LOCAL ECONOMIC DEVELOPMENT ASSESSMENT ON THE PROPOSED dNUCLEAR POWER STATION AT THYSPUNT SITE IN THE EASTERN CAPE PROVINCE

by

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DECLARATION

I, **Malwandulwazi Vumazonke** declare that the contents of this dissertation/thesis represent my own unaided work, and that the dissertation/thesis has not previously been submitted for academic examination towards any qualification. Furthermore, it represents my own opinions and not necessarily those of the Cape Peninsula University of Technology.

Signed..... Date.....

Student number: 215119193

ABSTRACT

Globally, municipalities face difficulties of unequal and inadequate services to local communities. Kouga Local Municipality faces the challenges of unemployment and achieving equitable economic transformation as well as delivery of equitable, accessible services to improve the socio-economic lives of residents.

In South Africa, municipalities are charged with local economic development to improve the livelihoods of residents. One of the main functions of a district municipality is to include a development framework of all municipalities that fall in its jurisdiction, hence the salience of Sarah Baartman District Municipality.

This qualitative study assessed how the proposed nuclear power station at Thyspunt would impact local economic development in the Kouga region, using a sample of 100 managers and officials responsible for local economic development, 50 each, sourced from the district and local municipalities through purposive sampling.

Having obtained ethical clearance from the Ethics Committee of the Faculty of Business and Management Sciences and permission from both the district and local municipalities, in-depth interviews were conducted with 22 managers and officials to collect relevant data.

The data were analysed using thematic content analysis, yielding key findings from which conclusions were drawn and recommendations made that could assist officials dealing with local economic development in the selected municipalities.

This study is significant because very little research has been done on local economic development aspects associated with nuclear energy.

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DEDICATION

This dissertation is dedicated to my late granmother, Hazel Vumazonke.

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ACRONYMS AND ABBREVIATIONS

TERMS/ACRONYMS	DEFINITION
COCT	City of Cape Town
Co2	Carbon Dioxide
DoE	Department of Energy
DTI	Department of Trade and Industry
DWS	Department of Water and Sanitation
EIA	Environmental Impact Assessment
GW	Gigawatt
KLM	Kouga Local Municipality
LED	Local Economic Development
IDP	Integrated Development Plan
IRP	Integrated Resource Plan
KNPS	Koeberg Nuclear Power Station
MG	Megawatt
NDP	National Development Plan
NT	National Treasury
RSA	Republic of South Africa
SBDM	Sarah Baartman District Municipality
SEFA	Small Enterprise Finance Agency
SETA	Sector Education and Training Authority
SMME	Small Medium and Macro Enterprise

CHAPTER ONE
GENERAL INTRODUCTION

1.1 Introduction

Globally, municipalities face the same difficulties of inequality, unemployment and inadequate services to the local communities (Horn & Lloyd, 2001:59). These challenges are frequently influenced by postmodern developments like globalisation. Payne and Askeland (2016:2) contend that the most important consequence of postmodern development is inequality within and across societies. As a result, globalisation in developing countries is generating unbalanced outcomes. Ismail (2016:1) claims that globalisation creates wealth, but too many third world countries and people are not sharing its benefits nor have a voice to shape the process.

In addition to the challenges noted above local municipalities must address the economic path of their communities. Clause 152 (1) of 1996 Constitution outlines municipalities should promote socio-economic development, and encourage community involvement in national and provincial development programmes. However, despite national key performance areas such as Local Economic Development (LED), the economy has not created enough opportunities that can contribute towards reducing poverty and inequality in South Africa.

Wekwete (2014:5) describes Local Economic Development, as a development approach that allows local stakeholders to understand their economy and take actions directed towards local economic growth and poverty alleviation. As such, people within underdeveloped societies of South Africa should see evidence of LED. Correspondingly, Barbier (2005:1) provides that in many developing countries of Africa; it has been commonly accepted that the environment is not for economic development but contains natural capital fundamental to challenge uneven development. Thus, developing countries need to consider LED as an approach designed towards enhancing economic development amongst communities and equally benefiting the country as a whole.

Following an Environmental Impact Assessment (EIA) study performed by Eskom in 2015, Thyspunt, which is situated within the Kouga Local Municipality (KLM) in the Eastern Cape, was identified as the ideal site to build the first new nuclear reactor. According to Snodgrass and Potts (2011:146), the potential nuclear build at Thyspunt is premised on a need for a future energy supply arising from population growth and economic development, and recognising that alternative forms of energy need to be explored in South Africa.

1.2 Background

Currently, in Africa, South Africa is the only country that uses nuclear energy to produce electricity. Koeberg in Cape Town supplies electricity to the Western Cape, which is considered one of the fastest developing provinces in South Africa. According to Eskom Holdings (2017:1), the two reactors at Koeberg make a total contribution of 6% of South Africa's energy needs since 1984 using seven and a half tonnes of Uranium. Subsequently, Koeberg's contribution to the electricity mix in South Africa is a small amount due to population growth.

The need for expanding energy supply in South Africa has become heavily pronounced due to an increase in population. Consequently, Pfenninger and Keirstead (2015:2) claim South Africa is a developing economy with expected growth in energy demand due to an increase in population. Apergis and Payne (2010:555) assert that, in order to meet required energy demands, alternative measures need to be taken to include nuclear energy into the global energy mix.

According to Statistics South Africa (2011), the current population is estimated to be 56.5 million. Odimegwu and Kekovole (2015:56) claim that South Africa needs to address challenges posed by population growth, through creating opportunities proportionate to the growth rate of the population. Similarly, the UN Advisory Group (2010:7) agrees that current energy systems are inadequate to meet the needs of developing countries and threaten realization of sustainable development and economic growth. However, construction and operation of nuclear plants is very controversial. Thus, the nuclear programme in South Africa has been controversial, with as many opponents as enthusiasts. Anti-nuclear views are frequently formed on the basis of the horrific nuclear incidents that affected the communities of Chernobyl (Ukraine) and Fukushima (Japan) recently.

Cerda and Labandeira (2010:20) claim that failure to measure changes in economic outcomes, whether positive or negative, can misrepresent the welfare effects of those changes. Hence, by understanding these factors measures can be applied to facilitate growth of local economies.

1.3 Problem statement

SALGA (2010:3) highlights that until only recently, the main focus for most municipal LED initiatives have been community economic development projects, most of which were unsustainable because of unsustainable donor or public sector funding, which, consequently, resulted in no long-term impact on developing the local area and alleviating poverty. Challenges for LED include, among others, lack of conceptual clarity, absence of clear roles and responsibilities of relevant stakeholders and lack of planning and support to implement

LED sufficiently. Subsequently, there is an acceptance that Kouga Local Municipality faces challenges of unemployment and achieving equitable economic transformation as well as delivery of equitable accessible services to improve the socioeconomic profile (Kouga Local Municipality, 2017:33).

Following a statement made ahead of a presentation by Nuclear Energy Corporation SOC Limited (NECSA) on the proposed Thyspunt Nuclear Power Station, the elected Kouga Local Municipality Executive, Mayor Elza Van Lingen, said the municipality will not be bullied into accepting the power station because the infrastructure of Kouga is seriously dilapidated and the impact of a mega-project like Thyspunt would have on infrastructure will be catastrophic if the building of the plant takes place without any terms and conditions being attached (RNews, 2016).

Cloete (2006:4) asserts that before a development is undertaken it is necessary to do an analysis to evaluate the threats and chances of successfully executing the development. Bond (2003:157) states that high level infrastructure-related projects can shape the economic landscape of a region, through attracting investment from inside and outside the local area, as well as creating employment for residential (high- and low-income groups) and non-residential (commercial, industrial and civil construction) clients.

Considering challenges faced by the Kouga Local Municipality in achieving equitable economic transformation and the impact of infrastructure development projects such as Thyspunt, it was essential to assess the potential impacts, negative and positive, of the construction and development of a new nuclear power station on the Kouga Local Municipality. Thus, this study performed an impact assessment of the proposed nuclear power station at Thyspunt.

1.4 Research objectives

The main aim of the study was to assess the potential impact of the proposed nuclear power station at Thyspunt on Local Economic Development within the Kouga region. The study had five objectives, namely:

- To assess the state of LED sector in Kouga Local Municipality.
- To identify the barriers associated with ineffective implementation of LED strategies at local municipalities
- To determine current strategies that are targeted to create sustainable development in Kouga Local Municipality.
- To ascertain if there is a relationship between LED and nuclear energy within Kouga Local Municipality.

- To establish what infrastructure is required in the municipality to cope with nuclear energy.

1.5 Research questions

The main research question this study sought to answer was, How would the proposed nuclear power station at Thyspunt impact local economic development within the Kouga region? The sub-research questions were:

i. To what extent is Local Economic Development sector prioritised at Kouga Local Municipality?
ii. What barriers hinder the effective implementation of LED strategies in local government?
iii. What strategies has the municipality established to sustainable development as reflected in the Kouga Local Municipality Integrated Development Plan?
iv. What is the relationship between LED and nuclear energy within Kouga Local Municipality?
v. What infrastructure would be suitable for the proposed nuclear development in Kouga Local Municipality?

1.6 Significance of the study

This research is significant because very little research has been done on LED aspects associated with nuclear energy in the Kouga Local Municipality. There is a dearth or lack of original academic research on nuclear energy focusing on the proposed Thyspunt plant in the Eastern Cape, the only known study being that of Mbusi (2011) entitled 'An assessment of selected stakeholders attitudes towards and perceptions to the construction of nuclear power plants in the Western and Eastern Cape Regions, South Africa'. In this context, it was important and necessary to conduct this research to assess how the proposed nuclear power station at Thyspunt would impact local economic development in the Kouga Local Municipality. Findings of this study could contribute to the body of knowledge in this area.

1.7 Research design and methodology

Sileyew (2019:11) states that research methodology indicates the overall process flow for a given study. This process helps researchers to consider samples and models for data collection, problem validation and result dissemination. Aaker, Kumar and George (2000:19) interpret research design as a framework that determines how relevant information for a study will be obtained. The research design process contains many interrelated decisions to

be considered, such as the type of design a study will follow. Creswell (2009:22) attests the overall decision involves which design should be used to study a topic.

1.7.1 Three types of designs

A study tends to be more qualitative than quantitative or vice versa. Mixed methods research exist in the middle of this variety because it incorporates characteristics of both qualitative and quantitative approaches (Creswell, 2009:22).

1.7.1.1 Qualitative approach

According to Creswell (2014:4) qualitative research places emphasis upon exploring and understanding the meaning individuals or groups ascribe to social or human problems. Similarly, Polonsky and Waller (2011:134) describe qualitative research as methods seeking to find understanding in human or social studies before drawing conclusion.

1.7.1.2 Quantitative approach

Kumar (2011:104) states that in quantitative research, the measurement and classification requirements of the information gathered demand study designs to be more structured, rigid, fixed and predetermined in their use to ensure accuracy in measurement and classification. Subsequently, quantitative study designs provide more clarity and distinction between designs and methods of data collection.

1.7.1.3 Mixed methods

Schoonenboom and Johnson (2017:108) state that a mixed method design is characterised by the combination of at least one qualitative and one quantitative component.

1.7.2 The selected research approach

Given the brief outline on research designs in 1.7.1, the researcher followed a qualitative approach, using a case study design. Case study design is frequently used in qualitative research methodologies (Yazan, 2015:134). Kemanusiaan (2007:5) states case studies present real life situations governing social issues and problems. Kumar (2011:123) maintains that case study design is useful when exploring an area where little is known or where the researcher wants to have a holistic understanding of a situation, phenomenon, episode, site, group or community. As such, this design is of immense relevance when the focus of a study is exploring and understanding rather confirming and quantifying. Considering there is a lack of academic research focusing on nuclear energy on the proposed Thyspunt plant in the Eastern Cape, the researcher adopted this approach to understand and present a real life situation within the given context.

1.7.3 Population under study

A population is all people who live in a particular area, city or country (Hornby, 2015:1155). Brynard and Hanekom (2005:43) define population as objects or subjects chosen by the researcher to take part in a research study. Therefore, the population of this study comprise of Sarah Baartman District Municipality (SBDM) and Kouga Local Municipality (KLM) officials responsible for managing Local Economic Development in the region.

1.7.3.1 Proposed nuclear site

The image shown in Figure 1.1 shows the location of Thyspunt (proposed site for Nuclear 1) in the Kouga Local Municipality, which has 15 wards and an estimated population of 95580 people.

Figure 1.1: Thyspunt proposed site for Nuclear 1 (Source: eNCA, 2015)

1.7.3.2 Identifying units of analysis

A unit by definition is a group regarded as a single thing but forming part of a larger group (Hawkins, Delahunty & McDonald (2002:697). Chenail (2012:266) claims in qualitative data analysis a unit would be a single undivided entity upon which you direct your analysis and express the qualities in that element. Moreover, Harris (2019:1) contends one of the best ways to help identify unit of analysis is to classify the level and what you are studying. Given the different explanations offered, units of analysis provide the researcher guardrails to ensure the dissertation remains within the boundaries of what is being examined. In addition, unit of analysis distinguishes between the level and group which is being studied.

The unit of analysis for this research was classified between the level of investigation and what was being analysed. Firstly, local government was selected as the sphere of government, where Kouga Local Municipality and SBDM were the selected municipalities.

Secondly, LED was the directorate to be examined. Thirdly, was the individual level, where interviews focused managers and officials.

The population of this study consisted of SBDM and Kouga Local Municipality officials responsible for local economic development in the region. Twenty-two participants were identified through liaising with directors and portfolio councillors, with permission from municipal managers.

1.7.4 Sampling frame and sample size

According to Marshall and Rossman (2006:62), one cannot study the whole universe. For this reason, the researcher should select a representative of a group with a view of obtaining information for the whole group. Following this principle, the researcher utilised a non-probability sampling technique called purposive (or availability sampling) was used to select the sample for this study. By using this sampling technique, the participants were selected based on their convenience and immediacy to the researcher. This sampling technique was utilised for SBDM and KLM officials responsible for LED initiatives in the region. The projected sample size consisted of 100 people, determined as follows: 50 managers and officials from SBDM and 50 managers and officials from Kouga Local Municipality.

1.7.5 Research instrument

Scott (2016:43) avers that questions can be asked in formal surveys or interviews to gather data. Creswell and Poth (2017:43) offer the view that social science researchers gather data by conducting interviews and analysing archives. Flick (2014:199) characterises in-depth interviews in two ways: first, they look for rich and detailed information and, secondly, questions are open-ended, which allow for a coherent conversation between the interviewer and interviewee.

In-depth interviews were carried out with managers and officials from Kouga Local Municipality and SBDM, to answer the how and why questions. The questions were done in a consistent manner. This allowed the officials freedom to ask questions and share their views about LED in the municipality. The face-to-face in-depth interviews were valuable because they enabled extraction of large volumes of data. The researcher used a tape recorder for the duration of the interviews and all participating respondents gave permission to the researcher for the use of a tape recorder.

1.7.6 Data analysis

According to Bernard (2018:356), analysis searches for sequence in data and understanding to clarify meaning. The process includes linking results to the findings of other research. Gibbs (2007:4) adds that qualitative data analysis often consists of large volumes of data. To

enable the researcher comprehensively analyse interviews, data was organised into sub-groups and aligned to the research questions, which allowed for the data to be objectively analysed and interpreted.

