means to generate more planting stock on a large scale in a small area. The first ornamental plant shipment to the Netherlands was in July 2017. These plants were grown in our facility to meet the client's specifications and quality requirements.

Figure 4.9: The Dube AgriLab

Source: *DTP, 2019*

The facilities that are found in the laboratory include a room for cleaning purposes, three transfer rooms that are insulated individually, three grow rooms that are controlled by climate and also washing and preparation areas. To prevent contamination of produce, a Heating Ventilation and Air Conditioning (HVAC) system ensures High Efficiency Particulate Arrestance (HEPA) filtered out is sent to the grow rooms. The hardening room weans micro plants from tissue culture as well as adapting the plantlets to satisfy customer needs. Phytosanitary measures include virus nets which cover all vents, double doors and it also ensures all water is sterilised. The lab is also environmentally sustainable by using

ebb and floor benches thereby reducing the use of water fertilising by 30%. Furthermore, all water used is obtained from rainfall. The use of solar energy reduces electricity use by 20%. Power generators ensure power supply during power outages. The laboratory also uses the Temporary Immersion System (TIS) which produces tissue cultured plants much more effectively. The hardening of packaging trays also reduces the negative effect on the environment, and this also leads to improved quality.

4.2.2.2 Nursery

The nursery in the AgriZone produces indigenous plants to restore the local environment. It also includes a tunnel for misting, a potting shed and staging area. It's anticipated that more than 500-ha of land in the immediate vicinity will be rehabilitated to its former natural condition. Farmers face a constant problem i.e. getting good quality plant material from which to grow their crops. Young plants are vulnerable, and disease can spread vastly, ruining an entire crop before it has even begun to grow. Therefore, professional nurseries can help as they take seeds and grow them into healthy plantlets that farmers can use to produce the crops required. An increasing number of farmers are turning to advanced tissue-culture laboratories to source their plantlets. These laboratories use the latest technology to produce plants that are disease free and carefully suited to their growing environment.

4.2.3 Current tenants at the Dube AgriZone

4.2.3.1 Qutom Farms (Pty) Ltd

Qutom Farms has been operating at the AgriZone since 2010 and signed a lease to operate at the AgriZone for 15 years. Qutom Farms have many years of experience and approximately 37 years of expertise in farming hydroponically growing vegetables such as cucumbers, tomatoes and peppers. The AgriZone allows Qutom Farms to regionalise their products by supplying the market in KwaZulu-Natal as well as minimising or reducing their cost of transport. Qutom Farms grows its produce hydroponically. The products supplied by Qutom Farms are packed for the customers in the packhouse facility. Additionally, if there is an extra supply of the produce, it is sold in the KZN market. In terms of job creation, Qutom Farms created 120 jobs for people from KZN and Transkei.

Qutom Farms provided training for all the employees in order to operate within the facility.

4.2.3.2 Lebombo Cape (Pty) Ltd

Lebombo Cape is a company with a presence in the Western Cape and Mpumalanga. They focus on forming relationships with farmers and retailers so that the farmers themselves are guaranteed a price and do not have to negotiate with the retailers themselves. Retailers also benefit as they receive the produce packaged to the specifications requested. Due to differences in climate and geography, fruit may be out of season in Mpumalanga, but still in season in KwaZulu-Natal thus, they are able to source fruit and vegetables from different regions and extend the growing season.

According to Lebombo Cape, logistically no matter which way you go you have major transport routes which is beneficial. One of the greatest costs to producers is moving their produce around the country, especially in smaller quantities. We are in a position to consolidate different products, to minimise wastage and keep costs under control. Lebombo Cape is an example of how logistics, producers, and retailers can work together to build South Africa's fresh food supply chain with less risk for suppliers and better produce for consumers. In some cases, the facility served as a staging platform whereby produce destined for Woolworths, mainly from the Cape regions, arrived at the Dube AgriZone already packaged and simply required Farmwise to label and distribute it to Woolworths stores.

4.2.3.3 House of Hemp (Pty) Ltd

South Africa's cannabis industry, House of Hemp (HoH) which was founded in 1999, has over 20 years of experience with industrial cannabis (hemp) and became the first private company to be awarded a research permit to legally cultivate and process hemp for community research trials in 2009 in South Africa. It was recently granted the first medical cannabis license for the commercial production of medical cannabis by the South African Health Products Regulatory Authority (SAHPRA). At a time when the cannabis industry is expanding across the world and creating thousands of sustainable jobs makes this beneficial for the country.

House of Hemp's operations within Dube AgriZone represent an enormous potential to increase international exports of high-value airfreight through the production of medical cannabis. It uses the 3-ha greenhouse situated at DTP's AgriZone which is ideal for large-scale cultivation and processing of medical cannabis as they provide a climate-controlled environment that ensures year-round production as well as the opportunity to achieve improved yields and a consistent quality crop. It is ideally positioned for House of Hemp medical cannabis operations due to the various facilities available. The project will also create a number of local job opportunities, in addition to ensuring skills transfer and increasing investment in the region.

Figure 4.10: House of Hemp (HoH)

Source: *DTP, 2019*

4.2.4 Previous tenants

4.2.4.1 Farmwise Marketing (Pty) Ltd

Farmwise Marketing was a tenant at the Dube AgriZone in February 2013 to operate from the Pack-house and Distribution Centre. Farmwise's services included the sourcing, processing, packaging, and distribution of fresh produce from around the country. The company had three customers (Woolworths, Spar and FreshMark) which were in receipt of its wide range of products. Farmwise has been able to create 184 new job opportunities at its Dube AgriZone branch. Farmwise employees were given in-house training, were informed of the strict in-house health and safety protocol, and were unionized after being

registered under the Food and Allied Workers Union (FAWU). It was mentioned that Woolworths had influenced the design of the Pack-house and Distribution facility within the Dube AgriZone and were influential in Farmwise occupying the premises.

4.2.4.2 Carmel Nurseries

Carmel Nurseries commenced their tenancy at the Dube AgriZone in 2012. Carmel had arranged to produce flowers as per contract for KP Holland in Amsterdam. The flowers were air-freighted by Air Emirates from KSIA to Schiphol International Airport via Dubai. Carmel Nurseries had their Dube AgriZone contract terminated and do not operate from the Dube AgriZone anymore. The reasons behind the production difficulties were due to issues of logistics, infrastructure and finances. KP Holland soon displayed disinterest in the Dube AgriZone product. Carmel had revealed that Greenhouse D did not have the infrastructural capacity to be cooled down. The greenhouse ceiling curtains meant to shade the interior would apparently suppress air-flow in the greenhouse causing heat levels to rise. Greenhouse roof vents could not be opened either because of the effects caused by atmospheric soot.

4.3 General practices at the AgriZone

The participants consisted of those operating within the AgriZone (greenhouses and packhouses), including the management of the AgriZone. There was a total of four face-to-face interviews conducted with those operating within the greenhouses and packhouses at the AgriZone, including management, as listed in Table 3.1 of chapter three.

4.3.1 Requirements to operate within the AgriZone

In order to become a tenant and operate within the AgriZone, qualification as well as experience are essential. However, the requirements are not specific. According to one of the participant's, the market is informed that there is an opportunity (such as greenhouses or packhouses to operate) at the AgriZone by advertising and calling for proposals. Individuals who are interested should be able to operate the facilities and also have financial capital required to operate within the facilities available. Individuals are then scored and chosen according to an evaluation criterion. The response from one of the participant's was as follows:

"So, we advertise them and in our call for proposal documents, we state the kinds of expertise we are looking for. If it's a greenhouse we want someone who can operate a greenhouse. If it's a packhouse then someone who can operate that, so whilst we don't say if you do not have for example BSC in agriculture you cannot come operate. With your valued companies there's an evaluation criteria that looks at the experience of the company and the people who would be managing that, and then other factors such as you know jobs you'll be creating, how much investment you'll be coming in with so we have a scoring criteria so that's what we look at a holistic evaluation criteria. We don't say qualifications only but it's part of that. So, for example there's someone with 2 years of experience vs someone with 6 years of experience obviously the preference would be with the one with the 6 years of experience, they will score more in their evaluation criteria if you follow what I'm saying."