1.8 Ethical considerations

Hawkins *et al.* (2002:219) define the word 'ethics' as standards of moral principles. According to Stevens (2013), it is important for research to encourage health and well-being. In addition, the dignity, rights and safety of participants should not be compromised by the researcher. As such, this study was anonymous. Involvement was completely based on the accessibility and immediacy of participants. Participants were assured of confidentiality and the right to withdraw from the study at any time. The benefits of participating in the study were associated with new knowledge being discovered and further understanding, which contributed towards addressing the objectives of the study. Informed consent to conduct the study was obtained before data collection.

Key ethical considerations for this study are outlined as follows:

- Approval from the faculty of Business and Management Sciences Ethics Committee was obtained before the research began (see Appendix A).
- The researcher sought and obtained permission from Kouga Local Municipality and SBDM to conduct interviews (see Appendices B and C).
- The nature of the study was explained to the participants before interviewing them (see Appendix D).
- Participants were informed participation in the study was voluntary.
- Participants could withdraw any time or refuse to answer any question.
- Participants could withdraw permission to use data from the interview.
- The interview granted would be audio-recorded and data would be treated confidentially.
- The identity of the participants would remain anonymous.
- The signed consent and audio-recordings would be stored securely.
- Participants were free to contact people involved in the research for further clarification.

1.9 Delineation of the study

The parameters of the study were as follows:

- The study focused on LED assessment of the proposed nuclear power station at Thyspunt Site in the Eastern Cape.
- The study was limited to only local government officials employed in two municipalities.

- The study did not include stakeholders from the nuclear energy sector.
- English was used as the preferred language of communication, although the majority of officials were fluent in isiXhosa and Afrikaans.

1.10 Reliability and validity

According to Golafshani (2003:597), the use of reliability and validity is common in quantitative research and now is considered in qualitative research paradigms. Cypress (2017:254) argues reliability and validity are key aspects in qualitative research to assert rigor. Similarly, Hayashi, Abib and Hoppen (2019:98) attest reliability and validity are important elements to provide evidence on the quality of a research inquiry. Bashir, Tanveer and Azeem (2008:39) add that the idea of testing in qualitative research is regarded as elicitation of information. Thus, the most important test in qualitative research is quality.

Furthermore, reliability and validity are factors qualitative researchers should be apprehensive of when designing, analysing results and judging its quality. Bashir *et al.* (2008:44) maintain the claim for achieving reliability and validity in qualitative research rests on data collection, analysis techniques and instruments. Lincoln and Guba (1985) argue that reliability and validity ensure credibility, confirmability, truth value, consistency and neutrality of the research. Essentially the research must honest, eliminate bias and ensure the results of the research are accurate.

In achieving truth value, the researcher gave clarity at the beginning about the research plans. In addition, documenting the objectives of the study on each chapter assisted in maintaining consistency with the findings. Audio recordings enabled the researcher to revisit the data frequently to check for emerging themes. Asoba (2016:57) states that the findings of a study must be more or less the same to other researchers. Furthermore, to ensure consistency of the study, a supervisor was assigned to supervise the student researcher. The supervisor evaluated the content and objectives of this research and whether the research questions and acquired data emanated from the literature.

1.11 Outline of the study

The study is divided into five chapters, outlined as follows.

Chapter One: introduces the study and gives the background to the study. The research problem and the key questions pertaining to the research are described. The selected concepts are defined and the objectives of the study are defined. The significance of the study is discussed. Additionally, the chapter explains the research design and methodology employed.

Chapter Two: provides a comprehensive understanding of the existence of LED from a global and local context. This is followed by investigating the role of local government, taking into consideration stakeholder identification and the challenges associated with implementing LED initiatives. Municipal structures and the South African economic system are brought into the discussion between sub-sections four and five, followed by the need for infrastructural development in South Africa discussed under sub-section six. These include hard and soft infrastructure such as transport and bulk infrastructure, social improvements pertaining to early childhood development, adult learning and workforce development and SMME development.

The last sub-section of the chapter reflects on the local economy of Kouga, which involves an investigation of the macroeconomic impact of constructing and operating Thyspunt as well as the UN-Habitat strategic planning model designed for implementation of strategy. Finally, the chapter gives an overview of nuclear energy with consideration given to nuclear expansion in South Africa, global warming factors and nuclear accidents.

Chapter Three: describes the methodological characteristics of the study as well as the research design, population and sample of the study. Different data collection techniques were addressed. The different techniques explored by the researcher are explained and why they were deemed suitable for the study. In addition, the theoretical and philosophical assumptions underlying the study were reviewed.

A qualitative approach was adopted using a case study design. The unit of analysis for this research was classified between the level of investigation and what was being analysed. Firstly, local government was selected as the sphere of government, where Kouga Local Municipality and SBDM were the selected municipalities. Secondly, LED was the directorate to be examined. Thirdly, was the individual level, where interviews focused managers and officials. Furthermore, in-depth interviews with municipal officials responsible for LED were conducted through purposive sampling. Supplementary data was collected from scholarly publications, books, the internet, unpublished master's dissertations and doctoral theses. The data from in-depth interviews were transcribed, coded and explained. Ethical measures taken in the course of the study are clearly discussed.

Chapter Four: presents and analyses the data collected from in-depth interviews with municipal officials responsible for LED in the Kouga region. The interview guide was designed to align with the research questions and research objectives.

Chapter Five: concludes the study. The main findings are provided, followed by conclusions drawn and recommendations to managers and officials responsible for LED. This is followed by suggestions for further research and a general conclusion.

1.12 Summary

This chapter introduced the study. The chapter defined the dissertation by underlining some of the previous research conducted nuclear development in South Africa. In so doing, the Chapter indicated how this dissertation would contribute to the body of knowledge to LED, both in South Africa and internationally. The chapter briefly reflected on the challenges faced by the Kouga Local Municipality and how these challenges prompted for this research project to be conducted. Furthermore, the chapter explains the research design and methodology used for the study. In Chapter Two, a thorough background for the study is provided in terms of LED. This is done by the use of relevant literature pertaining to the study. In addition, Chapter Two highlights the theoretical framework used in the study.

CHAPTER TWO
LITERATURE REVIEW

2.1 Introduction

The review of literature helps determine the study's relevant concepts and shapes the tentative guiding hypothesis (Algozzine & Hancock, 2017:35). O'Leary (2017:95) contends that the role of a literature review is to explore texts and media reports as well as journal-based research studies that make up an area's scientific literature. Therefore, to achieve these objectives, the researcher needs to explore relevant literature pertaining to this study. The literature review is made up of eight sections. The first part gives a comprehensive picture of the existence of LED from a global and South African context. The second section identifies policies and programmes applicable to LED. The third section investigates the role of local government, taking into consideration stakeholder identification and the problems relating to LED implementation.

The South African economic system and municipal structures are brought into the discussion in sections four and five, followed by the need for infrastructural development in South Africa, discussed in section six. These developments consist of hard and soft infrastructure such as Transport and Bulk infrastructure, Social Improvements pertaining to early childhood development, Adult Learning and Workforce Development and SMME development.

Section seven reflects on the Kouga local economy, which involves an investigation on the macroeconomic impact for constructing and operating Thyspunt, as well as the UN-Habitat strategic planning model designed for implementation of strategy. The section provides a holistic view of the study by giving an overview on nuclear energy with consideration given to how nuclear is produced, nuclear expansion in South Africa, global warming factors and nuclear threats.

2.2 Overview of local economic development

2.2.1 Understanding LED

LED suggests creating strong local economies, through identifying local opportunities and potential advantages that address local needs. The, UN-Habitat (2005:2) describes LED as a way to combat uneven growth and improve the standards of living. The theory of LED may be better understood as subdivisions of regional improvement (Pike, Rodriguez-Pose and Tomaney; 2006). Similarly, Trah (2004:1) adds that LED is a territorial theory intended to encourage the usage of locally existing resources.

Though the true definition of LED is widely contested, literature suggests that all definitions form a collective purpose. Lawrence (2013:3) states that LED is an ongoing process that focuses on local role players collaborating to accomplish objectives. The word 'process' is acknowledged within the core fundamentals of LED as a sequence of activities used to reach an end result. Hawkins *et al.* (2002:495) describe process as "in the event of doing or making something".

Seduma (2011:11) sees LED in terms of pro-poor or pro-growth focus. The distinction between the two is that pro-poor LED focuses on poverty alleviation, while the pro-growth LED focuses on establishing an environment favourable for investments. Nel and Rogerson (2015:109) indicate that LED can be presented as community-based or a market-orientated intervention.

In essence, the background to the study hinges on the acceptance that LED is a development approach that allows local actors and those involved in planning and implementation of policy to understand the economy and take actions directed towards stimulating economic activity and improving standards of living. For this reason, government should put in place systems and create channels for community development initiatives, through investing into community projects with the potential to reap sustainable economic results.

2.2.2 Background on LED

The establishment of LED dates back to the early 1960s. Post-1970 LED extended its scope from government-led local enterprises in Europe to leading projects of private sector LED to the rest of the world. Sekhampu (2010:3) confirms that LED was included by local governments in the 1970s as a policy approach to realise trade and the moving of resources to areas where competitive advantage could be gained. Thus, with the newly-found understanding of LED in this era, government could grow the economy by undertaking strategic programs devised to stimulate investment and local growth.

The World Bank (2006:6) summarises the evolution of LED through three phases of development, as shown in Table 2.1. Each phase displays a detailed understanding through which LED can be pursued.

Table 2.1: Phases of LED

Phase 1	**Consideration**	**Equipment**
1960s-1980s	Developing hard infrastructure	• Prioritised on minimizing production costs by recruiting cheap labour
Phase 2	**Consideration**	**Equipment**
1980s-1990s	Sustaining and expanding existing local businesses	• Direct payments to individual enterprises
	Constant focus on obtaining internal investment	• Business start-up centres were customary • Professional expertise, assistance and skills acquisition for small-medium scale enterprises
Phase 3	**Consideration**	**Equipment**
2000s	Investments on technological advancements to enable accessibility and convenience	• Encouraging local firm growth
	Public/Private Partnerships	• Public engagement and participation • Emerging collective business relation
	High priority to attract internal investment, to develop the local landscape	Supporting quality of life improvements: • Enabling economically related enterprises • Development of regional and local development strategies

Source: World Bank (2006:6)

In the initial phase of LED attention was directed towards marketing potential areas to external investors through incentive systems such as grants, tax subsidies and infrastructure development (World Bank, 2006). In the second phase, the emphasis was to stimulate local economic activity to sustain existing and growing local businesses through promotion of business start-up plans. This was achieved through skills empowerment initiatives for small medium enterprises, rural development and making funding accessible. However, the reality is that despite various approaches used between the 1980s-1990s, a common trend can be acknowledged on the role played by local actors in taking autonomous strategy as a response to global restructuring of economies.

The third phase focuses on improving individual capacity and development approaches that were used in phase two by taking into consideration public/private and community partnerships to facilitate a conducive economic development environment (Patterson, 2008:3).

Rucker and Trah (2007:13) claim that LED modern-day objective is to provide a competitive local business environment by enabling workforce training and education. Drawing from the various phases of LED noted, Rodriguez-Pose (2009:25) is of the view that LED methods are dispersing away from developed to developing countries because of decentralisation and

globalisation. Arensberg and Niehof (2017:1) attest that increase of production in developed states ensued great wonders of output. However, developing countries have not yet achieved this desire despite partaking in the global market. Correspondingly, Rucker and Trah (2007:15) state although LED activities present a vibrant economic focus, consideration has been directed towards sustainable development patterns to make provision for social and ecological objectives in developing countries. Therefore, the current phase of LED provides new possibilities for developing countries with stagnated policies.

2.2.3 The South African LED experience

Before LED became prevalent in the 1990s in South Africa, it had already been applied in highly developed industrial countries. Nel and Rogerson (2015:3) state that LED gained widespread acceptance in South Africa as a major post-apartheid tool for social improvement and change. However, according to South Africa (2006:13), LED has been insufficiently stimulated to local areas, even where due economic opportunity can be realised. This was recognised by former President, Thabo Mbeki, who notes that:

> Many African countries, do not have and are unlikely to have the foreseeable future, the strength themselves to determine on their own what should happen to their economies. The more they get integrated into the world economy, the further will their capacity be reduced, making them more dependent on the rest of the world economy with regard to meeting the challenge of ending poverty within their countries (Mbeki, 2000*).*

Post-democratic South Africa faces socio-economic development problems of high inequality in income. Osborne (2015:26) concurs that the policy developed under the apartheid government left an inheritance of deficiency and disparity. The RDP (1999:14) strongly affirms poverty was and still is the biggest problem in South Africa, affecting a vast majority of the population living in underdeveloped townships. Seduma (2011:12) agrees with Osborne (2015) that apartheid spatial development planning was intentionally designed to alienate the majority from crucial economic activity, thus increasing inequality. Reconstruction and Development Programme (RDP) (1999:2) further maintains that the economy in South Africa was built on a systematically enforced racial dissection, where rural areas were alienated into underdeveloped communities with insufficient basic services, predominantly consisting of blacks. Meanwhile, towns and cities were adequately resourced for whites.

From the literature, it can be said that pre-1994 the development of LED was suppressed, due to community displacement and racial segregation. It has only been post-1994 that there has been a need for social improvement. As a result, the concept of LED became noticeable in legislative structures and among policy makers to the point where it has become a pronounced priority today.

Rogerson and Rogerson (2010:472) claim that large metropolitan areas have steered the way in implementing LED by building competitiveness through encouraging entrepreneurship, preserving municipal resources and capacity building to participate within an ever-changing global environment. Rogerson and Rogerson (2010:474) add that LED activities and studies are primarily prioritised in cities, rather than smaller towns. A gap in LED can thus be acknowledged as smaller cities and towns, particularly in the Eastern Cape, are still struggling to grasp the concept entirely compared to cities and towns of developed countries.

Several scholars agree that LED has proven to be indefinable in smaller municipalities and underdeveloped areas due to an inactive process of land reform, poor prioritisation to enable development in local economies, insufficient capacity and partial engagement between public and private sector (Binns & Nel, 1999; Nel & Rogerson, 2007; Rogerson & Rogerson, 2010).

Ndabeni and Rogerson (2017:18) emphasise critical importance of understanding that policies pursued in well-developed countries may not yield the same results in less-developed countries as developing countries are still at the lower tier of development and face both social cohesion and competiveness agenda. Therefore, policy-makers should do away with usual practices, but rather shift attention towards building capacity to increase participation in LED initiatives.

2.3 Theoretical underpinings of LED

In this section, three different theoretical perspectives are offered: Territorial Theory, Deleuzian Theory and Neo-liberal Theory. The purpose is to provide deeper understanding and meaning to developmental theories and approaches applied across the globe and determine how these theories can be applied within the South African LED context.

2.3.1 Territorial Theory

The Territorial Theory, also referred to as Territorial Approach to Local Development (TALD), is an ideology targeted at improving welfare and economic activity in different areas, districts or provinces of a country (Minsat, Simpasa, Lusigi & Losch; 2015:4). This approach is formulated by local authorities with the intention to improve the potential of spatial and geographic areas that go below the radar of national policy makers, thus reducing territorial disparities and promoting social cohesion. Amongst other things, TALD encourages local actors to be self-sufficient and have capacity to develop their own initiatives through effective decentralisation of government and leverage local resources.

Romeo (2015:16) argues that territorial development cannot be achieved if there is no national strategic commitment, while Bilbao (2015:18) suggests strategies should be put in place to build blocks to bridge the gap between national-local government, including decentralisation of responsibility to enable local actors identify opportunities and challenges.

The European Commission (2016:26) highlights that the outlook on decentralisation should be reconsidered from being a public sector reform approach to a political process of empowerment of people through the empowerment of municipal governments. Akah (2008:46) describes empowerment as a positive change to a group or an individual, through a set of structural measures to increase self-sustainability and self-determination. Within this context, empowerment can be applied as a theory to the LED dialogue and discipline. Noticeably, empowerment is seen across South African policies and programmes that require plans to address job creation and community development through reinforcing capacity of municipal government to support LED through human resource training, participation in construction and developmental projects.

Linked to the abovementioned, the European Commission (2016:27) considers three main forms of decentralisation that can be applied relating to empowerment. First, devolution gives local authorities mandate to develop territories and promotes public involvement, which increases opportunities for people to make choices, exercise control and contribute in all stages of LED planning. Secondly, deconcentration requires local actors to execute functions as central agents and be granted authority to make autonomous decisions within the agreed guidelines subject to considerable oversight and reporting. Thirdly, delegation informs arrangements made between public-private entities to deliver services that are formally central government responsibilities, thus enabling community participation in executing and overseeing delegated responsibilities.

In essence, the LED discipline can integrate more than one development theory. In this case, territorial development theory goes hand in hand with the empowerment theory, subsequently social, economic and geography development can be expressed in the LED practice.

2.3.2 Deleuzian Theory

An examination of the theory on Deleuzian metaphors as an aid to understanding local economic development is explored. Rowe (2009:101) asserts that most local economic development theories are established from economics and geography. The author challenges practitioners and researchers to ‘think outside the box’ to formulate new theory that can be applied in practice to solve existing problems. Rowe (2005:230) offers the following explanation to describe the use for this metaphor as follows:

"*If inside the box is the status quo, outside the box is not the status quo".*

The Deleuzian Theory contends that every metaphor contains an idea which is underpinned by reasoning and philosophy. Similarly, Williams (2011:2) acknowledges that Deleuze's work rests on innovation to explain and develop philosophy of process and becoming without having to underpin it to a prior foundation dependent on some kind of hypothetical supposition. In this regard, Rowe (2016:38) concedes there cannot be a universal theory for LED, but argues that Deleuze's philosophy should be taken in the context of urging practitioners to not blindly follow others and to be robust by thinking outside the box to enable innovation for local challenges.

Simply put, Deleuzian Theory puts forward an alternative viewpoint. These alternatives are described by Lundy (2012:185) and also found in the literature of Rowe (2009:109) as key metaphorical tools for understanding LED. Although there are several Deleuzian metaphors, three are highlighted for the purpose of this study. First, De-territorialisation considers movement that produces change; secondly, Nomad opens new networks and realities, thus producing inventive processes and, thirdly, Flow deliberates the movement of knowledge, concepts and ideas from practitioners to the communities. In designating these metaphors, it is clear that this theory encourages the LED practitioner to be someone who strives to achieve the impossible.

2.3.3 Neo-liberal Theory

The emergence of development economics as a discipline became prevalent due to a realisation that developing countries prevailed with different economic conditions which included larger agricultural and production of primary goods, similarly unobtrusive manufacturing as well as different types of labour markets which led to inefficiency and collapsed due to poor trade policies (Fine & Jomo, 2006: vii).

Supposedly, the neo-liberal theory was established on the collapse forming the basis that free trade promotes economic growth and global interconnectivity which optimizes global resource allocation, maximizing consumer welfare and increasing productivity in manufacturing (Fine & Jomo, 2006:47). Thompson (2015:1) contends that neo-liberalism considers human beings as consumers in the market, whose choices are best applied by means of trade i.e. buying and selling. Subsequent to this explanation, the market enables benefits that can achieve economic growth thus reducing poverty.

Politics of Developing Nations (1999:1) is critical of neo-liberalism citing that it is only beneficial for those who are on the upper echelon and those in the bottom of society are unlikely to be capital investors which leads to unbalanced development. Correspondingly,

Akah (2008: 42) states that neo-liberalism as a free market theory in South Africa is not able to address alleviate poverty and inequality left behind prehistoric imbalances.

The Territorial Theory is best suited for purpose of this study as it uses a mixed approach to identify geographic areas with potential for economic growth, mandates the decentralisation of responsibilities and encourages empowerment of municipal authorities and, in turn, empowerment of the public through social improvement programmes and skills development training. In essence, the LED discipline can integrate more than one development theory. In this case, territorial development theory goes hand-in-hand with the empowerment theory. Subsequently social, economic and geography development can be expressed in the LED practice.

2.4 Legislative framework and programmes

Key policies and programmes established to promote LED in South Africa are discussed in the sub-sections that follow.

2.4.1 Constitution of the Republic of South Africa (Act 108 of 1996)

The Constitution (South Africa, 1996b) is the highest law of the country, establishing a system of checks and balances. Furthermore, sets obligation on government to protect the rights of its citizens, create an environment conducive for growth and facilitate development needs. In terms of clause 152, municipal government is commanded to stimulate social and economic change, followed by making services to communities accessible.

2.4.2 Local Government Transition Act 17 of 1996

The Act (South Africa, 1996a) was formulated to assist local government to encourage Integrated Development Planning (IDP) frameworks aimed at addressing development, spatial and transport planning with appropriate funding mechanisms.

2.4.3 White Paper on Local Government (1998)

This paper was initiated to capacitate municipal government to impose transformation through LED tasks geared towards meeting socio-economic needs and enhancing living conditions (South Africa, 1998b). Under Section B of South Africa (1998b:24), the framework clearly states that municipalities need to collaborate with domestic enterprises to create jobs, attract investors and ensure there is visible change in local economies. Therefore, this paper establishes that municipalities are responsible for creating an environment conducive for development.

2.4.4 The Municipal Systems Act, 2000 (Act No 32 of 2000*)*

Section 26(c) instructs elected councils to make development a priority, including LED and transformation. Patterson (2008:7) argues that despite clause 152 of the constitution giving mandate to municipal government to engage and stimulate socio-economic change, the Act does not prescribe how Category B municipalities can achieve this.

2.4.5 Reconstruction and Development Programme

The RDP was adopted to mitigate inadequacy and redress historic inequalities across communities in underdeveloped communities and subsequently the basis of the RDP was to enhance plans addressing job creation and community development.

2.4.6 Accelerated Shared Growth Initiative in South Africa (ASGISA)

ASGISA was initiated to decrease unemployment and poverty by addressing historical inequalities and unsustainable growth for marginalised poor communities. In the context of municipalities, ASGISA is mandated to strengthen capacity of municipal government to support LED by way of human resource training, participation in agriculture and the Expanded Public Works Programme (South Africa, 2004:4).

2.5 Responsibility of local government in LED

Elgie, Grossman and Mazur (2016:291) describe local government as an organised form of public administration where the local authority is the only legitimate site of local power and policy. Meyer (2013:25) adds that municipalities are tasked to ensure growth and development in communities. The Constitution mandates municipal government to promote community participation in matters critical, to the promotion of LED. Additionally, section 153 clauses (a) and (b) of the Constitution allocates related LED duties to municipalities, stipulating that municipalities should prioritise community needs, by arranging and managing a budget and take part in nationwide development objectives.

Davids, Theron and Maphunye (2010:62) come to an understanding that the responsibilities of local authorities need to be identified to promote and support development. However, it should be acknowledged that having a government that promotes and supports development is a tall order in developing countries. Ceasar and Theron (1999:108) claim that less industrialised countries do not present the ability to implement change and, consequently, adaption from conventional physical development technique to a new people-orientated development technique is required to change the traditional bureaucratic structure and the attitudes of government officials towards issues such as public participation and community empowerment.

In light of the discussion, Liebenberg and Stewart (1997:58) claim that not only has planning failed in developing countries, but that the planning process has many inherent problems. As such, guidelines are necessary so that people (particularly those responsible for LED programmes) can try to improve the situation. Ultimately, by noting the discussion above, it is clear that government spheres are obliged to take responsibility in the planning stages of the proposed nuclear power station at Thyspunt by ensuring LED will deliver skills development among underprivileged communities, connect government and non-government sectors to mitigate rampant unemployment and constrained industrialisation in the region.

2.5.1 Key role players in LED (stakeholder analysis)

Clause 29(1) (b) (i) (ii) of the Municipal Systems Act provides that the public be engaged regarding their development needs. Correspondingly, this requires relevant stakeholders to be considered as part of the planning process. Steyn and Puth (2000:198) describe stakeholders as persons or individuals directly impacted by decision-makers or those whose decisions impact society. Similarly, Skinner, Mersham and Benecke (2013:40) add that stakeholder management includes aspects of identifying stakeholders, determining their needs, deciding on appropriate ways of addressing their needs and implementing activities that will address these needs within an agreed budget. It is, therefore, necessary to understand LED functions in a stakeholder century, where communication plays a big role for successful implementation. Prince2 (2014:3) contends that the key challenge for organisations today is to succeed in balancing two parallel requirements, facilitating communication engagement with stakeholders and delivering a product according to an agreed business case. On the same note, Davids *et al*. (2010:129) add that even though decision makers underrate the value of stakeholder involvement, it creates an opportunity for correcting inequalities and shapes future outcomes. Thus, participation amongst stakeholders is essential in the early stages of development planning as it helps to gather different views and understand issues.

2.5.2 Barriers to LED implementation

Municipalities with limited economic activity face challenges in identifying the significance of good municipal infrastructure and services (South Africa, 2006:15). Abrahams (2003:185) claims the challenges facing municipalities is the result of poor preparation and execution of IDP.

Gumede (2009:4) contends that smaller municipalities typically develop strategies containing five-year ideas that outline a vision on how to boost economic growth, build new industries and reduce unemployment. Despite these development plans, smaller municipalities fail outright or produce disappointing below average deliverables.

The South African Cities Network (SACN, 2016:17) lists two crucial challenges affecting LED, namely: majority of local authorities have insufficient and inadequate economical redevelopment plans existing and a lack of skills and decrease in the standard to appoint suitably qualified professionals. In contrast, according to SALGA (2010:12), the vital areas that hinder effective execution of LED, with consideration given to smaller municipalities, are:

i. **Lack of awareness on the role and function to LED**

   Legislators and decision-making bodies must come to a general consensus that by virtue of having a LED plan does not insinuate LED will take place.

ii. **An increasing urban-rural divide**

   Less developed communities have a shortage of designated members of council to advise and guide LED execution. Non-implementation in LED is the fundamental reason contributing to discordant development. In essence, a deviation amid progress made in urban areas and rural regions makes universal LED policy development and implementation difficult (SALGA, 2010:13).

iii. **An incoherent intergovernmental relation between provincial, district and local government**

   LED officials lean towards a unilateral understanding of local rather than understanding that their local economy is constituently linked to the district, the province, the national and the global economy (SALGA, 2010:14).

iv. **Ineffective LED "networks"**

   Less developed local authorities often place much emphasis on involvement by marginalised local residents, instead of enabling networks with the private industries and non-government organisations (SALGA, 2010:15). Patterson (2008:26) argues that local government lacks control to influence and implement LED successfully.

v. **Insufficient resources and capacity planning**

   Rural municipalities do not have sufficient financial resources to outsource the envisaged skills to execute LED effectively. Consequently, this results in inadequate LED plans characterised by impractical goals and a lack of ability to identify economic development opportunities (SALGA, 2010:16).

Rogerson (2010:484) argues that LED problems in South Africa can be resolved by integrating spatial relations amongst all government sectors and institutions. What is critically important for this study is that public and business sector must collaborate to achieve LED. Bogopane (2012:1) suggests that successful LED is influenced by the support of all government structures, together with local business and civil society.

2.5.2.1 Summary on LED challenges

In light of the literature reviewed, LED in the 1970s was acknowledged internationally by local governments as a strategic programme to stimulate investment and expand economic activity for local growth. This approach allowed communities to gain understanding on their development needs and enabled local businesses to grow by encouraging entrepreneurship and making funds accessible for SMMEs.

Though there is no precise distinction to characterise LED, some scholars argue that LED is pro-poor, while others maintain it is pro-growth. This makes it difficult to formulate a collective understanding on how to initiate planning and implementing LED initiatives in regions. What can be generally accepted across the spectrum is that LED is a process aimed at achieving an end goal. The literature shows that in South Africa, LED became prevalent in the 1990s as a policy developed to address historical inequalities that were formed under the apartheid regime. Accordingly, South African policies developed post-1994 were meant to reduce the gaps between rich and poor, and, accordingly develop underdeveloped racially segregated locations to empower communities through skills development programmes and training.

In essence, most South African policies can be identified as leaning towards a pro-poor approach.

Another challenge for South Africa drawn from the literature is that much attention for LED has been focused on large cities, leaving smaller rural towns underdeveloped. As a result, urban areas have become overpopulated because of better economic benefits. In smaller municipalities, barriers often relate to inadequate planning and execution of economic improvement plans, where there is no common understanding of the purpose and process for doing LED by officials. This further relates to an incoherent relationship from other spheres of government to collaborate with smaller municipalities in equipping them with necessary frameworks, funding and encouraging skills development training to facilitate LED. The literature suggests that planning fails in developing countries, because the planning process has many inherent problems. This implies that, traditional bureaucratic structures and attitudes of government officials towards issues such as public participation and community development should be taken seriously.

2.6 Municipal structures in South Africa

The local government sector in South Africa is composed out of three kinds of municipal governments. At present, there are two hundred and seventy-eight municipal governments containing: eight metropolitans, forty-four municipal districts and two hundred and twenty-six local. The types of municipal structures described within Municipal Structures Act (117 of 1998) context are:

2.6.1 Category A Municipalities (METROPOLITAN)

- An area that is often over populated.
- An area with high business activity and high potential development.
- An area with several industrial zones.

2.6.2 Category B Municipalities (DISTRICT)

- An area that lies beyond the jurisdiction of the metropolis area and split into local municipalities.
- Joint decision-making and jurisdictive control with a local municipality within a certain range or parameter.

2.6.3 Category C Municipalities (LOCAL)

- An area with several local municipalities that lie within certain range or parameter.
- Category B municipality has to plan to improve the delivery in the whole district.

Figure 2.1 shows a map of the SBDM, which consists of seven local municipalities, while Table 2.2 gives population statistics of the local municipalities.