4.3.2 Partnerships and stakeholder engagement

As stated in the literature review, partnerships as well as stakeholders are an imperative concept in promoting LED. It was noted at the AgriZone, that the private and public sector work together to achieve an overall objective. This example of partnerships allows all parties involved to benefit. The respondent stated that:

"So it's their (DTPC) facility, we only rent it from them, so its people who have the knowledge of pack houses and have a market and have market access, that's why we here because we have access to retail and we needed a centralised hub in Durban to pack product because I bring in the product from all over the country to pack for retail here."

Although the produce that the packhouses deals with is not grown at the greenhouses within the AgriZone, farmers around KZN as well as within South Africa are able to earn an income as their products are packed and distributed to retailers that they otherwise do not have contact with. This aspect of partnerships is vital regarding LED. Development is a process whereby the private and public sector work together to create sustainable development. As stated in the conceptual framework chapter of this dissertation, trend in South African cities recently, focus on promoting investment and business opportunities through projects that are

created through partnerships. Stakeholders serve as vehicles to carry economic growth forward and contribute towards wealth through the urban economic system. The stakeholder, which is DTPC in this case, creates an enabling environment for economic growth and encourages and facilitates a relationship between the public and private sector while using the local resources available. The fundamental idea is that wealth created in the local economy can be used to uplift the poor income populace through social development, employment opportunities and economic empowerment.

4.3.3 Operating period at the AgriZone

The AgriZone officially became part of the SEZ in 2012. In terms of current occupancy, the tenant at the packhouse is operating at the AgriZone from 2014 for the past three and half years. The tenant at the greenhouse has been operating at the AgriZone from 2012 and has a 15-year contract in the form a lease. Most sub-units such as the tissue culture laboratory and packaging & distribution centre were established in 2013. The respondent stated that:

> *"The tissue culture lab was established in 2013 which produces young plant material for industries like the sugar cane industry. The packaging and distribution centre were also established in 2013 which draws produce not only from the AgriZone but from farmers outside the province. This facility draws produce from the wider region which fits into the objectives of having an impact beyond the zone itself as people have access to world-class packaging facilities and high-end retailers."*

This shows that there were always tenants operating at the AgriZone. Although the researcher noted by the method of observation that some of the greenhouses were not being used, there were previous tenants that made use of the greenhouses and also a tenant that was operating since 2012. The tenants that operate from the AgriZone greenhouses and packhouses also have access to retailers and distribute products from local farmers and outside the province impacting beyond the AgriZone itself. It is important to note that development is a process and occurs over years. Thus, there is significant potential within DTP as an SEZ that will take time to improve and develop. However, lessons should be learned in order to make use of the benefits.

4.3.4 Types of products grown and packaged at the AgriZone

4.3.4.1 Greenhouses

The main product that is cultivated in the greenhouses is cucumbers as it is produced throughout the year and delivered daily to retail stores. It was also mentioned that tomatoes and peppers are grown in another greenhouse. The products are sold to the domestic market (Gauteng and KZN), to retail stores such as Woolworths, Checkers and Food Lovers Market. Therefore, specific quality standards need to be met ensuring high quality products are produced. If the products do not meet the quality standards demanded by the retail stores, then the farmers will need to find another market or improve the quality of the products that are being produced in the future.

4.3.4.2 Packhouses

There are different kinds of fruit and vegetables (about 87 different kinds) that are brought to the AgriZone packhouse from various parts of the country which are packed and distributed throughout KZN. The list of the types of fruit and vegetables that are packed and distributed are provided in the table below:

Table 4.2: Types of fruit and vegetables in the packhouse

List of fruit and vegetables packed and distributed	
Apples	Spinach
Bananas	Tomatoes
Pears	Lettuce
Papaya	Broccoli
Mangoes	Cabbage
Strawberries	Cauliflower
Cherries	Yams
Oranges	Ginger
Lemon	Tumeric
Lime	Kiwis
Grapefruit	Naartjies

Source: *Author's own creation (Fieldwork)*

The many types of fruit and vegetables that are packed, labelled and/or distributed are distributed to various types of people, and covers more tastes and preferences in terms of target market. The products are usually consolidated for local suppliers of the products. In other cases, the suppliers provide the products for the packhouse facility to only label and distribute them. There is also an opportunity to add value to various products in ways which

are labour-intensive thereby creating employment within KZN. This also benefits consumers as they have a choice and have access to a variety of fruit and vegetables.

4.3.5 Investment

The investment in an SEZ itself is a huge investment by the government, along with the facilities provided at the SEZ. Thus, it is can be beneficial to use the competitive advantages of the area in order to promote economic growth and development. The tenants at the AgriZone (private sector) have invested capital (as much as millions of Rands) in the AgriZone. The investments were majorly related to setting up of crop in the facilities rent. While the opportunity to operate the greenhouses and packhouses may be available, the capital required to invest in the project is large and varies. The growth of the SEZs can take many years in order to receive all the benefits that come with it. Thus, it must be noted that it will take time to develop as the SEZ is fairly new. Despite this, the government as well as the private sector has invested largely in the project in attempt to promote local and national development. Although the tenant operating from the packhouse at the AgriZone does not grow any crops in the greenhouses, the packhouse is still being used instead of not being used at all, and DTP receives an income in the form of rent. This represents investment in the AgriZone from the private sector which is one of the objectives of SEZs in order to promote development in a country as attracting foreign and local investment is key in terms of developmental objectives. SEZs can be used as an industrial tool for national development and support in underdeveloped regions in South Africa in order to help create jobs, improve the value of manufacturing and attract investment. Therefore, the available resources (human, institutional, natural and physical) should be used in such a way so as to enhance employment opportunities as well as boost the economy in a sustainable manner.

4.3.6 Value added products and market access

The facilities at the AgriZone allow for the products that are produced or supplied to those who operate within the AgriZone to add value to these products. It also is situated in an area close to KSIA which enable the products to be easily transported. The tenants at the packhouse contribute to development within the area as they provide a market for farmers within the country as well as add value to their products by labelling, packing and distributing to the retail stores according to specifications that the retail stores request. This increases the value of their products and also provides access to retailers that they would

usually not have access to or contact with. The tenant at the packhouse provides access to Woolworths and Checkers retail stores as they have a relationship with these retailers, which farmers do not necessarily have. One example of adding value to products is using the produce to make salads or/and packaging and distributing this final product to retail stores. Input costs are also reduced for farmers in this way. One of the respondent's mentioned that:

> *"I do a summer programme and I do winter programme so a farmer will have a winter crop and a summer crop. What I always say to the growers, I say you can ask whatever price you like for your product and I either can or can't take it at that price however, I will try as far as I possibly can to get to as close as your price as possible."*

In terms of access to market, the tenants mentioned that they provide a programme to farmers as well as small growers and guarantee a price for a certain quality and quantity of products. However, one of the downfall's is that value is added to first-grade products instead of adding value to the second-grade products as mentioned by one of the respondents:

> *"South Africa's most critical downfall is we add value to our first-grade products, we should add value to our second-grade products. Your first-grade products should be available to the customer your oranges and stuff shouldn't be in in a bag your customers should have a choice, you should be packing your smaller fruit stuff that has a little more marks on them and adding value to that instead if adding value to our premium ones."*

4.3.7 Job creation

Each tenant mentioned that they have created over one hundred jobs since inception. All their employees at the pack house are from KZN while the greenhouse employees were from KZN as well as Transkei. In terms of employment, 120 jobs have been created by Qutom Farms since operation (2012). KZN farmers are encouraged to pack their products and are guaranteed an income. Local labour is used in this process which reduces the number of people unemployed in the area. Lebombo Cape created 112 jobs since 2014. This is a significant contribution to LED with regard to job creation as the employees are not seasonal workers. The greenhouses and packhouse are operations that produce and pack every day,

throughout the year. The farmers as well as the those operating at the packhouse will receive an income. Consumers will also receive quality products at the retail stores who will earn an income from selling the produce that was purchased locally; this represents a multiplier effect.