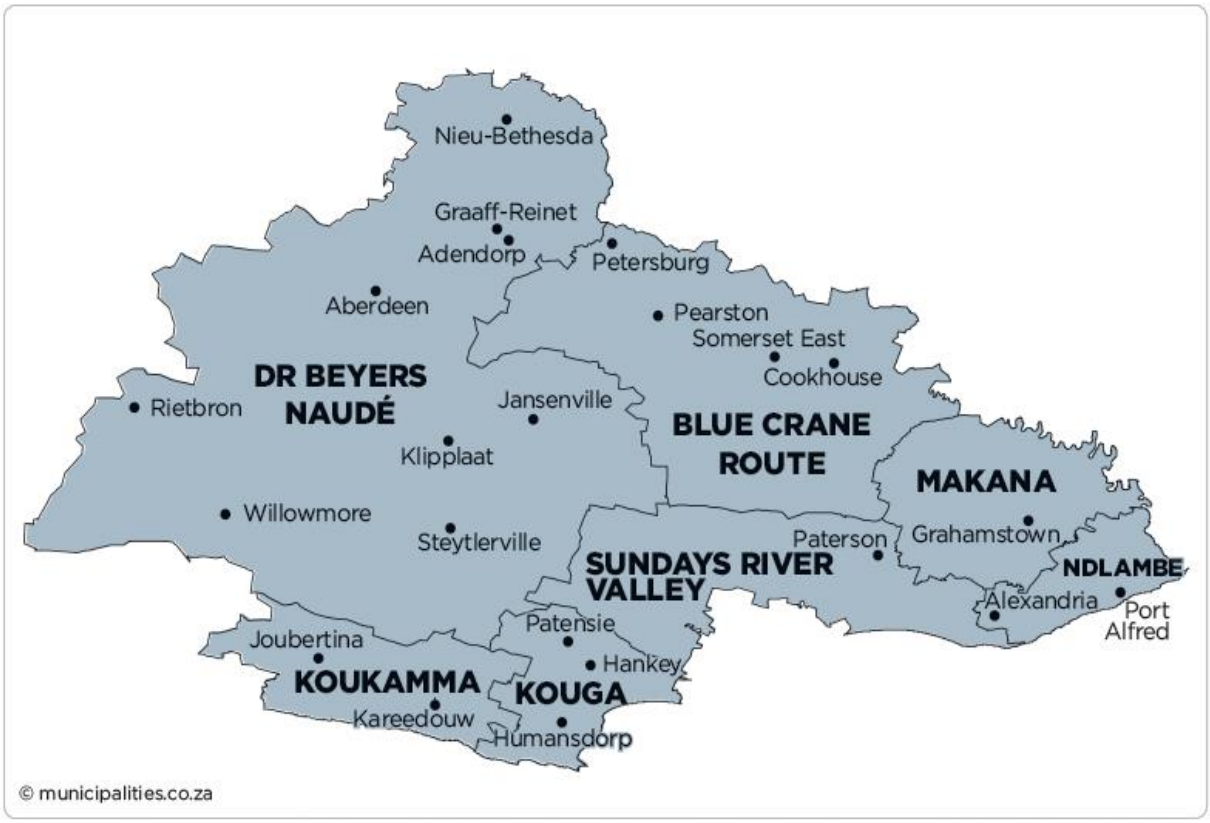

Figure 2.1: Geographical map of Sarah Baartman District (Source: Google Images)

Table 2.2 show the various Category B municipalities within the Sarah Baartman region (Category C) in the Eastern Cape. Kouga Local Municipality, on which the study focuses, falls under the Sarah Baartman region, which is constituted with regard to clause 155(1) in the Constitution and the Municipal Structures Act as a Category B municipality.

Table 2.2: Population of the Sarah Baartman District

Local Municipality	Census 2011 Population	Census 2011 Growth Rate (2001-2011)	Community Survey 2016	Community Survey% Growth Rate (2011-2016)
Kouga	98 558	38%	112 941	14.6%
Blue Crane	36 002	1.6%	36 063	0.1%
Makana	80 390	6.7%	82 060	2.1%
Ndlambe	61 176	11.4%	63 180	3.2%
Sundays River	54 504	11.8%	59 793	9.7%
Beyers Naude	79 291	5.1%	82 197	3.6%
Kou-Kamma	40 663	18.7%	43 688	7.4%
Total	450 584	16.6%	479 923	6.5%

Source: Statistics South Africa (2011) and Community Survey (2016)

Statistics South Africa (2011) documented the population for Kouga Local Municipality at 98 558 in 2011, while Community Survey (2016) recorded a population of 112 941, showing an increase of 14.6% between 2011 and 2016. These figures demonstrate a population growth of 6.5% for the Kouga region.

Clause 84(1) in the Municipal Structures Act outlines one of the important functions and powers of a Category B municipality, explaining that an IDP for a regional municipality ought to establish development structures for all local municipalities of that particular district. Simply put, collaboration within the local sphere of government is critical for ensuring sound decision making on how the region can improve on its LED initiatives.

Matlala (2014:33) highlights the fundamental importance for all sectors in government to establish conditions conducive for LED to thrive. SALGA (2010:14) contends that, though LED planning requires greater integration within government sectors, in reality this rarely occurs. In the context of this study, Kouga Local Municipality should create partnerships and receive LED support from pertinent economic development subdivisions, private sector and community organisations.

2.7 The South African economic system

2.7.1 Overview

South Africa is a developing country with an emerging market that has natural resources of well-built judiciary, finance, communication and energy system (World Economic Forum, 2017). However, the macroeconomic environment is characterised by a decelerating economy growth, rampant unemployment and a deflated foreign exchange policy. Fourie and van den Bogaerde (1992:17) describe macro-economic as a science geared towards policy, where its success is dependent on the outcomes obtained by carrying out the application of policy regulation derived from it. The low growth rate can be explained the international economic crisis, specifically for South Africa's commercial partners, associated to several exogenous issues including inadequate infrastructure developments, job market unrest and weakened investment.

Since the beginning of the international economic crisis in 2008, South Africa has declined in real Growth Domestic Product (GDP) dropping 5.5% in 2005 to 0.4% in 2016 (SARB, 2016). GDP forecasted for 2017 suggested a slight increase to 1.1% (SARB, 2017). The world's economic conditions have experienced the worst recession since the great depression of the 1930s. Thus, it can be said, the shortcomings of an integrated global economy are that economic downturn in one major country can adversely spread across the globe (Blakely & Green-Leigh; 2010:2).

2.7.1.1 Unemployment

According to Statistics South Africa (2011), the unemployment rate during the fourth quarter of 2017 depicted a high 26.7%, which can be attributed to structural unemployment. Hawkins *et al.* (2002:633) define "structural", as a something that has been organised or built. Unemployment, according to Hawkins *et al.* (2002:695), can be defined as being without a job.

Structural unemployment is a result of industrial reorganisation due to rapid globalisation and competitive market prices. Put differently, new technology increases productivity, but requires fewer skilled workers, consequently contributing towards high unemployment figures. The South Africa Economic Update (2018) report confirms that South Africa is likely to experience higher unemployment with flattened economic conditions which may possibly have an impact on household behaviour and expenditure.

2.8 Why South Africa needs infrastructure investment

Infrastructure is a crucial contributor to stimulating the economy and integrating the country. Badikazi (2012:7) distinguishes infrastructure in dualistic groups, for example: physical and

nonphysical infrastructure. The distinction amongst the groups is that physical infrastructure is concrete and relates to buildings to help the country; for example: transportation systems, power utilities, satellites and water supply stations, while nonphysical infrastructure is intangible. Nonphysical infrastructure offers backing to physical infrastructure with institutional guidelines and procedures.

Similarly, Fredderke and Garlick (2008:2) are of the view that development infrastructure can be classified as either social or economic. The authors explain this phenomenon with a basic theoretical model, which provides links between economic growth and infrastructure:

a) Infrastructure as an aspect of development

Improving the standard of infrastructure would prompt the economy.

b) Infrastructure for enhancing to other factors

Poor infrastructure generates expenses to organisations. Put differently, inadequate infrastructure potentially creates considerable expenses for organisations, which in turn, requires them to find alternative ways of moving goods and merchandise.

c) Infrastructure as a boost to growth

Physical and nonphysical Infrastructure forms the basis for many factors in an economy. In this context, personnel resources are emphasised as a functional capability for factors such as educational establishments. According to Simko, Tuicu and Backman (2015:3), distribution of human capital depends on an individual's mobility across locations. In this regard, infrastructure relates to the state of transport systems used to access educational establishments and supply of power to those establishments.

d) Infrastructure and skills development

Lack of experience of public sector bodies to execute complex regional projects has been identified as a critical challenge to Africa's regional integration. Fredderke and Garlick (2008:15) suggest that inadequate skills transfer for infrastructure projects impacts on economic growth.

2.8.1 The case for infrastructural investment

The above section described the linkage between infrastructure investment and economic growth. Perkins (2011:24) corroborates Badikazi (2012:7) and Fredderke and Garlick (2008:2), leaning slightly to the latter, that infrastructure can be categorised into two groups. Perkins adds that infrastructure covers investments and related services to improve physical capital, such as transportation systems, energy utilities, water supply structures; and communal infrastructure comprising, educational establishments and healthcare services.

Given the above literature, this section of the study focuses on the infrastructural investment pertinent to growth and sustainability for South Africa with consideration given to transport infrastructure, bulk infrastructure, social improvements and economic linkages.

2.8.1.1 Transport infrastructure

Button and Reggiani (2011:2) are of the view that transport infrastructure is necessary to create mobility and enhance social and political cohesion. More importantly, transport infrastructure should give consideration to the potential to support increased proximity of places and functions, thus, minimising the need for extended movement. This can be seen in many cities where formal institutions affect the transport sector, frequently operating in a less than desirable manner; consequently, this is the case in developing countries (UN-Habitat; 2013:176). Given this context, the Department of Transport (DoT) states that there is ongoing deterioration of road infrastructure conditions and road users, especially in rural areas, are faced with poor transport infrastructures that prohibit access and mobility.

Meijer, Huijbregts, Schotten and Schipper (2018:1) claim transportation infrastructure is critical for socio-economic development through creating employment opportunities and making provision to access resources. However, Fredderke and Garlick (2008:15) find that there is a contrast in the state of infrastructure between developed and underdeveloped areas. Inadequate infrastructure provision impacts the quality of life, especially for underdeveloped rural areas. In addition, PWC (2014:72) agrees that South Africa faces a massive backlog in road maintenance; with the major challenge being that the road network is estimated to be older than its 20-year design life. Daya's findings (2014:81) maintain that, compared to highly industrialised countries, transportation networks in South Africa need considerable upgrade. Subsequently, these challenges reduce the economic development of a country.

2.8.1.2 Bulk infrastructure

Bulk infrastructure is concerned with connecting water resources to the distribution systems which supply water to users and comprises wastewater infrastructure such as waste water treatment (Water Services Regional Bulk Infrastructure Programme, 2011:4). Development and effective management of bulk infrastructure is imperative in overcoming challenges in the water industry. The country is experiencing challenges with lack of focus on sustainable asset management and existing infrastructure needs maintenance. Mulopo (2015:28) asserts that 21 million South Africans do not have adequate sanitation and are forced to use bucket systems and pit toilets.

From a health and hygiene perspective, The World Health Organization (2018) determines that ensuring access to sanitation to households and institutional facilities is critical in

reducing diseases such as diarrhoea, intestinal worms and trachoma, which affects millions of people worldwide.

2.8.1.3 Social improvements

According to Warner and Sullivan (2017), civil society groups and government authorities must move towards a partnership model for delivering social programmes. From a public policy perspective, local authorities ought to develop regional land-use plans and sustainable strategies for poverty reduction plans and sectorial planning that looks at health care, education and water supply.

2.8.1.3.1 Primary education

Kosslyn and Rosenberg (2011:326) identify the ages of birth to six years as critical for human development. This can be understood as the stage for mental, physical, moral and emotional growth. Properly designed programmes to encourage childhood development indicate that children who partake in such initiatives are likely to realise positive results at school, than children not enrolled in high quality programmes.

2.8.1.3.2 Adult learning and training

Baatjes and Mathe (2004:407) proclaim that Adult Basic Education and Training (ABET) facilities are largely dysfunctional with no organisational and management structures. Furthermore, the volatility of these institutions is compounded by deteriorating infrastructure, limited participation and high turnover in teachers. Bolton and Allais (2008:6) concede that government policies have not been effectively supporting adult learning and training in South Africa. Similarly, Conrad (2017:14) gives a relative comparison of the state of public libraries in low and middle-income communities, stating that public libraries in middle-income neighbourhoods are thriving, compared to the shuttered libraries in poor communities. Moreover, libraries in poor communities do not have enough reading material, let alone material that is current. It can thus be argued that social development programmes should be relooked, to ensure transformation within communities.

2.8.1.3.3 Workforce development

According to O'Rears (2011:17), workforce development integrates education and training programmes for temporarily displaced workers and currently employed workers. In other words, workforce development training helps educate the work force, by sending employees to tertiary institutions. From a corporate viewpoint, Dhaunya (2015:28) states that workforce development is an essential responsibility of human resources department, which regulates the landscape of the organisation in terms of planning for the development and motivation of employees to sustain growth and build capacity. Kaup (2016:1) claims that the coherent partnerships among education institutions and workforce development can positively impact

society. Thus, skills and information acquisition has become an important component of economic development strategies.

2.8.1.4 Economic bridges

2.8.1.4.1 SMME business development

The deterioration to the economy is relative to the declining performing labour market, subsequent, to job cuts and retrenchments. Even before the 2007/2008 global crisis highlighted by Blanchard and Leigh (2013:120), South Africa faced the reality that not enough people work. Subsequently, this is not just an economic problem; insufficient human development, skills mismatch and social cohesion also play a role in the deteriorating labour market. According to the Budget Review (2010), young people and low-skilled job seekers are mostly affected by the decline in the labour market. However, Levin and Bantjies (2012:301) maintain that South Africans do not do well in terms of entrepreneurship.

Erasmus, Strydom and Rudansky-Kloppers (2016:45) argue that the reason for South Africa's high unemployment can be attributed to the fact that there are not enough people involved in SMMEs, which are recognised in both established and emerging economies as the strength of every economy, through job creation and reduction in unemployment. (Agupusi, 2007:2; Fatoki & Garwe, 2010:729; Fatoki & Odeyemi, 2010:128).

In the view of Levin, Pretorius and Viljoen (2012:315) SMMEs offer opportunities to diversify sources of income through:

- Operating small scale businesses around community assets (parks, forests and rivers) by providing (transport, retail and accommodation) services.
- Empowering employees to exploit training opportunities on-the-job and other training, to start their own businesses.
- Creating partnerships by linking up with mainstream businesses supplying goods and services.

2.9 Kouga local assessment: an overview

2.9.1 Economic conditions

The World Bank (2006:9) maintains that it is vital to identify the environment of the local economy to enable investors and stakeholders identify opportunities and advantages. Local economy assessment should outline economic relationships in a geographic area and economic drivers.

According to Kouga Local Municipality (2017:54), the municipality should develop focused institutional frameworks and planning bodies within the region to ensure area-wide economic

growth and, subsequently, unite efforts and improve LED results. Inarguably, Kouga Local Municipality's main economic driver is tourism, which is a stimulus for the thriving of other industries such as retail, hotel and accommodation. Kouga Local Municipality (2017:33) states that the municipality is confronted by challenges of unemployment and achieving equitable economic transformation to improve the socio-economic profile.

2.9.1.1 Employment status

Thirty-eight thousand four hundred and twelve individuals living in the municipality are economically active, while 19 634 are not employed (Kouga Local Municipality; 2017:33). Statistics South Africa (2011) claims the employment figures for the municipality declined by 11, 7% between 1995 and 2010, while the working group increased by 25%. Figure 2.2 depicts the employment situation.

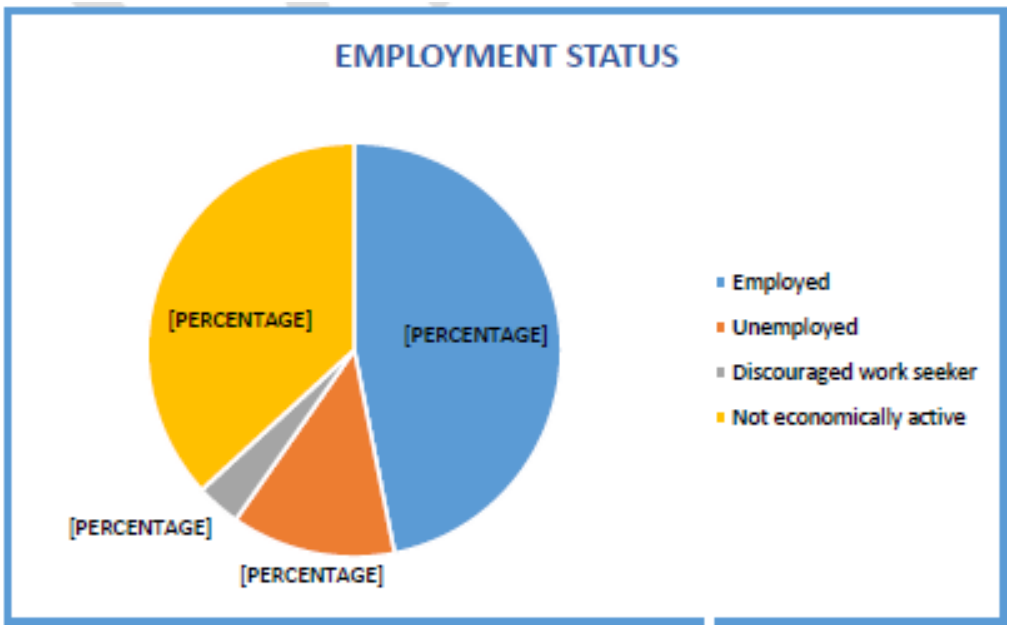

Figure 2.2: Employment status (Source: Kouga Local Municipality, 2017)

2.9.2 Thyspunt impact assessment

This part of the chapter analyses the economic impact of Thyspunt. The analysis presents a comprehensive macro-economic impact, taking into account the positive and negative externalities on the economy and social factors.

2.9.2.1 Macroeconomic impact

Generally, the construction phase of large projects is, to a certain degree, short term, while the operational phase can extend for a longer term. In the context of Thyspunt, the

construction phase is assumed to last seven years, whilst the operational phase is expected to take up to 30 years.

2.9.2.1.1 Construction phase

Tables 2.3 illustrates the impact of constructing and operating a nuclear power station at Thyspunt.

Table 2.3: Economic impact for constructing Thyspunt

		Total impact per annum
Macroeconomic Indicators	a. GDP (R million)	5,527
	b. Capital formation (R million)	10,186
	c. Employment (numbers)	67,673
	d. Household income	
	• Low-income household income (R million)	352
	• Medium and high-income HH income (R million)	2,347
	• Total household income (R million)	2,699

Source: GIBB (2013:41)

According to Table 2.3:

- R5.5 billion is estimated to contribute towards provincial GDP during each of the seven years of construction. In addition, R10.2 billion is estimated to be invested directly and indirectly in all sectors in the Eastern Cape.
- 67,673 jobs can be sustained for the seven years of construction.
- An additional amount of R2.7 billion is envisaged to contribute towards incomes of households in the Eastern Cape.

2.9.2.1.2 Operational phase

The economic impact of operating Thyspunt is shown in Table 2.4 below.

Table 2.4: Economic impact of operating Thyspunt

		Direct	Indirect	Induced	Total
Macroeconomic indicators	a. GDP (R mil)	4,429	4,383	557	9,369
	b. Capital formation (R million)	170,000	804	1,262	172,066
	c. Employment (numbers)	1,340	2,624	5,460	9,424
	d. Household income				
	• Low-income household income(R million)				299
	• Medium and high-income HH (R million)				1,200
	• Total household income (R million)				1,499
Social Indicators	A. Additional number of educators				3,157
	B. Additional number of hospital beds serviced				680
	C. Additional number of doctors				71
	D. Additional number of low- cost houses				2,968

Source: GIBB (2013:42)

Table 2.4 illustrates the operational costs associated with Thyspunt:

- An estimated R9.4 billion to contribute to provincial GDP; from this amount, R4.4 billion (47%) will directly be contributed by electricity generation activities, which will contribute 5% to the GDP of the province.
- An estimated R172 billion will be added to the Eastern Cape fixed capital, where R170 billion (99%) will come from direct investments to sustain the proposed power plant.
- 9242 jobs are estimated within the operational phase, 1340 (14%) will be direct jobs at the nuclear power station, with 2624 (28%) created in sectors that are backwardly linked and 5460 (58%) resulting from induced impacts through the economy.
- A total of R1.5 billion is expected to contribute towards income of households in the province during each year of operation.

Social indicators suggest that:

- 3,157 new educators will have to be hired during each year of operational phase.
- 680 new hospital beds will be brought in during this phase.
- 71 doctors will be employed in each year the power station remains operational.
- 2968 new low-cost houses will be constructed over a ten-year period during operational phase of the power station (GIBB, 2013:43).

This information indicates the magnitude of macroeconomic and social impacts that could flow from the construction and operation of Thyspunt, based on revenue that will be generated from of taxes and levies. The figures indicate that Thyspunt will have a significant impact on the Eastern Cape economy, making it possible with assured power supply for other businesses to relocate to the region.

In terms of the job creation, labour is a key factor of the production process and, thus, new employment opportunities will be created. The analysis indicates that temporary employment will be created during construction, while permanent employment will be sustained during operational phase.

Industrialisation is the core element to stimulate a fast-growing economy and a rampant labour force (South Africa, 2016). KPMG (2017:33) further maintains that, when considering industrialisation, the electricity sector contributes massively to economic growth indirectly through direct procurement and local spending.

Social impacts from the proposed power plant rely largely on government's social spending priorities and funding capabilities. Social objectives such as building low-cost houses, building facilities to train educators and doctors within the Kouga region could be emphasised by government. Subsequently, Eskom Chairman, Dr Baldwin Ngubane, made a statement during an interview that "the new nuclear programme intends to build skills amongst the youth through training programmes geared towards ensuring sustainable development" (Anon., 2016:9).

2.9.3 Strategic planning for Kouga local economy

Byrons, Edwards and Van Slyke (2017:317) describe strategy development as an approach for complex challenges. In other words, strategic planning encompasses various approaches, processes and methods combined to produce comprehensive results. Pasha, Poister and Edwards (2015:885) also define strategic planning as a well detailed process that enables long-term effectiveness.

What could strategic planning mean for the Kouga local economy? In this context, this question is answered by four theoretical modules from UN-Habitat (2005:3) devised to achieve LED successfully:

- Module 1: Where are we now?
- Module 2: Where do we want to go?
- Module 3: How are we going to get there?
- Module 4: How do we know when we have arrived?

1) Module 1: Where are we now?

Getting started

Wheelen, Hunger, Hoffman and Bamford (2015:11) claim that to ensure operational strategy planning, information on variables in both the external and internal environments is important. What can be deduced is that planning should go beyond ad-hoc decision-making and allow the local area to identify its economic strengths and weaknesses.

Stakeholders and participation

Participation amongst government, business sector and community members is essential in successful strategic planning, as it helps to gather different views and issues as to what has to be done. Alternatively, staying within the context of the Kouga Local Municipality, Mbusi (2011:51) claims in Thyspunt it is clear the majority of residents are optimistic mainly about the improvement in employment opportunities and standard of shopping facilities that the development is likely to bring to the region.

Situation analysis

In the context of LED, situation analysis entails in-depth understanding of available local resources and the services local business produce. This suggests comparing the past economic state with the current economic state to forward considerations for future development.

2) Module 2: Where do we want to go?

Visioning

Soria-Lara and Banister (2016:113) indicate a vision emphasises on explaining a sequence of approaches intended to meet projected future images, with clear timelines for implementation. Consequently, visioning answers the question: where do we want to go by giving clarity to what the Kouga region expects in the future.

3) Module 3: How do we get there?

Action planning and strategy documentation

Alexander and Kane-Berman (2014:16) assert that the civil service needs to attract highly skilled professionals who are committed to servicing society. This is important because strategic action planning and implementation depend on the organisation acquiring civil servants with the right abilities, knowledge and attributes.

4) Module 4: Have we arrived?

Monitor and evaluate

Kusek and Rist (2004:98) demand effective oversight systems to enable achievement of outcomes by aligning implementation plans to outcomes. Thus, monitoring and evaluation can improve decision-making.

Drawing on the literature, strategic planning is an action plan that identifies who, where, how and what should be done to achieve a goal. Correspondingly, to achieve LED, local authorities should take cognisance of strategic planning approaches designed to stimulate growth for the local economy.

2.10 Understanding nuclear energy

2.10.1 Nuclear overview

Nuclear energy is energy released from atoms. In view of this, Vanek (2012:231) defines nuclear energy from a nuclear physicist's perspective, declaring that it is energy combined by subatomic particles in the nucleus of an atom. De Sancitis, Monti and Ripani (2016:3) describe atoms as all matters around us; both living and non-living are made up of atoms. These include elements and beings of the universe. In turn, Lamarsh and Baratta (2014:7) add that atoms in the nucleus form rapidly-moving electrons used to produce energy.

2.10.2 How nuclear energy is produced

In order to produce energy, atoms must be released in two ways, nuclear fission and nuclear fusion. According to Yan and Hino (2011:47), fission and fusion energy have a big impact on the nuclear reactor. Nuclear fission entails a process where atoms are split into small fragments to release large amounts of energy (De Sancitis *et al.*, 2016:96). Consequently, this is how electric energy is generated. Contrarily, Yan and Hino (2011:377) comprehend that fusion power is generated by more than two atoms so that the nuclear force will pull them into one large atom. Thus, fusion reactions produce heat to rotate generator electric to produce electric power.

2.10.3 Historical background on nuclear reactors

According to Schobert (2002:394), in the 1950s, nuclear energy was used to produce electricity for households. These early commercial reactors were designed for what is today known as generating capacity. The existing nuclear reactors are generation II, built from 1960 onwards as the first commercial reactors. Additionally, generation III power plants were designed in the nineties to expand and improve generation II reactors. At present, generation IV reactors are at different planning stages (Pfenninger & Keirstead, 2015:310).

The Nuclear Energy Institute (2017:1) states that since November 2016, four hundred and fifty nuclear reactors operate in 30 countries and sixty new reactors are being built in 15 countries.

2.10.4 Nuclear expansion in South Africa

South Africa first experienced an electricity crisis in 2005, followed by a unit failure at Koeberg in early 2016 which, consequently, led to a nationwide load shedding (Newbury, 2008). Cameron, Naude and Roussouw (n.d) claim that load-shedding affected South Africa through power outages that intensified and continued for months. As a result, economic productivity was affected. Additionally, Eskom faces supply challenges due to population growth and an ageing energy infrastructure. Furthermore, reliance on coal means that South Africa is a major emitter of greenhouse gas.

According to South Africa (2010), the new nuclear generation programme proposes six reactors to supply 9.6 Gigawatt (GW) to the current energy grid. Qasaymeh (2014:25) states that nuclear energy can be an enabling source of energy for achieving sustainable economic growth in South Africa. Correspondingly, this brings across the view that nuclear expansion will provide a reliable electricity infrastructure.

2.10.5 Global warming factors

The effects of global warming have caused severe damage to the world's geography, impacting the landscape, causing water shortages and damage to livestock farming. Apergis, Payne, Menyah and Wolde-Rufael (2010:2256) claim nuclear-powered energy contributes significantly towards minimising global warming by restoring 10% of carbon dioxide from global energy usage.

In addition to the effects of global warming, current climate change policies focus more on international conservation concerns, as opposed to local improvements. Markandya, Halsnaes, Mason and Olhoff (2002:2) state climate change policies, from the local viewpoint, should focus on promoting clean energy that can contribute towards reducing air pollution.

Due to South Africa's rich uranium reserves, nuclear energy can potentially make a substantial difference in mitigating greenhouse effects and resolving challenges of uneven development in the country. Vanek (2012:254) further adds that nuclear energy makes a significant contribution to rapid global climate change.

2.10.6 Concerns about nuclear risks and safety

Uncertainties regarding nuclear energy originate from its perceived threats that entail the removal of radioactive waste and dangers of explosive materials. Stobaugh and Yergin

(1979:120) add that post-World War II suspicions had been expressed about atomic energy following the bombs dropped on Hiroshima and Nagasaki in August 1945. Many scientists who saw the great promise of nuclear energy stressed its dangers regarding nuclear weapons proliferation. Table 2.5 presents a list of nuclear disasters. That have occurred worldwide.

Table 2.5: International Nuclear Event Scale

Location	Country	INES	Date	Total	^{131}I	^{137}Cs
Fukushima	Japan	7	11 March 2011	>630	190–380	12–37
Chernobyl	USSR	7	26 April 1986	>12 000	1760	85
Mayak	USSR	6	29 September 1957	74–1850	n.d.a	n.d.a
Chalk River	Canada	5	12 December 1952	>0.3	n.d.a.	n.d.a.
Windscale	UK	5	10 October 1957	1.6	0.7	0.02
Simi Valley	USA	5–6	26 July 1959	> 200[a]	b	n.d.a.
Belojarsk	USSR	5	1977	n.d.a.	n.d.a.	n.d.a.
Three Mile Island	USA	5	28 March 1979	1.6[c]	<0.0007	n.d.a.
Chernobyl	USSR	5	1 September 1982	n.d.a.	n.d.a.	n.d.a.
Idaho Falls	USA	4	29 November 1955	d	d	d
Idaho Falls	USA	4	3 January 1961	n.d.a.	n.d.a.	n.d.a.
Monroe	USA	4	5 October 1966	d	d	d
Lucens	Switzerland	4–5	21 January 1969	d	d	d
Windscale	UK	4	1973	n.d.a.	n.d.a.	n.d.a.
Leningrad	USSR	4–5	6 February 1974	e	n.d.a.	n.d.a.
Leningrad	USSR	4–5	October 1974	55	n.d.a.	n.d.a.
Jaslovské Bohunice	CSSR	4	22 February 1977	n.d.a.	n.d.a.	n.d.a.
Saint-Laurent	France	4	13 March 1980	n.d.a.	n.d.a.	n.d.a.
Buenos Aires	Argentina	4	23 September 1983	n.d.a.	b	n.d.a.
Tokaimura	Japan	4	30 September 1999	n.d.a.	n.d.a.	n.d.a.

INES 0–3 events are indicated as deviations, anomalies and incidents;
INES 4 is an accident with local consequences; INES 5 is an accident with wider consequences;
INES 6 is a serious accident; INES 7 is a major accident (major release of radioactive material with widespread health and environmental effects requiring implementation of planned and extended countermeasures);
n.d.a. no data available; [a] Substantial emissions of ^{85}Kr, ^{133}Xe assumed though n.d.a.; [b] Substantial ^{131}I emissions assumed, though n.d.a.; [c] Mainly ^{85}Kr emitted; [d] No strong source of radioactivity to the atmosphere; [e] Release of radioactive sludge from filter powder to the environment.