4.3.8 Source of raw materials and other inputs (resources)

The raw materials and other inputs are mostly locally sourced. Some inputs such as coir (coconut fibre) and hybrid seeds are usually imported. Coir, for example, is imported from Sri Lanka as mentioned by one of the participants:

> *"There's a large percentage cause of the nature of the business a lot of the stuff is imported. Coir, that's coconut fibre, it comes from Sri Lanka. All my seed is imported. Most of the seeds we use are all hybrids, and most of the seed companies that produce products for horticultural industry, greenhouse industry is based in Holland."*

Another respondent operating from the packhouse stated that:

> *"Majority farmers are mostly in natal so obviously their fertiliser costs there's an import factor on it, packaging is all local yeah there's nothing that comes from outside the boarder that we use. We don't import anything here, yeah nothing is imported from our side."*

4.3.9 Agricultural skills development of employees at the DTP AgriZone

The individuals that are employed to work within the greenhouses and packhouses do not necessarily require a special training programme to enhance their agricultural skills at the AgriZone. The private sector/farmers/tenants at the AgriZone are already qualified or experienced and require further assistance by employing people to operate within the facilities provided. Therefore, they train people at their facility for them to acquire necessary agricultural skills. It was also stated that technical experts were usually engaged to train and assist people with production processes in the past.

> *"What we have done in the past is we have brought in technical experts to assist*

people with production this was right at the begging after we developed the facilities and set up the infrastructure so we brought in overseas experts who had years of experience in growing in similar facilities; yes the climatic might be different but they had experiences using facilities. We also have a support programme with companies that helps to ensure that the facilities are well maintained technical or operational issues with the climate control system can come in and provide that support."

4.3.10 Food security

The AgriZone itself is a commercial zone and the produce that is grown and packed are for commercial purposes not food security reasons. However, in terms of the local development of farmers in the surrounding areas, it somewhat contributes to food security indirectly. Although it is difficult to differentiate between production for commercial and food security, majority of the respondents stated their products are for commercial purposes as mentioned below:

"It's a commercial zone because the produce is for commercial fresh produce market whether it's the retailers or wholesaler, but I believe that by so doing you contributing, by adding you know additional food products you contributing to food security. Now people define food security in different ways, cause some will say its having access to food some will say no its having income that would ensure that I can meet my food requirements but the project or the zone is not a food security primarily although I believe indirectly it does contribute to that. Now if you look at our tissue culture lab, we've had instances where we supply planting material to small scale farmers in the surrounding areas like Waterloo, Verulam and around here. I believe that is a direct thing that contributes to food security but we do that almost as a cooperate social initiative you know supplied thousands of planting materials for those that directly helps those farmers who are almost in between being subsistent and during that stage of been commercial farmers so it assist them in that regard. Because generally how people view food security is gardening in your back yard whether you grow self-sufficient and some people think differently and say no its having economic means to meet your food needs whether you grow them yourself wherever they growing but having the economic means or resources to actually cater for those."

4.3.11 Critical challenges that affect the production at the greenhouses

There were some major challenges faced by the respondents such as adverse climate, product acceptance by the local consumers, limited crop varieties supported by greenhouse and logistic challenges, among others. These challenges are discussed in detail below.

4.3.11.1 Lack of demand of products grown at the greenhouses

Some of the products such as cucumbers are not considered as an African crop meaning that it is not highly demanded by South Africans. This sometimes affected the acceptance of the product by local consumers who do not necessarily use them when preparing meals. Cucumbers can be classified as a diet crop or a food that is used in salads rather than a basic need crop which is not highly demanded by South African consumers. The respondent stated that:

> *"Look I mean they (South Africans) will eat it but it's not a staple crop, and it's not something that they going to go actively look for, if you have to really look at it very few African people eat salads, so a lot of Indian people don't eat a lot of salad as well it's just the way things are it's not about they can't eat it or whatever it's just a lot of it is to do with what they used to and what their culture says. Let's put it this way. it's a first world crop and that to a large degree is why cucumbers as a crop has been under tremendous pressure over the last few years purely because a lot of the market has left the country."*

4.3.12 Limited variety of crops can be grown in a greenhouse

Greenhouses have a certain type of climate for an entire year. Therefore, only crops that are suitable for this particular climate will thrive. Crop diversity is therefore limited. A lot of products are not viable (in a financial sense) to grow in a greenhouse. The three main crops that is grown in South Africa and around the world is peppers, tomatoes and cucumbers besides flowers. Cucumbers worked in the greenhouse because it is a sub-tropical crop. Although, greenhouses are beneficial in terms of controlling climate to a certain extent, the crops that can be grown in the greenhouses are limited. Thus, the crops that are grown in the greenhouses should be demanded within the country in order to have access to a market, or it should be viable to export if the local market does not demand the product. According to

one of the respondent's:

> *"First of all, in a greenhouse there's a limited number of products you can grow, a lot of products are not viable to grow in a greenhouse or make financial sense. So, the three main crops that are grown in greenhouses grown here and around the world is peppers, tomatoes and cucumbers, besides flowers obviously; I'm talking about vegetable crops and salad crops. There is lettuce that's grown in greenhouses but you can't grow lettuce down here because of the climate is just not right so then you need to look at the specific crop okay; tomatoes…the high humidity at night is a problem, same with the peppers the ambient conditions play a role. For peppers, the ideal 24-hour average temperature is 21 degrees. Now you know for 5 months in a year you not going to get that in KZN. So yes, it can handle up and down but it's not optimal, so you then need to look at the crop and what the crop needs and the best, the only one that's really worked here is the cucumbers because it's a sub-tropical crop."*

4.3.13 Logistics challenges

The logistics involved in exporting products was also identified as a challenge hindering the product distribution and marketing. In terms of exports to the global market and even the African market, logistics is an issue and is also costly. Although being part of the SEZ should be more convenient in terms of transport due to the close proximity to KSIA, it is still costly to transport the products to the global market. The respondent stated that:

> *"The problem is getting it there logistic wise and costs of getting it there. There's still a small market opportunity to export to the Middle East Dubai and whatever but then again, you're fighting against the EU because now they can get it there quicker than you and at a similar price to you and well, cheaper than you purely because they can still ship stuff across the Mediterranean and into the Middle East where as we still got to fly it there."*

Another respondent stated that DTP is situated at a place that is beneficial for the company as produce is brought to the AgriZone from various parts of the country and is convenient in terms of transport.

"That's why we here because we have access to retail, and we needed a centralised hub in Durban to pack product for because I bring in the product from all over the country to pack for retail here."

4.3.14 Climate

The hot and humid weather conditions in Durban make it difficult for the crops to adequately develop. Plants are bred for different climates and for different times of the year. Although the greenhouses allow for some control of the environment to grow crops, the external environment which has an impact on produce cannot be controlled. One of the respondent's explain in more detail:

"So, here in KZN we have hot and humid, now you must remember in greenhouse its hot and humid. Plants don't always like hot and humid, so you got to try and control the greenhouse accordingly, but there's only a certain number of hours in a day that you can actually control the climate in a greenhouse. Controlling humidity in a greenhouse is quite easy during the day because you use the sun to heat up the house which then allows the air within the house to hold more humidity which is better for the plants, but as soon as sunset comes in KZN and the wind stops blowing I rely on the greenhouses natural ventilator. So, I rely on air movement out of the top of the greenhouse to create a suction to move air out of the greenhouse. But what happens as soon as night falls, the wind drops (becomes stagnate) so then your end to the problem is that your plant is not like an on and off switch, so your plants starts working during the day but now as soon as the sun goes it doesn't stop working cause it's a big pump effectively. So the roots haven't got the message that, listen there's no sunlight I must stop pumping water so what it does is it pumps water, but now the plant says I got this water it needs to go so it opens up which puts moisture in the atmosphere created a high humidity in the house which you can't then control. In Europe they are able to control it because they are able to heat 12 months of the year because their ambient conditions, like I said before allow them to do that, whereas here our ambient conditions are too warm, so we can't heat cause we go nowhere to, you can only do so much and it's not cost effective."