Source: Lelieveld, Kunkel & Lawrence (2016:4247)

In view of Table 2.5, it is worth examining the causes of some of the worst nuclear power plant disasters as these have contributed significantly to fears of and opposition to the nuclear power industry today.

2.10.7 Nuclear reactor accidents

2.10.7.1 Fukishima Daiichi (Japan 2011)

The Fukushima Daiichi Nuclear Power Plant accident resulted from the East-Japan Earthquake and tsunamis of March 2011. As a result, unforeseen health effects such as mental health have been profound (UNSCEAR, 2013). Sawano, Nishikawa, Ozaki, Leppold and Tsubokura (2018:381) attest that radiation release incidents are diverse with long-term psychological effects. Mark and Foreman (2018:3) argue that ionizing radiation should be treated like a chemical poison as alpha particles and neutrons cause harm by delivering

energy to water and other substances inside the body, thus forming reactive species which, in turn, damage biomolecules including DNA.

2.10.7.2 The Chernobyl Accident (Ukraine 1986)

The incident began on April 25, 1986 because of human error. According to Schobert (2002:419), the operators disabled all the reactor's safety systems, resulting in radiation measured as far as Soviet Union, Scandinavia, Europe, Great Britain and Ireland.

2.10.7.3 Three Mile Island Accident (Pennsylvania 1979)

The incident began on March 28, 1979 when a cooling system water pump failed. As workers struggled to bring the situation under control, there were fears the hydrogen bubble would wreak havoc by exploding. It is estimated that more than 150,000 residents fled the area (Schobert, 2002:419).

2.10.7.4 Enrico Fermi (Michigan 1966)

According to Union of Concerned Scientists (2016), vibrations caused a component within the reactor to loosen, which led to a coolant flow blockage in two fuel channels, subsequently causing a meltdown at Fermi Unit 1. In 1975, the Nuclear Power plant was decommissioned.

2.10.7.5 SL-1 (Idaho 1961)

The withdrawal of a single control rod caused a power surge and steam explosion at the SL-1 boiling water reactor which led to the death of all workers on duty (Union of Concerned Scientists, 2016).

2.10.7.6 Sodium Reactor Experiment (California 1959)

The Sodium Reactor Experiment experienced extensive fuel damage during a power run. Thirteen of forty-three fuel elements overheated when the cooling flow provided by liquid sodium was blocked, which caused the reactor to overheat. As a result, the primary sodium leaked into the atmosphere.

2.10.7.7 Windscale (Cumbria 1957)

Windscale Unit 1's core caught fire and melted, which caused large amounts of radioactivity to be released to the area and reached as far as mainland Europe. The accident attributed to more than 200 cancer deaths.

Ichihara (2001:1799) claims that loss of life and pervasive radioactive contamination caused by nuclear accidents arouse deep fear and loathing towards nuclear power generation. Subsequently, Rennkamp and Bhuyan (2015:18) argue about a lack of transparency in the planning process, stating that imprecise procedures convey doubts over nuclear

programmes. Consequently, socio-economic factors driven towards developing the economy turn out to be more important, as opposed to security concerns and danger to life.

Furthermore, Wolde-Rufael and Menyah (2010:556) concur that imprecise intentions must not overshadow the threats the nuclear programme could bring to the Kouga region. Moreover, the White Paper on transforming public service delivery (South Africa, 1997:9) highlights principle 5 of the Batho Pele Principles, stating citizens are entitled to accurate information regarding the public service. Thus, a balance should be obtained concerning uncertainties regarding the programme and the demand for nuclear expansion in South Africa, through openness and transparent governance.

2.11 Limitations of existing literature

Literature on LED associated with nuclear programmes is limited. Owing to this limitation, the researcher borrowed literature from theory to answer the objectives of the study.

2.12 Summary

This chapter helped determine the relevant concepts and shaped the hypothesis in the study.

In this chapter literature was review and expanded into eight subdivisions. The first part gave a comprehensive picture over the existence of LED, from a global and South African context. The second section identified policies and programmes applicable to LED. This was followed by investigating the role of local government, taking into consideration stakeholder identification and the problems relating to LED implementation.

The South African economic system and municipal structures were brought into the discussion between sub-sections four and five. Followed by, the need for infrastructural development in South Africa discussed under sub-section six. These included hard and soft infrastructure such as transport and bulk infrastructure; social improvements pertaining to early childhood development, adult learning and workforce development; and SMME development.

The last sub-sections of the chapter reflected on the Kouga local economy, which involved an investigation on the macroeconomic impact for constructing and operating Thyspunt, as well as the UN-Habitat strategic planning model designed for implementation of strategy. Finally, the chapter gave an overview on nuclear energy with considerations given to nuclear expansion in South Africa, global warming factors and nuclear accidents. In the next chapter, the research design and methodology used in the study is explained.

CHAPTER THREE
RESEARCH DESIGN AND METHODOLOGY

3.1 Introduction

The theoretical framework and literature review were presented in Chapter Two. This chapter focuses on design and methodology, including population, sampling, data acquisition techniques and guidelines to ethical concerns.

Sekaran and Bougie (2013:1) define research as the process of finding explanations to a problem after identifying the situation. According to Bertram and Christiansen (2014:40), research design and methodology indicates how the researcher assembles and analyses data required for answering the research question.

3.2 Research objectives revisited

As indicated in the earlier chapters, the main aim of the study was to assess the potential impact of the proposed nuclear power station at Thyspunt on Local Economic Development within the Kouga region. The study had five objectives, namely:

- To assess the state of LED sector in Kouga Local Municipality.
- To identify the barriers associated with ineffective implementation of LED strategies at local municipalities.
- To determine current strategies that are targeted to create sustainable development in Kouga Local Municipality.
- To ascertain if there is a relationship between LED and nuclear energy within Kouga Local Municipality.
- To establish what infrastructure is required in the municipality to cope with nuclear energy.

3.3 Research design and methodology

Sileyew (2019:11) states that research methodology indicates the overall process flow for a given study. This process helps researchers to consider samples and models for data collection, problem validation and result dissemination. Aaker *et al.* (2000:19) interpret research design as a framework that determines how relevant information for a study will be obtained. The research design process contains many interrelated decisions to be considered, such as the type of design a study will follow. Creswell (2009:22) attests the overall decision involves which design should be used to study a topic.

3.3.1 Three types of designs

A study tends to be more qualitative than quantitative or vice versa. Mixed methods research exist in the middle of this variety because it incorporates characteristics of both qualitative and quantitative approaches (Creswell, 2009:22). Furthermore, the following section distinguish between the three types of design: qualitative, quantitative and mixed methods.

3.3.1.1 Qualitative approach

According to Creswell (2014:4) qualitative research places emphasis upon exploring and understanding the meaning individuals or groups ascribe to social or human problems. Similarly, Polonsky and Waller (2011:134) describe qualitative research as methods seeking to find understand in human or social studies before drawing conclusion.

Qualitative methods are usually described as inductive, with the fundamental expectation being that reality is a social construct and that the data collected is extracted from an insider's outlook (Almalki, 2016:291). Rovai, Baker and Ponton (2014:4) maintain that this form of research values individuality, culture or social justice. As such, this approach provides content and context rich breadth of information which, although subjective in nature, it is current.

3.3.1.2 Quantitative approach

Kumar (2011:104) states that in quantitative research, the measurement and classification requirements of the information gathered demand study designs to be more structured, rigid, fixed and predetermined in their use to ensure accuracy in measurement and classification. Subsequently, quantitative study designs provide more clarity and distinction between designs and methods of data collection.

Almaki (2016:290) agrees with Rovai *et al.* (2014:4) that quantitative researchers regard the world as being outside of themselves and that there is an objective reality independent of observations. The authors contend that by creating subdivisions observations can be made to test the hypotheses and reproduce the relationships among variables. Creswell (2009:22) attests that these variables, in turn, can be measured on instruments so that numerical data is analysed and presented using statistical procedures.

3.3.1.3 Mixed methods approach

Schoonenboom and Johnson (2017:108) state mixed method design is characterised by the combination of at least one qualitative and one quantitative component. Creswell (2014:43) agrees mixed methods involve integrating qualitative and quantitative research components,

furthermore, qualitative approach tends to be open-ended without predetermined responses while quantitative approach includes closed-ended responses by making use of questionnaires or instruments. Ultimately, mixed method design is about increasing quality in achieving multiple validities, thus, making the strength of the study greater.

3.3.2 Research paradigm

Research, whether qualitative or quantitative, is established on some underlying conventions on what determines valid research and which research methods are applicable. For this purpose, hypothetical suppositions relate to science of existence to guide the study. Epistemology assumes how knowledge and information can be gained (Hirschheim, 1992). Roos and von Krogh (2014:2) contend that because knowledge can be associated with life and experience, information can be attained from humans.

A qualitative approach was deemed best to address the objectives of this study. As explained by Bell (2010:5), qualitative research is associated with understanding real life situations, individuals deal with. Gummesson (2000:1) adds that qualitative research offers the researcher tools to accomplish research pertaining to organisation, leadership and business strategy. Furthermore, Merriam (1998:202) establishes that the reality in qualitative research is multidimensional, holistic and ever changing.

Qualitative paradigms consist of exploratory, explanatory, interpretive or descriptive objectives. According to Harrison, Birks, Franklin and Mills (2017:1), because of the philosophical differences each methodology is unique in approach depending on the epistemological stance, however all stimulate exploring, seeking understanding and establishing meaning. As such, qualitative researchers can use a broad scope of methods and interpretative practices.

Several scholars point out that qualitative research contains three fundamental paradigms. Chua (1986), Orlikowski and Baroudi (1991) and Myers (2009:36) list these fundamental paradigms as: positivist, interpretative or critical.

3.3.2.1 Positivist paradigm

This paradigm highlights observation and reason as means of understanding human behaviour. Hence, positive knowledge is based on natural phenomena and their properties and relations, interpreted through reason and logical observation (Rafeedalie, 2018). Kawulich (2012:7) concedes that positivism is based upon the view that science is the only foundation for true knowledge. The author defends this using the following rhetoric as an example to inform the reader:

Can you imagine using scientific methods to carry out research on witches? The positivist would conclude, since the scientific method did not yield concrete outcomes on the nature of witches, then witches do not exist.

3.3.2.2 Interpretive paradigm

This is apprehensive by accepting the universe from experiences of human beings, such as that they rely on an intrinsic bond between the researcher and subjects. The researcher takes into consideration that interpretive research considers the personal experiences of participants. According to Bertram and Christiansen (2014:189), interpretive research seeks to understand the social realities of the external world. Thus, interpretative researchers tend to focus more on the text. Moreover, Myers (2009:40) states that interpretivism assists researchers to perceive explanation, significance and meaning from participants. In this study, the researcher uses the research question and tries to make sense of the phenomenon.

3.3.2.3 Critical paradigm

According to Bonney, Cooper, Dickinson, Kelling, Phillips and Rosenberg (2009:978), the rise in technology and social media created a need for critical theories to ensure transparency and security in population engagement. In the context of South Africa, Callaghan (2016:64) states that populations are particularly vulnerable to increasing power inequalities associated with digital divide. Thus, in such contexts of radical inequality, people in working contexts become more vulnerable to managerial practice which fails to incorporate values to ensure human emancipatory principles act as a counterbalance to mistreatment. Consequently, critical paradigms rely on dialogic methods to allow conversation and reflection to question the natural state and challenge the mechanisms for order maintenance (Cohen & Crabtree; 2006).

3.3.3 Qualitative research designs

3.3.3.1 Biographical study

According to Mgutshini (n.d), biographical studies consist of individuals experiences as told to the researcher or found in archival material. This form of study is commonly used for life history where turning point moments in an individuals' life is depicted. The American Educational Research Association (2019:1) states that the basic research orientation constitutes telling the subjects story in a sequential order with emphasis on life pattern stages and description of acts of recognition as the biographer marches through the life of the biographical subject.

Creswell (2009:124) asserts that designing this study is quite simple, further adding, that the researcher must first decide what type of historical event, perception or experience they want to find about. Followed by identifying the individuals or sources then collecting information about them to be analysed and interpreted.

3.3.3.2 Phenomenological study

Phenomenology is an approach concerned with study of experience from the viewpoint of the individual by emphasising the importance of personal perspective and interpretation. Furthermore, this approach enables the researcher to gain insight into people's motivations and actions, cutting through the clutter of taken-for-granted assumptions and conventional wisdom (Lester, 1999:1). Teherani, Martimianakis, Senfors-Hayes, Wadhwa and Varpio (2015: 669) proclaim that phenomenology describes the how and what was experienced.

Simply put, phenomenology studies an individual's lived experience of the world (Manen, 1997:31). Neubauer, Witkop and Varpio (2019:91) argue that because of philosophical theories phenomenology does not have a strong following. In other words, to truly understand phenomenology, the researcher is required to develop an appreciation or become familiar with philosophical theories on human experiences.

3.3.3.3 Grounded theory study

Noble and Mitchell (2016:34) define grounded theory as a methodology for developing theory that is grounded in data which is systematically obtained and analysed. Tie, Birks and Francis (2018:2) maintain one of the defining characteristics of grounded theory is to generate theory that is grounded in the data. In other words, theory is not discovered but constructed by the researcher who views the world through their own lens.

Noble and Mitchell (2016:34) further add that researchers should be theoretically sensitive when constructing new theory. In essence, the researcher should be able to give meaning to the data and distinguish between what is relevant and not. Birks and Mills (2015:181) admit grounded theory research assumes a balance between being acquisitive and being able to establish significance during data gathering or analysing.

3.3.3.4 Ethnographic study

Reeves, Peller, Goldman and Kitto (2013:1366) state that ethnography is the study of social interaction and culture groups, whether these groups are defined as societies, communities, organisations or teams. Hammersley and Atkinson (2007:152) contend the aim of ethnography is to document culture and see the world from each group's viewpoint.

Similarly, Sangasubana (2011:567) claims ethnography to be dialogic. This implies, interpretation through it allows feedback and views from those who are under the study. Subsequently, this design focuses on collaborating with others rather than treating them as objects.

3.3.3.5 Case study

Hawkins *et al.* (2002:97) define the word case as an occurring situation or something being investigated. Within this context, case study research design is the investigation of one or more occurrences that encompass the case in a study. According to Rose, Spinks and Canhoto (2015:3), case studies deploy multiple sources of evidence which makes them a useful tool descriptive research studies where the primary focus is on a specific situation or context where generalisability is less important, for example in describing the implementation of a programme or policy.

Teegavarapu and Summers (2008:4) contend that case study design is ideal when the objective of the research is to answer why and how type of questions; and when present day events are being studied. Neale, Thapa and Boyce (2006:3) indicate case study research is good for highlighting a projects success, or to raise awareness to a potential challenge in a project.

3.4 The selected research approach

Given the abovementioned explanations on research design and methodology the researcher followed a qualitative approach, using a case study design. Case study design is frequently used in qualitative research methodologies (Yazan, 2015:134). Kemanusiaan (2007:5) states case studies present contemporary situations governing social issues.