Climate refers to the atmosphere measured over a long period of time. Climate variations are becoming more frequent especially in those areas where contextual climatic factors play a role e.g. Durban is influenced by the warm current of the Indian ocean. As a result, climatic conditions have deviated from the norm over the past few decades. The conditions under which the greenhouse effect is supposed to be working in Durban may be operating with slight variation from the norm. Due to the high humidity levels in Durban/coastal regions which is enhanced by the rising air associated with the warm ocean, this will negatively impact on the greenhouse structures. This effect is exacerbated at night. During the day there is sufficient CO_2 for plants to absorb however, at night artificially produced CO_2 is required which not cost effective as mentioned by one the respondents:

> *"During the day it's not a problem because the higher the CO_2 level we have in the house, the better because it's using CO_2. So during the winter months where I need to heat at night, I then pump CO_2 into the greenhouses during the day as a benefit to me but I can't do that in the summer months because I got nowhere to destroy the heat and I'm just burning kerosene just to get CO_2 which is not cost effective."*

This has led to the belief that greenhouses should be situated in areas away from the coast. Because Durban's temperature is moderate, even in winter, the benefits of using greenhouses won't be experienced at an optimal level. In addition, there is also a problem of light as the greenhouse steams up, because there aren't any light trenches.

> *"Our climate is the biggest problem, KZN is a net importer of fresh produce because it's not the easiest climate to grow."*

4.3.15 Ambient weather conditions

Although the greenhouses enable the users some sort of control of the climate in the greenhouse, it is difficult especially in a hot and humid area such as Durban and is also not cost-effective. This has a major impact on those operating within the greenhouses at the AgriZone as profits are reduced or product quality is compromised. The respondent mentioned that:

"Everybody has an idea that you put up a greenhouse and all your problems go away. That's not true, your ambient weather conditions dictate the weather/climate in the green house to a large degree. In Europe they will control it because they are able to heat 12 months of the year because their ambient conditions, like I said before, allow them to do that whereas here our ambient conditions are too warm so we can't heat, you can only do so much and it's not cost effective. Remember what I said to you the ambient conditions still prevail you can't change the ambient conditions you can maybe manipulate them a little bit, but you can't change what you've got.

4.3.16 Market access

Farmers are offered a price (income) and the access to a market via the packaging and distribution facility at the AgriZone. Even products that are already packaged can be labelled and distributed to retail stores within the country. Market access hurts farmers due to the volatile market prices. Although volumes can be produced, there is not always a market to sell the products as access to market is a major challenge. The facilities offered by the AgriZone opens up a market for farmers through the partnerships with the public and private sector and the stakeholders. The facility (packhouse) also saves farmers an input cost of renting the facility themselves. The cold chain is also very important regarding fresh produce as the temperature needs to be maintained thus having facilities are very beneficial. As mentioned by one of the respondent's:

"I've got access to the market. So, its people who have the knowledge of pack houses and have a market and have market access, that's why we here because we have access to retail. It is very difficult to grow stuff and not have a market before you know what you going to do with it, and that's what's making it so difficult because the local market price is also volatile whereas the AgriZone gives the guys an opportunity to get to a pack house like this and when I can I try and market the product for them…Yeah or farmers comes the other way with their products and ask us if we can pack it for a market or he has access to a market but doesn't have a pack house. So, I save him the input cost of a facility like this."

4.3.17 Attention to detail

Farming is a lot more scientific nowadays. However, it was noted that there isn't consistency in terms of produce as growers are drifting away from being a specialist in certain crops and diversifying their businesses. Therefore, the attention to detail gets lost. In addition, input costs don't allow farmers to be consistent due price and market volatility. As stated by one of the respondent's:

> *To produce that type of quality (high quality) you got to have the attention to detail. So, growers are going away from been specialist in particular crops and they been forced to diversify their businesses and with that diversification you lose that attention to detail and that's what gets a lot of people into financial trouble. it's the attention to detail and that what makes or breaks a farmer. For example, you'll get someone who grows chillies, marrows and say one of the leafy products, lettuce, they'll end up losing one of the three because of attention to detail."*

4.3.18 Design of the greenhouse

It was noted that some of the greenhouses are empty, however, as previously noted the AgriZone was a R434-million project. This shows that there was large financial investment into building and running the facility. There were comments regarding the design of the greenhouse and why it is not fully occupied. One of the reasons that the greenhouses are not fully occupied is that the greenhouse came from Holland and were not designed for Africa as the venting, for example, is slightly different as it is a concept of the Dutch. Although experts were brought in to the AgriZone when required, it was noted that the skills set to run a glass greenhouse exceeds the skills needed to run a plastic greenhouse. The respondent stated that:

> *"It (the greenhouses) wasn't designed incorrectly; it was broken down in Holland and then they tried to make something work in Africa that doesn't necessarily desire."*

According to another one of the respondents, the greenhouses should not be situated in Durban as it is too close to the coast and the humidity levels are too high. Controlling the

climate during the day is not a problem but it is a problem at night. The hotter or more humid the climate, the more difficult it is to control.

> *"I'll design it the way it is, but I wouldn't put it here. I mean, you know the best example is, you tell, a farm anywhere that's this close to the coast anywhere in KZN? There isn't one. So, you know that tells you why I mentioned earlier our climate is my biggest problem, KZN is a net importer of fresh produce because it's not the easiest climate to grow in."*

4.3.19 Exports

4.3.19.1 International standards to export are very high and prices are competitive

Exporters are put at a serious cost disadvantage if they have to pay high import tariffs on inputs used in producing exports. This necessitates the need to lower tariffs on imported intermediate inputs into production to enable farmers to become more internationally competitive. Africa is driving most of South Africa's agro-processing export growth. However, the country is facing competition from China, the EU, India and the USA for agro-processing products. South Africa needs to raise its competitiveness in order to increase and sustain its market share in global markets.

Certain retailers only take the top end of produce and then the rest of the produce will have to try to be sold in the local market however, demand is a factor. The South African grower sits with majority of crop left due to high quality standards therefore the packhouse can be used to add value to these crops. One of the reasons that the flowers are no longer exported from the AgriZone is due to the international standards regarding the packaging and quality of the flowers. The prices internationally are also difficult to compete with.

It is also difficult to export to the African market as it presents a risk due to input costs and the price of products that can be exported. It is high risk as 50% of the amount is required to be paid before containers leave. The demand in the African market is not always high for certain products as in other countries thus demand becomes an issue. It is also because of high volumes being produced that the price is lower.

4.3.19.2 Exports to global markets

Cucumbers are convenient and economical to pack thus; it should be encouraged to be exported outside South Africa. A more profitable target market should be foreign markets, in particular MEDCs. Previously, cucumbers were exported to foreign markets, however, as more countries joined the EU, the EU was a preferred market because of the lower price and travel time. There are certain raw materials that are required to cultivate cucumbers such coir (coconut fibre) from Sri Lanka. This is costly and can lead to an escalation in the price of cucumbers. Therefore, to export to foreign markets will mean that the prices are higher, and the quality must be of higher standard. To save costs, countries export from the EU market to save costs and travel time.

There was opportunity 10 years ago to export, before the EU, as there was opportunity to export to the UK and certain parts of Europe during their Winter. One of the respondents stated that they used to export to the UK but when the EU opened up then the tariffs fell away and the importers stopped purchasing certain products from South Africa. The export market is also too far away especially for the fresh produce and it is expensive to export. According to one of the respondents:

> *"There probably was still an opportunity 10 years ago, maybe less than that, before the EU there was an opportunity for export. Because you had that opportunity to export it into the UK and certain parts of Europe during the European winter because there was actually import duties and all that sort of thing placed against the Spanish products, which is probably one of the biggest producing areas in the world, and they produce basically for Europe. They've always done that; they were part of the EU so there was an opportunity as soon as the EU came into place it just fell away. So that all fell away and a lot of the guys that were importing in Europe, in Britain, stopped. I exported tomatoes for about 7 years, so they were importing from me; as soon as the EU opened up and all those tariffs fell away and whatever they actually started setting up farms in Spain because it was paying more money, besides everything, we just too far from the market especially for fresh produce because everything that you do is got to be flown out and flying stuff out is expensive."*

Another reason for a lack of exports is that initially DTP was an IDZ and later on became an

SEZ. The AgriZone and the TradeZone were then designated as part of the SEZ. As the respondent stated:

> *"Yeah, let me talk about first, the whole SEZ when we were first opened or launched, we were not a SEZ unlike other SEZs are from the beginning. We were created to be IDZ that was the whole legislative environment back then. We became designated as a SEZ a few years ago."*

In a nutshell, the reasons for the lack of exports were; competition with similar products on the global market, the perishable nature of the products, strict international exporting regulations, international quality standards, too far from the market and currency fluctuation.

4.4 Descriptive statistics on the AgriZone (general performance)

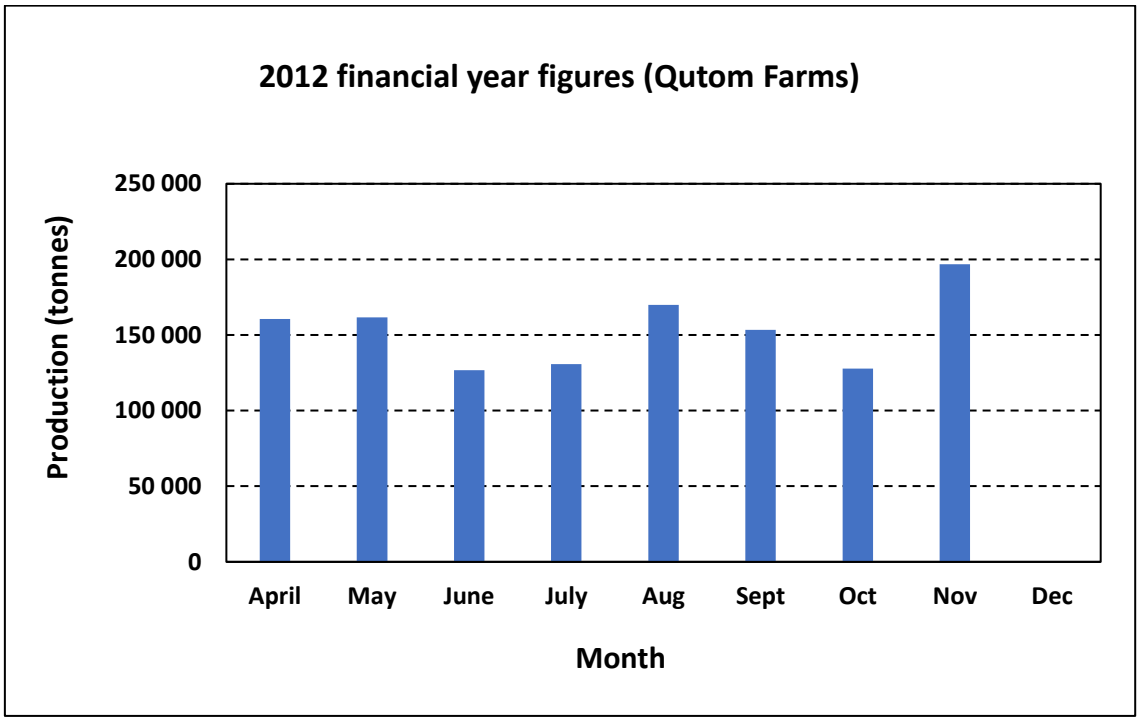
The table below shows the statistics that the researcher gathered regarding the production within the AgriZone. As mentioned before, the AgriZone has one tenant/independent farmer producing cucumbers thus the figures below represent the output for Qutom Farms.

Table 4.3: 2012 financial year figures

	Greenhouse C	
Month	**Target production (tons)**	**Actual Production (tons)**
April	78	160 664
May	78	161 697
June	78	126 700
July	78	130 861
Aug	78	169 907
Sept	78	153 447
Oct	78	127 826
Nov	78	196 772
Dec	78	238 78

Source: *Author's own creation*

Figure 4.11: Qutom Farms (2012 financial year figures)



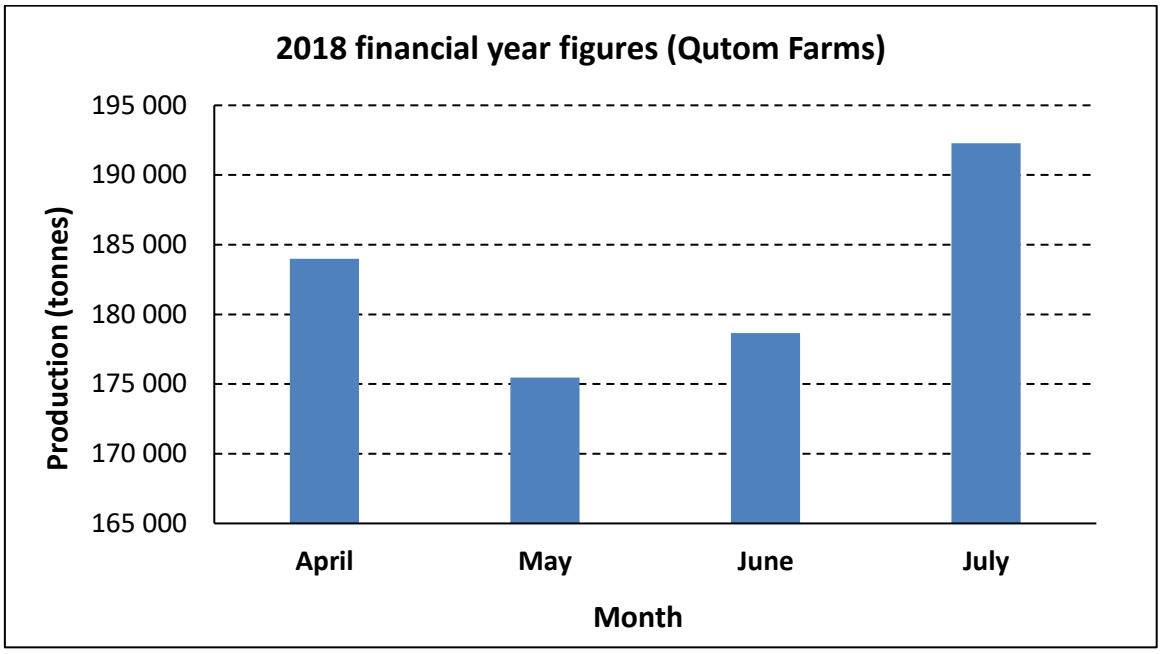
Source: *Author's own creation*

Table 4.4: 2018 financial year figures

	Greenhouse C
Month	**Actual Production (tons)**
April	183 986
May	175 477
June	178 664
July	192 286

Source: *Author's own creation*

Figure 4.12: Qutom Farms (2018 financial year figures)



Source: *Author's own creation*

The table below shows the performance (actual and target) of the AgriZone in terms the strategic objectives in within the programme for the years 2016/2017 and 2018.

Table 4.5: AgriZone performance (2016-2018)

		2016/17		**2018**	
SUB-PROGRAMMES	PERFORMANCE INDICATOR	Annual target	Actual performance	Annual target	Actual performance
Dube AgriZone Services	Value produced, processed/handled	R87.6m	R64.3m	R95.5m	R55.6m
	% occupancy of available facilities	85%	77%	85%	77%
	% of completion of tenant-logged job cards	85%	98%	90%	99%
Dube AgriZone Sustainable Farming Initiatives	% of energy derived from renewable sources	15%	19%	20%	22%
	Number of projects initiated	2	2	2	2
Tissue Culture Facility (Dube	% increase in production	12%	0%	20%	21.5%

AgriLab)	volumes				
	Revenue generated from tissue culture sales	R1.2m	R95 042	R725 000	R193 644
	Number of research projects completed	2	2	2	2
Landscaping and Rehabilitation	Number of hectares rehabilitated	20ha	26.3ha	20ha	21.6ha
	% of rehabilitated land maintained	100%	100%	100%	100%
Dube AgriZone Expansion	Number of hectares leased to or reserved by operators/tenants	5ha	6ha	5ha	7.8ha

Source: *DTPC, 2018*

Dube AgriZone Services: The indicators used to show the performance of this sub-programme consist of the value produced, processed/handled, the percentage occupancy of available facilities and the percentage of completion of tenant-logged job cards.