Kumar (2011:123) maintains that case study design is useful when exploring an area where little is known or where the researcher wants to have a holistic understanding of a situation, phenomenon, episode, site, group or community. As such, this design is of immense relevance when the focus of a study aims to explore and seek meaning as opposed to quantifying.

Considering there is a lack of academic research focusing on nuclear energy on the proposed Thyspunt plant in the Eastern Cape, the researcher adopted this approach to understand and present a real life situation within the given context

3.5 Study area and justification

Figure 3.1 is a map of the Sarah Baartman District showing the location of the selected municipality, Kouga Local Municipality.

Figure 3.1: Map of SBDM district (Source: Sarah Baartman District Municipality, 2015)

Figure 3.1 shows the various Category B municipalities that fall under the SBDM (Category C) in the Eastern Cape. Kouga Local Municipality, which this study focuses on, falls under the SBDM. Simply put, co-operation between district municipalities and local municipalities is critical for ensuring sound decision making on how the region can improve on its development planning.

3.5.1 Population under study

A population refers to all people who live in a particular area; city or country (Hornby, 2015:1155). Brynard and Hanekom (2005:43) define population, in a research context, as objects or subjects chosen by the researcher to take part in a research study.

3.5.2 Identifying units of analysis

A unit by definition is a group regarded as a single thing but forming part of a larger group (Hawkins et al., 2002:697). Chenail (2012:266) claims in qualitative data analysis a unit would be a single undivided entity upon which you direct your analysis and express the qualities in that element. Moreover, Harris (2019:1) contends one of the best ways to help identify unit of analysis is to classify the level and what you are studying.

Given the different explanations offered, units of analysis provide the researcher guardrails to ensure the dissertation remains within the boundaries of what is being examined. In addition, unit of analysis clarifies between the level or group at which is being studied.

As illustrated in Figure 3.2, the unit of analysis for this research was classified between the level of investigation and what was being analysed. Firstly, local government was selected as the sphere of government, where Kouga Local Municipality and SBDM were the selected municipalities. Secondly, LED was the directorate to be examined. Thirdly, was the individual level, where interviews focused on managers and officials.

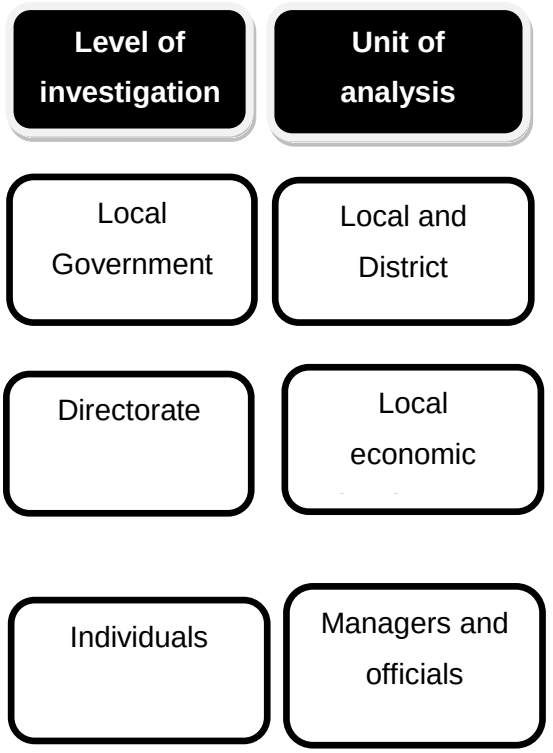

Figure 3.2: Unit of analysis (Source**:** Researcher's own construct)

3.5.3 Sampling frame and size

The projected sample size consisted of 100 people, determined as follows: 50 managers and officials from SBDM and 50 managers and officials from Kouga Local Municipality. According to Marshall and Rossman (2006:62), one cannot study the whole universe for this reason; the researcher should select a delegate in a cluster in order to acquire data of the entire cluster. The researcher used one aspect of non-probability sampling technique called purposive or availability sampling for the purpose of this study.

Welman and Kruger (2001:47) attest that non-probability sampling is frequently used for reasons of convenience and economy. Using the purposive or availability sampling

technique, participants were selected based on their convenience and immediacy to the researcher. This sampling technique was utilised for SBDM and Kouga Local Municipality officials responsible for LED initiatives in the region. Oppong (2013:203) describes purposive sampling as a technique where participants are selected based on their expertise on the subject matter.

3.6 Validation of interview schedule

After compiling the interview questions, the preliminary draft of the questions was submitted to the researcher's supervisor for suggestions. Feedback on the questions was given and changes, where necessary, were made.

3.7 Submission of the research questions to the Higher Degrees Committee

The research questions were submitted to the Higher Degree Committee for approval (HDC1.2). Recommendations and suggestions consisted of minor issues such as preference of words and rephrasing language.

3.8 Ethical clearance from Faculty Research Ethics Committee

Following an application submitted, the ethics committee at the Faculty of Business and Management Sciences issued an ethical clearance certificate prior to the commencement of the data collection process (see Appendix A).

3.9 Qualitative (interview) research process

Consistent with Scott (2016:43), questions can be requested in formal surveys or interviews to gather data. Creswell and Poth (2017:43) indicate that social science researchers gather data by conducting interviews and analysing archives. Flick (2014:199) characterises in-depth interviews in two ways: they look for rich and detailed information and questions are open-ended, which allow for a coherent conversation between the interviewer and interviewee.

In-depth interviews were carried out with managers and officials from Kouga Local Municipality to answer the how and why questions. The interviews were done in a consistent manner, which allowed officials freedom to ask questions and share their views about LED in the municipality. The face-to-face in-depth interviews were valuable because they enabled extraction of large volumes of data. The sought and received permission from all respondents to used a tape recorder for the duration of the interviews.

3.9.1 Qualitative data analysis

According to Bernard (2018:356), analysis searches for sequence in data and understanding to clarify meaning. The process includes linking results to findings of other research. Gibbs (2007:4) adds that qualitative data analysis often consists of large volumes of data. To enable the researcher to comprehensively analyse interviews, data was arranged into sub-groups and aligned to the research questions. This allowed for the data to be objectively analysed and interpreted.

3.10 Collection of secondary data

Secondary data can come from the same kind of source as primary data. Blaikie and Priest (2019) state secondary data is often referred to as secondary analysis and considered best practice to validate prior findings, or to use for purposes of comparison Thus, secondary data were collected from the following sources: scholarly publications, library books, the internet, unpublished Masters and PhD dissertations.

3.11 Validity and reliability

Reliability relates to the correctness and consistency of the measure. The same instrument must be able to produce the same data under similar conditions. Validity implies that the test instrument measures what it is supposed to measure. According to Noble and Smith (2015:35), models such as reliability and validity are normally linked to quantitative research. However, a good few approaches used by qualitative researchers are adopted to increase the integrity of the research. Noble and Smith explain this phenomenon in Table 3:1.

Table 3.2: Strategies qualitative researchers adopt to ensure credible results

Quantitative terms relevant to qualitative studies	**Alternate terms linked with credible qualitative studies**
Validity	**Truth value** Distinguishes that several practical situations occur, researchers delineate individual experiences and perspective that could result in procedural unfairness.
Reliability	**Consistency** Transmits to honesty by which the practices taken depend on the researcher sustaining a consistent decision-making process. Subsequently, an autonomous researcher ought to attain alike or comparative findings.
	Neutrality Obtained once truth value, consistency and applicability is considered.

Source: Noble and Smith (2015:35)

In achieving truth value, the researcher gave clarity at the beginning about the research plans. In addition, documenting the objectives of the study in each chapter assisted in maintaining consistency with the findings.

The audio recordings enabled the researcher to frequently revisit the data to check for emerging themes. Asoba (2016:57) states that the findings of a study must be more or less the same to other researchers. Furthermore, to ensure consistency of the study, a supervisor was assigned to supervise the student researcher.

The supervisor evaluated the content and objectives of this research and whether the research questions and acquired data were based on the literature.

3.12 Ethical considerations

Hawkins *et al.* (2002:219) define ethics as standards of moral principles. According to Stevens (2013), it is important for research to encourage health and well-being. In addition, the dignity, rights and safety of participants should not be compromised by the researcher. Ethical measures dealt with in the course of this study included the following:

- The nature of the study was explained to participants
- Participation in the study was voluntary.
- Participants could withdraw any time or refuse to answer any question.
- Participants could withdraw permission to use data from the interview.
- There will be no monetary benefit accruing to participants from agreeing to participate
- in the study.
- Interviews granted were audio-recorded and data obtained treated confidentially.
- The identity of participants was anonymous.
- Signed consent and audio-recordings were stored securely.
- Participants were free to contact people involved in the research for further clarification.

3.13 Plagiarism

Hawkins *et al.* (2002:471) define ‘plagiarism’ as an act of using someone else’s writings or ideas as if they were one’s own. Aligned with this, all sources cited or referred to are referenced and acknowledged.

3.14 Delineation of the study

The boundaries of this study were delimited as follows:

- The study focused on LED assessment on the proposed nuclear power station at Thyspunt Site in the Eastern Cape.
- The study was limited to only local government officials employed in the two municipalities (Kouga Local Municipality and SBDM).
- The study did not include stakeholders from the nuclear energy sector.
- English was used as he preferred language of communication, although the majority of officials were fluent in isiXhosa and Afrikaans.

3.15 Limitations and challenges

3.15.1 Resources constraint

As an employee of the City of Cape Town, the researcher was granted only 10 days of study leave to travel to the Eastern Cape to collect data from two municipalities. Permission to collect data at one of the municipalities (SBDM) was granted, but data could not be collected despite numerous email correspondence to get in touch with the managers and officials. Owing to this and insufficient time, the researcher could not conduct interviews with the projected sampling frame, which had an impact on the projected sample size.

3.15.2 Research methodology

The purposive sampling or availability sampling technique might have been compromised the representativeness of the sample. To mitigate against this limitation, the researcher was assisted by one staff member to identify participants in the Kouga Local Municipality who have knowledge or previously worked in the LED directorate.

3.16 Summary

This chapter has described the methodological characteristics of the study as well as the research design, population and sample of the study. Different data collection techniques were addressed. The different techniques explored by the researcher are explained and why they were deemed suitable for the study. In addition, the theoretical and philosophical assumptions underlying the study were reviewed.

A qualitative approach was adopted using a case study design. The unit of analysis for this research was classified between the level of investigation and what was being analysed. Firstly, local government was selected as the sphere of government, where Kouga Local Municipality and SBDM were the selected municipalities. Secondly, LED was the directorate to be examined. Thirdly, was the individual level, where interviews focused managers and officials. Furthermore, in-depth interviews with municipal officials responsible for LED were

conducted through purposive sampling. Supplementary data was collected from scholarly publications, books, the internet, unpublished master's dissertations and doctoral theses. The data from in-depth interviews were transcribed, coded and explained. Ethical measures taken in the course of the study are clearly discussed. The fourth chapter presents and interprets the results of the data analysis.

CHAPTER FOUR
DATA ANALYSIS AND PRESENTATION

4.1 Introduction

The previous chapter addressed the different data collection techniques and why they were suitable for the study. This chapter presents and analyses the gathered data collected. Bernard (2018:356) claims that to analyse data is to seek for behaviours, explanations and suggestions and why these behaviours and explanations happened. The process includes linking one's outcomes to outcomes of other scholars.

A sample of hundred managers and officials responsible for local economic development, fifty each, was sourced from the district and local municipalities. The researcher could not conduct interviews with the projected sampling frame, which had an impact on the projected sample size. Owing to this, the respondents consisted of twenty two managers and officials from the district and local municipalities. Twenty one participants represented the Kouga Local Municipality consisted of eleven officials and nine senior managers, including the LED director and municipal manager. One official was a LED portfolio councillor representing the SBDM.

4.2 Re-statement of research objectives

The main aim of the study was to assess the potential impact of the proposed nuclear power station at Thyspunt on Local Economic Development within the Kouga region. The study had five objectives, namely:

- To assess the state of LED sector in Kouga Local Municipality.
- To identify the barriers associated with ineffective implementation of LED strategies at local municipalities
- To determine current strategies that are targeted to create sustainable development in Kouga Local Municipality.
- To ascertain if there is a relationship between LED and nuclear energy within Kouga Local Municipality.
- To establish what infrastructure is required in the municipality to cope with nuclear energy.

4.3 Handling of the data

Signed consent and audio-recordings were filed and stored securely. The data obtained through audio-recordings was transcribed using Microsoft Word software. Bailey (2008:130)

claims transcribing is an interpretive act that allows for close observation which can lead to noticing unanticipated phenomena. Similarly, Tessier (2012:447) states that transcripts provide detailed accounts of the interviews and provide easy access to the tape for validation purposes.

As such, the transcribed data was coded using Microsoft Word. According to Knoch (2018) the process of coding is categorising data by applying tags or labels arranged into different themes. The researcher borrowed five steps from LaPelle (2004:4) on how to code qualitative data using Microsoft Word:

- Step 1: Data was formatted into a table including participant information in sequence.
- Step 2: A theme codebook was developed to define linkages between theme categories.
- Step 3: Columns were added to table to accommodate theme categories.
- Step 4: Thematic coding in the theme column was done to handle text that was coded with multiple themes.
- Step 5: Data and theme codes were sorted to look for patterns.

4.4 Method of analysis

The method of analysis used for this study was a qualitative approach of thematic content analysis. Jugder (2016:2) and Castleberrya and Nole (2018:808) agree thematic analysis is a data analysis strategy used across qualitative designs. Nowell, Norris, White and Moules (2017:2) note that thematic analysis is useful for outlining crucial components in large data, as it enables the researcher to take a well-structured approach to handling data.

In other words, thematic analysis assumes that the recorded messages themselves are the data and codes are developed by the investigator during close examination of the texts as salient themes emerge inductively from the texts (Neuendorf, 2019:212). Saldaña (2016:4) claims that these codes often consist of words or short phrases, which enable the investigator or scholar to translate and disseminate results.

The goal is to develop a story from the texts of interest. The findings are presented and interpreted in relation to the research questions and research objectives. The interview guide is contained in Appendix D.

4.5 Process of thematic analysis

Scholars typically follow a six-phase process in using thematic analysis (Braun & Clarke, 2006; Clarke & Braun, 2014; Braun, Clarke & Rance, 2015):

- **Phase one:** becoming familiar with the data and identifying items of potential interest.
- **Phase two**: generating initial codes that identify important features of the data relevant to answering the research question(s) and applying codes to the dataset consistently.
- **Phase three:** searching for themes, examining the codes and collated data to identify broader patterns of meaning.
- **Phase four**: reviewing themes, applying the potential themes to the dataset to determine if they tell a convincing story that answers the research question(s), themes may be refined, split, combined, or discarded.
- **Phase five**: defining and naming themes, developing a detailed analysis of each theme.
- **Phase six:** producing a report, merging the analytic narrative and data segments, relating the analysis to existing literature.

4.6 Themes identified

The following themes emerged from the data collected and analysed:

- Theme 1: Situation analysis
- Theme 2: Understanding and interpreting barriers in implementation
- Theme 3: Economic transformation
- Theme 4: Nuclear energy impact in Kouga region
- Theme 5: Infrastructural investment and development

In the discussion that follows, the identified themes are interpreted and aligned to the research objectives.