Dube AgriZone Sustainable Farming Initiatives: The indicators used to show the performance of this sub-programme include the percentage of energy derived from renewable and the number of projects-initiated sources.

Tissue Culture Facility (Dube AgriLab): The indicators used to show the performance of this sub-programme include the percentage increase in production volumes, revenue generated from tissue culture sales and the number of research projects completed.

Landscaping and Rehabilitation: The indicators used to show the performance of this sub-programme include the number of hectares rehabilitated and the percentage of rehabilitated land maintained.

Dube AgriZone Expansion: The indicators used to show the performance of this sub-programme include the number of hectares leased to or reserved by operators/tenants.

4.5 Observation

Observation is used as the method of data collection and its major strength is precisely that it is direct and captures occurrences of behaviour without time delay. It has been stated that the phenomenon of SEZs is gaining prominence in South Africa as a developmental concept. It is with this observation and results from other studies that this study's concerns become pertinent. The current study aims to explore the contribution of Dube Trade Port's AgriZone to local economic development. With the agricultural sector being one of the key sectors in contributing to economic development and the large sum of financial resources used to develop the AgriZone, it is important to note the factors that hinder the development process of the AgriZone or to identify ways in which to further improve the results of this project.

At the beginning of the observation procedure, the researcher sought to gain orientation of the total setting of the AgriZone and charted out a map of the AgriZone within DTP as shown in figure 4.1. The researcher chose to make observations upon arrival of the AgriZone. This enabled a clear description of the area. On observation, the researcher noted that the greenhouses, along the way to the offices of the research participants, were empty. Upon arrival at the offices, observations and recordings were conducted at offices within the DTP AgriZone. It is the place best suited to making observations as the researcher was able to get a tour of the participants' working space at the AgriZone. The researcher was informed that the greenhouses were not being used as there was only one tenant using the AgriZone to grow crops. However, the packhouse was used by another tenant in order to pack and label products from KZN as well as outside the province. The greenhouses at the AgriZone are designed according to the idea from the Netherlands (Dutch), and therefore, does not fully suit the South African climate. The temperature in Durban is too hot and humid therefore, the location of the greenhouses is not feasible as it is not an ideal environment to operate the greenhouses. Initially, the AgriZone did not form part of the SEZ and only became a part of it at a later stage. It must also be noted that it is not common to have an AgriZone within an SEZ.

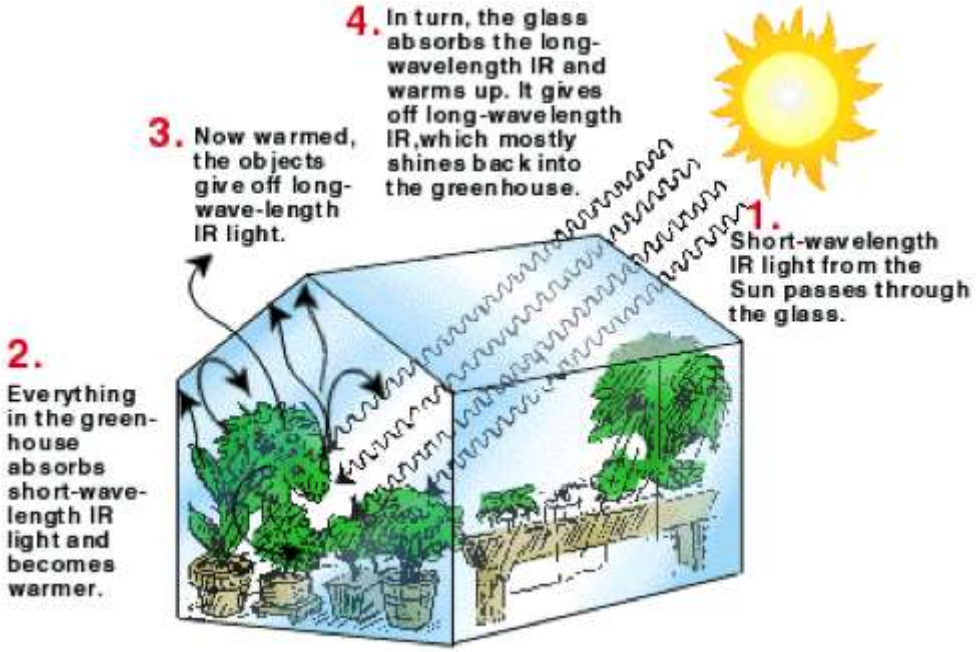
A greenhouse allows you to maintain the proper temperature and light conditions for optimal plant growth. For any greenhouse, the sun should be the primary heat and light source. Every greenhouse operates on a simple physical principle called the greenhouse effect. Sunlight passes through transparent or translucent materials such as glass or plastic. When it strikes

an opaque surface inside (plant leaves, greenhouse floor, planters) some of the light energy is changed into heat. The darker the surface, the more heat is generated. The greenhouse panels are good at transmitting light, but not heat. Therefore, most of the heat stays inside. With the climate already being hot and humid in Durban, this means that it is more difficult to lower the temperatures within the greenhouses when required. As one of the participants mentioned:

> *"We could use the CO_2 during the day and let, or exhausted CO_2 during the night, during the day it's not a problem because the higher the CO_2 level we have in the house the better because it's using CO_2 so during the winter months where I need to heat the at t night and then pump CO_2 into the greenhouses during the day is a benefit to me but I can't do that in the summer months because I got nowhere to destroy the heat and I'm just burning kerosene just to get CO_2 which is not cost effective. So, the CO_2 is not really a problem because generally because the plants are using CO_2 if I don't get enough air in the greenhouse, I get on a lower CO_2 level in the greenhouse during the day as opposed to night time."*

There are certain conditions under which plant growth, or photosynthesis occurs such as when temperature falls outside certain limits (for vegetables, usually 40° minimum and 90° maximum, the intensity and duration of light does not meet certain standards (most vegetables require 4-6 hours of direct sunlight minimum; fruit plants may need up to 8). Active plant growth produces more heat and also humidity to build up. Greenhouse vents and fans are sometimes necessary to exchange gases, cool and circulate the air, and drop the humidity level. Water and fertilizer provide plants with the energy they need to grow. The picture below illustrates the process of growing within a greenhouse.

Figure 4.13: Greenhouses



Source: *thediygreenhouse, 2019*

4.6 Conclusion

This chapter presented the findings and discussion of the study. The findings from the primary research (interviews and observation) combined with information obtained from the literature review in the form of a discussion were used in order to conduct a content analysis. The conclusions and recommendations made as a result of this discussion are provided in the next chapter.

CHAPTER FIVE: CONCLUSION AND RECOMMENDATIONS

5.1 Introduction

This study focused on the effect of SEZs on LED, specifically looking at the case of DTP's AgriZone. An examination of the available literature showed that there are various differences regarding the performance and success of SEZs globally. There are also debates regarding the rationale and justification for using SEZs as a tool for economic development as well as the extent to which SEZs contribute to LED. The purpose of this study was to explore the contribution of DTP's AgriZone to LED.

The purpose of this chapter is to provide conclusions and recommendations that the researcher obtained as a result of the analysis provided in the previous chapter. This chapter concludes the study by summarising the key findings of the research, provides recommendations based on these findings, as well as suggestions for future research that can be conducted.

5.2 Summary of key findings

The study contributed to the research objectives as follows:

Objective one

The first objective was to explore the general practice of tenants within the AgriZone (greenhouses/packhouses). With this objective in mind, the researcher aimed to identify how the AgriZone functions, in order to gain an in-depth understanding of the AgriZone from a development perspective. The study obtained information regarding the occupancy of the AgriZone in terms of the companies that operate within the greenhouses and packhouses, and the general functioning of these facilities. The general practice of these tenants involves growing, packing, labelling and distributing the produce from the AgriZone, as well as other parts of the country, to retailers. Farmers and small growers around KZN as well as within South Africa are able to earn an income as their products are sold, packed and distributed to retailers that they otherwise do not have contact with. This revealed that concept of partnerships that enabled all the parties involved to benefit. The AgriZone itself is a commercial zone and the produce that is grown and packed are for commercial purposes not

food security reasons. However, in terms of the local development of farmers in the surrounding areas, it somewhat contributes to food security indirectly. The study revealed that individuals who were interested in the opportunity of operating within the SEZ are required to be able to operate the facilities and also have financial capital required to operate within the facilities available. The company operating at the greenhouses are producing at the AgriZone since it was established in 2012, and the company at the packhouse was operating since 2014.

The second aspect of objective one was to provide or gather statistics relating to the performance of the AgriZone. It is imperative for any business to be aware of the production levels and profitability of the business overtime in order to find out if it is viable to operate. Being informed of the statistics of a company also enables them to identify trends and the reasons behind these trends, which could lead to solutions to challenges that they may experience. The statistics that were provided showed production at the greenhouses as figures were provided by the company in tonnes per year. The general performance of the AgriZone was also provided using indicators that relate to the strategic objectives of the AgriZone. The study found that the performance within the AgriZone has been improving over the years although this development may not be rapid. However, development is a process that occurs overtime.

Objective two

The second objective was to identify the challenges that the participants face at the AgriZone (greenhouses and packhouses) that may hinder development. There were various challenges experienced by the participants. It was noted that all the greenhouses were not being used for production despite a large investment to the greenhouses. Some of the reasons that was revealed as a result of the research was the adverse climate and ambient weather conditions in Durban, product acceptance by the local consumers, limited crop varieties supported by greenhouse, the design and location of the greenhouse as well as logistic challenges. The challenges in terms of exports included high international standards in terms of quality, high import tariffs and the increase in the number of countries that joined the EU, hence there was no need to import these goods from South Africa as it was more expensive and had a longer travel-time. This means that exports were not cost-effective, and it would be more profitable to supply the domestic market.

5.3 Recommendations

The following recommendations are provided in order to improve the functioning of the AgriZone within DTP:

- The goal for a greenhouse is to keep the temperature, light, humidity, and nutrition parameters within the ranges preferred by the plants grown. While farmers know the requirements for their crops, they should consider the possibilities in terms of the climate of Durban to be more informed and aware regarding this process. In this way, the temperature in the greenhouses should be modified using various methods to suit the production of their particular crop.

- Although increased temperature is an important consideration, precipitation or available plant moisture is also a critical limiting factor in crop production. Thus, if precipitation increased and/or irrigation were possible, greater food production and security would likely result from the projected temperature increases in Durban. This, however, would require planting times to be shifted towards winter and the provision of irrigation.

- The different types of fruit and vegetables that can be grown within the greenhouses should be explored as there are only certain fruit or vegetables that can be grown in a greenhouse. The three main crops in terms of vegetables that is grown in South Africa and around the world is peppers, tomatoes and cucumbers (besides flowers).

- The greenhouse could be adapted as it is an idea from the Netherlands which does not meet all the South African climate conditions. Thus, the design can be changed in order to be more viable to the South African climate. If possible, the idea of greenhouse can be used however, in a different location where it is cooler and not humid. The design of the greenhouses is good; however, it should not be situated near the coast.

- The need to lower tariffs on imported intermediate inputs into production or growth of crops at the AgriZone in order to enable downstream agro-processors to become

more internationally competitive as a lot of the inputs used at the AgriZone are imported.

- British Airways introduced a direct, non-stop flight between London's Heathrow Airport and Durban's KSIA is beneficial for KZN as it will be instrumental in contributing to an increase in international arrivals from the United Kingdom and North America. Thus, this is an opportunity to export to the United Kingdom. From an economic standpoint, this route also augurs well for improved trade relations as the United Kingdom is currently South Africa's second largest export trade partner in Europe.

5.4 Suggestions for future research

In future, studies can be conducted on the following:

- A quantitative analysis or evaluation of the AgriZone or on the Dube TradePort SEZ as a whole.

- A similar study to this at Richards Bay Industrial Development Zone.

- A detailed study on the climate in Durban and ways in which greenhouses can be used effectively to ensure quality products all year round.

- The literature has not revealed any distinct examples regarding agriculture at airports. This may show that this phenomenon is not a common practice and can signify a gap in the research.

5.5 Concluding remarks

This study was an exploration of the contribution of Dube Trade Port's AgriZone to local economic development. The purpose for the researcher was learn about the practices and become aware of the performance at the AgriZone as well as to identify the challenges faced at the AgriZone, in order to make the participants aware of the challenges that hinder development. As mentioned in the literature review, LED approaches are regarded as a process and occurs overtime. This process also includes removing obstacles that may hinder

development. Thus, there is significant potential within DTP as an SEZ that will take time to improve and develop.

Although there was a small number of participants interviewed, the research has revealed imperative information regarding those who are operating within the AgriZone. Thus, valid conclusions were arrived at and useful recommendations have been provided which can be of value to the individuals who are operating (including management) at the AgriZone.

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Appendix 1: Informed consent letter

MCOM Research Project

Researcher: Bhavia Sewnandan (082 393 6886)
Supervisor: Dr. Simon Taylor (071 509 3965)

Research Office: Humanities & Social Sciences Research Ethics Administration
Westville Campus, Govan Mbeki Building
Private Bag X 54001 Durban, 4000
KwaZulu-Natal, SOUTH AFRICA
Tel: 27 31 2604557- Fax: 27 31 2604609
Email: HSSREC@ukzn.ac.za

Dear Respondent,

I, Bhavia Sewnandan, a Master of Commerce student at the University of KwaZulu-Natal, invite you to participate in a research project (in the form of an interview) entitled 'The effect of Special Economic Zones on Local Economic Development: A case study of Dube TradePort's AgriZone.'

Through your participation in this interview, I hope to examine the contribution of Dube Trade Port's AgriZone to local economic development by gathering secondary data (statistics) on the development of the AgriZone and by analysing comments provided by stakeholders on the contribution of the AgriZone to local economic development.

Please be informed that your participation in this interview is voluntary and that you may withdraw from this interview at any time without any consequences. Please note that there will not be any monetary gains from participating in this study.

This study has been ethically reviewed and approved by the UKZN Humanities and Social Sciences Research Ethics Committee. In the event of any concerns/questions you may contact the researcher or the UKZN Humanities & Social Sciences Research Ethics Committee with the details provided.

The interview should take approximately 20-30 minutes to conduct. I appreciate your assistance and taking time to partake in this interview.

Sincerely

Bhavia Sewnandan
Student number: 212 548 709

UNIVERSITY OF KWAZULU-NATAL

GRADUATE SCHOOL OF BUSINESS

MCOM Research Project

Researcher: Bhavia Sewnandan (082 393 6886)
Supervisor: Dr. Simon Taylor (071 509 3965)

Research Office: Humanities & Social Sciences Research Ethics Administration
Westville Campus, Govan Mbeki Building
Private Bag X 54001 Durban, 4000
KwaZulu-Natal, SOUTH AFRICA
Tel: 27 31 2604557- Fax: 27 31 2604609
Email: HSSREC@ukzn.ac.za

LETTER OF CONSENT:

I……. (full names of participant) from……. (full name of company or organisation), in the position of ……. (designation), hereby confirm that I understand the contents of this document and the nature of the research project, and I consent to participating in the research project.

I understand that I am at liberty to withdraw from the project at any time, should I so desire.

Please underline the relevant response below:

I hereby give permission/ do not give permission for my name and the name of my company to be disclosed in the research.

I hereby consent/ do not give consent to have this interview recorded.

SIGNATURE OF PARTICIPANT **DATE**

_____ _____

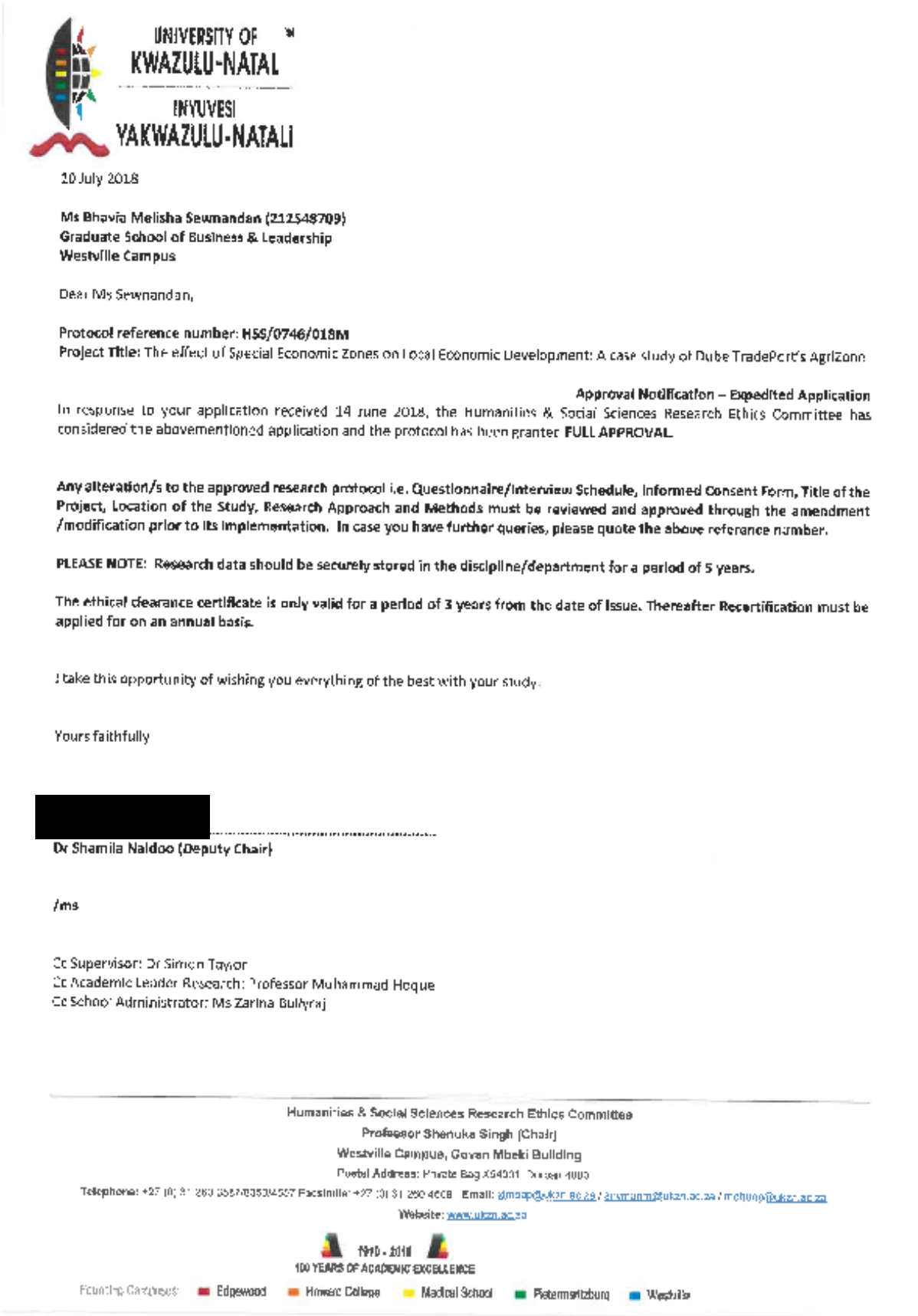
……

This page is to be retained by researcher

Appendix 2: Interview schedule

QUESTIONS
1. What are the criteria/requirements to operate within the AgriZone?
2. What types of products do you produce within the AgriZone?
3. How much (in terms of volume) is produced within your project?
4. When did this particular project start?
5. Approximately how much of investment is there for this project?
6. How many jobs have been created for this project?
7. How many people employed are from KwaZulu-Natal, South Africa?
8. Are products produced for food security or commercial reasons?
9. What markets are these products sold in? Export and/or local markets?
10. What resources are used to produce products?
11. Are raw materials and other inputs locally sourced or are they imported? (example fertilizer, pesticides)
12. Has the output increased overtime?
13. What are the critical challenges that affect the production of agricultural projects?
14. Are there programmes to enhance the agricultural skills of citizens within KZN?

Appendix 3: Ethical clearance



UNIVERSITY OF KWAZULU-NATAL
INYUVESI YAKWAZULU-NATALI

10 July 2018

Ms Bhavia Melisha Sewnandan (212548709)
Graduate School of Business & Leadership
Westville Campus

Dear Ms Sewnandan,

Protocol reference number: HSS/0746/018M
Project Title: The effect of Special Economic Zones on Local Economic Development: A case study of Dube TradePort's AgriZone

Approval Notification – Expedited Application

In response to your application received 14 June 2018, the Humanities & Social Sciences Research Ethics Committee has considered the abovementioned application and the protocol has been granted **FULL APPROVAL**.

Any alteration/s to the approved research protocol i.e. Questionnaire/Interview Schedule, Informed Consent Form, Title of the Project, Location of the Study, Research Approach and Methods must be reviewed and approved through the amendment /modification prior to its implementation. In case you have further queries, please quote the above reference number.

PLEASE NOTE: Research data should be securely stored in the discipline/department for a period of 5 years.

The ethical clearance certificate is only valid for a period of 3 years from the date of issue. Thereafter Recertification must be applied for on an annual basis.

I take this opportunity of wishing you everything of the best with your study.

Yours faithfully

[redacted]
Dr Shamila Naidoo (Deputy Chair)

/ms

Cc Supervisor: Dr Simon Taylor
Cc Academic Leader Research: Professor Muhammad Hoque
Cc School Administrator: Ms Zarina Bullyraj

Humanities & Social Sciences Research Ethics Committee
Professor Shenuka Singh (Chair)
Westville Campus, Govan Mbeki Building
Postal Address: Private Bag X54001, Durban 4000
Telephone: +27 (0) 31 260 3587/8350/4557 Facsimile: +27 (0) 31 260 4609 Email: [redacted]
Website: www.ukzn.ac.za

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Appendix 4: Gatekeeper's letter

dube tradeport
SPECIAL ECONOMIC ZONE

07 June 2018

Dear Bhavia Sewnandan
University of KwaZulu Natal
Westville Campus

bsewnandan11@gmail.com

RE: Masters of Commerce Research Project

This is to confirm that Dube TradePort Corporation (DTPC) grants you permission to do your dissertation on using the Dube TradePort's AgriZone as a case study on the impact of Special Economic Zone on Local Economic Development.
We will allow you to interview consenting staff as part of completing the research work. They will answer question insofar as they re ate to th.s. The information may only be used for the purposes of the thesis.

Sincerely,

[redacted]
Mlibo Bartwini
Executive: AgriZone & Cargo Terminal

29° South, 7 Umsinsi Junction, Dube City, La Mercy, KwaZulu-Natal, 4399
Tel: 032 814 0000 | Fax: 032 814 0100 | Email: info@dubetradeport.co.za | Web:
www.dubetradeport.co.za

Appendix 5: Turnitin originality report

turnitin

Digital Receipt

This receipt acknowledges that Turnitin received your paper. Below you will find the receipt information regarding your submission.

The first page of your submissions is displayed below.

Submission author:	Bhavia Sewnandan
Assignment title:	Thesis
Submission title:	The effect of SEZs on LED: A cas…
File name:	The_effect_of_SEZs_on_LED_A_…
File size:	188.36K
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