4.7 Analysis of data obtained from interviews

To differentiate between responses from the two municipalities, the researcher categorised participant responses as follows:

- L=Local (Kouga Local Municipality)
- D=District (SBDM)

Research objective 1:

To assess the state of LED sector in Kouga Local Municipality

4.7.1 Situation analysis

4.7.1.1 Why LED needs more attention

The purpose of this discussion is to determine the state of LED in the municipality. Officials were clear and consistent about what constitutes good LED practices. However, they felt that current LED practices in the municipality were not functioning to full potential. As participants L1, L2 and L8 pointed out:

> *Currently there is a LED Directorate, however the impact of that directorate has shown little impact to the Kouga community, because to date Kouga remains underdeveloped and Kouga is not utilising the demographic dividend it has in terms of the youth and skills available.*
>
> *The LED section consists of two employees (the manager and the LED officer) that, on its own is a reflection that the LED sector is not fully functional as it is supposed to be.*
>
> *More can be done to make it a priority, as the LED sector should be a cornerstone for growing the local economy of Kouga.*

These findings validate Abrahams (2003:185) results that challenges facing small municipalities is the result of poor preparation and execution of IDP.

4.7.1.2 Unsustainable LED projects

In terms of projects, participants felt that the municipality has been involved in small-scale LED projects. However, the municipality has not been successful in running these projects. The main reason behind this is a lack in capacity and funding. Moreover, SALGA (2010:3) argues that most economic development projects are unsustainable because of unsustainable public sector funding which, consequently, results in no long-term impact on developing the local area. Participant L11 stated that:

> *The municipality consists of an LED plan, LED strategy and prioritised projects, but funding is limited. Therefore, LED is prioritised, however resources and capability to execute it is a bit limited. There is room for improvement.*

4.7.1.3 New LED new underway

Significantly, it reads across that LED in the municipality is an emerging area. Participants acknowledged that LED is an area that will be prioritised more in the future; as a result, there is a new LED policy underway. Participant L10 points out that:

> *We, as the municipality, are in the process of appointing consultants for a new LED policy that we will do and this will be done with private business*.

These findings may be explained in terms of Nthekeleng's (2014:163) postulation that a lack of personnel confines effective execution of functions. Consequently, the organisation ends up recruiting consultants to perform the duties. As such, it could be argued that the municipality struggles because they do not have the necessary staff compliment to execute LED. Furthermore, insufficient structuring and planning impacts on the general quest to obtain financial support.

Research objective 2:
To identify the barriers associated with ineffective implementation of LED strategies at local municipalities

4.7.2 Understanding and interpreting barriers in implementation of LED strategies in local municipalities.

In this study, officials felt that they were explicit about the factors that hinder implementation of LED in local government. The participants did this by making a distinction between what exists and what the expectations of municipalities are in order to produce desirable outcomes. Participant L6 stated that:

> *The view is obviously that local government should be an enabler for a conducive environment for investment and business opportunity. In terms of the Kouga locality economic development strategies must look at the quality of infrastructure, quality of governance systems and the availability of services.*

4.7.2.1 Limited financial support and incoherent governmental relations

Participants in the study were quick to recognise that budgetary constraints are one of the main barriers in implementing LED. More so, they felt that there is not enough support from other government sectors. Participants L8 and L12 responded to the effect that:

> *Lack of budgeting from the municipality, the municipality should work with the other stakeholders because economic development is not only the role of local government. Businesses, provincial government and national government should all work together.*

There aren't not enough funds to launch community programmes and development projects.

Aligned to these findings, Minsat, Simpasa, Lusigi, and Losch (2015:4) state that LED is a territorial approach formulated by local authorities with the intention to improve the welfare and economic activity of geographic areas that go below the radar of national policy makers. Romeo (2015:16) argues that the implementation of territorial strategies cannot be achieved if there is no national strategic commitment, thus suggesting building blocks to bridge the gap between national-local government and decentralising responsibilities to public-private partnerships to enable community participation in executing delegated responsibilities.

4.7.2.2 Lack of suitably qualified personnel

SACN (2016) identified two crucial challenges affecting LED in South Africa, namely: a lack of skills and a decline in the levels of professional employment. Similarly, participant L2 in this study was of the view that:

Local government does not have properly educated employees working in LED sections, complimented by a lack of passion for LED.

4.7.2.3 Lack of awareness on LED function

Participants reflected that there is no understanding on how LED is supposed to work. As a result, LED policies are not implementable. Participants L17 and D1 stated that: `

To have a strategy it must be implementable, mostly in local government the policy documents that are drafted are for compliance and not implementable. That is the barrier; documents are well defined but are not implementable.

LED is only understood at senior management level, and that is where it ends.

This finding is in line with that of SACN (2016) that legislators and decision-making bodies must come to a consensus that by virtue of having a LED plan does not insinuate LED will take place.

4.7.2.4 Changes to political systems

Participant L13 offered the explanation that changes in the political environment have an impact on economic activities:

Political change is a big factor, normally when a ruling party takes over they implement their own strategic view based on their mission. This may have an impact on existing projects.

Research objective 3:
To determine current strategies that are targeted to create sustainable development in Kouga Local Municipality.

4.7.3 Economic transformation

4.7.3.1 Small business growth and development

The participants recognised that, as a sector, SMMEs across South Africa could provide employment opportunities. Moreover, SEDA (2016:32) established that SMMEs still operate largely with limited entrepreneurial capacity. Subsequently, this hinders them from gaining access to markets, thus threatening their long-term survival. From the interviews, it was established that:

> *What is probably needed is more focussed attention to develop SMMEs so that they can, overtime aim for bigger contracts. Building capacity for small businesses is important, as this increases the probability of transforming business plans into actual businesses (Participant L6).*

> *The municipality is engaging the Windfarms in the IDP, this brings opportunities and allows for cross interfacing between small business from the townships and established business (Participant L13).*

> *The municipality is training people; especially the SMMEs to be in par with what is happening in terms of the local economy. Trainings target SMMEs and aspiring entrepreneurs in each ward. Some of these initiatives are in the IDP plan (Participant L12).*

4.7.3.2 Socioeconomic improvements

Given, the challenges described in the Kouga Local Municipality (2017:33) among others, is inaccessible services to improve the socioeconomic profile. Admittedly, there is a consensus amongst participants that transformation in the municipality is slow, thus, objectives outlined in the IDP become unattainable and unrealistic. Interestingly, participants L10 and L21 commented on the impact of social improvements:

> *There are still households using the bucket system and those are the issues that need to be resolved.*

> *The IDP is mainly focussed on developing up-state property, whereas a majority of communities in the less affluent wards still face a problem of bucket systems, 24 years after democracy.*

With regard to Mulopo's (2015:28) finding, 21 million South Africans do not have adequate sanitation and are forced to use bucket systems and pit toilets. This finding indicates the disparity between preparation and execution of plans. Gumede (2009:4) contends that smaller municipalities typically develop strategies, containing five-year ideas on how to boost economic growth, build new industries and reduce unemployment. However, despite these development plans, smaller municipalities fail outright or produce below average deliverables.

Research objective 4:
To ascertain if there is a relationship between LED and nuclear energy within Kouga Local Municipality.

4.7.4 Nuclear energy impact in Kouga region

Qasaymeh (2014:25) suggests that nuclear energy can be an enabling source of energy for achieving sustainable development and economic growth in South Africa. Subsequently, Mbusi (2011:51) claims in Thyspunt majority of residents are optimistic mainly about the improvement in employment opportunities and standard of shopping facilities that the development is likely to bring to the region. Similarly, findings of the two scholars corroborate the findings of this study. Participants indicated that nuclear would have a positive impact in boosting the formal and informal sectors and providing employment opportunities for the youth in the region. Furthermore, participants felt that the industrial project would encourage investment into the region.

On the contrary, some participants expressed divergent views stressing that an influx of job seekers from other regions would challenge the infrastructure and increase informal settlements. Consequently, increasing crime rate and social ills. Participants L6 and L1 pointed out the following concerns:

> *There are environmental considerations that must be taken on board especially with regards to the contamination of ground water, possibly that might have an impact on the marine life and linked to that, is socioeconomic issues that come with the mega development as such, there will be more people in this limited space, which could put pressure on the infrastructure.*
>
> *In terms of social services, there might be more social ills, more crime. So considerations need to be weighed on what potential impacts there are on the society, environment and economy.*

Research objective 5:

To establish what infrastructure is required in the municipality to cope with nuclear energy.

4.7.5 Infrastructural investment and development

From the interviews, participants showed similar and consistent responses that current infrastructure in Kouga Local Municipality is too old and dilapidated to cope with nuclear energy. Invariably, they made concrete suggestions as they felt that poor infrastructure is one of the reasons the proposed nuclear development has delayed. In this discussion, participants L2 and L7 felt that:

> *The current road infrastructure is not built for heavy duty loads, therefore harbours would have to be built to save road infrastructure…as repairs and maintenance for the municipality will be high.*

> *For a development such as nuclear power plant, there is no municipality that can cater for the needs of a nuclear power plant.*

4.8 Summary

This chapter presented and analysed the data collected. A comparative explanation is presented of results that emerged from municipal officials' in-depth interviews. The interview guide was designed in line with the research objectives and research questions. Through thematic content analysis, themes were developed to enable the researcher to translate and disseminate results. The themes ranged from understanding the state of LED at Kouga Local Municipality, an explication of LED experiences and expectations relating to nuclear development, major infrastructural challenges facing the municipality and barriers affecting implementation of LED in local government.

The fifth and final chapter discusses the main aim of the study, provides conclusions, makes recommendations and suggests areas for future research.

CHAPTER FIVE
MAIN FINDINGS, CONCLUSIONS AND RECOMMENDATIONS

5.1 Introduction

The previous chapter discussed data analysis and interpretation. This chapter discusses the main findings, draws conclusion and makes recommendations that could be implemented by managers and officials responsible for LED in the Kouga Local Municipality. It also makes suggestions for further research. To recap, the main aim of the study was to assess whether the proposed nuclear power station at Thyspunt will impact Local Economic Development within the Kouga region.

5.2 Main findings

Participants felt that the LED sector in the Kouga Local Municipality needs more attention because to date Kouga remains underdeveloped. Subsequently this inhibits the municipality from functioning effectively. Moreover, participant L2 revealed that the LED section consists of two employees (LED manager and LED officer), this suggested that the LED section is understaffed.

When it came to challenges associated in LED across local municipalities, all respondents were explicit about the factors that hinder implementation. Citing insufficient budget and financial support to implement programmes, political interferences, properly qualified personnel working in LED sections and development plans that are not implementable. One unanticipated finding from participant D1 was that municipalities do not want to change from a traditional to a developmental trajectory and because of bureaucratic processes, public understanding and interest disappears.

In response to the question of strategies targeted to achieve sustainable development, the research recognised that there was general consensus amongst managers and officials' that transformation in the municipality is slow, thus, objectives outlined in the IDP become unattainable and unrealistic. Participant L10 in particular pointed out that there are households still using the bucket system and those are the issues that should be prioritised to be addressed. Therefore, achieving sustainable development of the Kouga Local Municipality is an ongoing process. However, there seems to be an improvement when it comes to skills development, as the municipality is capacitating small business owners and aspiring entrepreneurs to ensure long-term survival for their businesses.

Furthermore, the study finds that there is a relationship between LED and nuclear energy within Kouga Local Municipality. As participants expressed nuclear energy can contribute to

LED profile in boosting the transport and food industries, subsequently attracting investors and, thus, increasing employment figures for the local people. Other participants felt that consideration should be given to the impact on marine life and socio-economic issues such as crime and diseases that come with influx of people to an area. As such, consideration must be given to the impact on society, environment and the economy. Moreover, the influx of job-seekers would challenge the infrastructure of the municipality and increase informal settlements in the area.

5.3 Conclusions drawn

The results obtained indicated that LED in the Kouga Local Municipality is fully fledged but not functioning effectively. This further translates to the municipality being relatively underdeveloped, with challenges of high unemployment and low economic growth. This is combined with a number of factors, among others, having properly qualified personnel working in LED sections. Subsequently, this transcends to LED initiatives and plans that are not feasible or implementable.

The municipality has success stories in integrating the farming sector, Windfarm project, with communities. This integration has allowed cross interfacing between small businesses from the townships and established businesses in the formal sector. The Windfarm project through the municipality provides communities with lab infrastructure and financial support to youth whom have aspirations of furthering their studies post-Matric. It also became evident in the study that the municipality is working with SETA's to train small business owners to ensure long-term survival for their businesses.

The challenges facing the municipality include a dilapidated and aging infrastructure. Moreover, a significant portion of households are still using bucket systems, the roads are depleted and the sewer systems being over capacitated. The results obtained indicated that despite the proposed nuclear power plant premised to contribute significantly towards the formal and informal in terms of economic activity and job creation, the challenges relating to infrastructure take priority, thus, have a detrimental effect on nuclear development in Kouga Local Municipality.

5.4 Recommendations

The recommendations made emanate from the findings, analysis and the concluding remarks. These recommendations will assist managers and officials responsible for LED in the Kouga region. Based on the above findings, the following recommendations are made.

5.4.1 Liaise with other spheres of government or institutions for financial assistance and undertake change management workshops to build positive outlook on state of LED

Municipalities are responsible to ensure growth and development in communities. LED is one of the sectors that can have an impact on unemployment figures by enabling an environment to create opportunities for the youth and support for small businesses. Participants in this study stated that the LED sector in Kouga Local Municipality does not receive enough attention, as the municipality remains underdeveloped and understaffed with limited funding. The researcher recommends intervention by LED practitioners to forge linkages with other spheres of government and institutions such as National Treasury (NT), Small Enterprise Agencies (SEFA) and Department of Trade and Industry (DTI) to obtain financial assistance.

Besides financial assistance, the Municipal Manager should recruit more staff to assist with the current staff compliment in the LED portfolio. The municipality should incorporate the importance of LED in its organisational structure, mission and vision.

5.4.2 Plan and establish realistic timeframes for implementation

Another factor identified was households still using the bucket system and informal settlements illegally connected to the electricity grid. Thus, reaching the conclusion that economic transformation in the Kouga Local Municipality is ongoing and very slow. The researcher recommends that LED officials and managers should investigate how to fast track service delivery and social improvement programmes. The municipality should identify suitable land for RDP housing.

5.4.3 Review current and future needs in the municipality and involve members of the community

Participants argued that nuclear energy could contribute immensely towards LED through boosting the formal and informal sectors thus attracting investment and job opportunities. The researcher recommends that the municipality should first consider taking care of its current challenges relating to the dilapidated road and bulk infrastructure. Considerations should also be made for the potential influx of job seekers and social economic issues.

The municipality should conduct stakeholder engagement sessions with areas and people that will be mostly affected by the development.

5.4.4 Request funding from collaborative stakeholders

Road infrastructure, housing, schools, electricity networks and sewer system were identified to be the infrastructure the municipality requires to cope with the nuclear plant development. The researcher recommends Eskom and Department of Energy should provide additional services and funding prior construction phase.

5.4.5 Re-evaluate talent acquisition approach

The findings stated local government does not have suitably qualified personnel working in LED sections. The researcher recommends the municipality should re-evaluate its recruitment and selection criteria. Local government should attract highly skilled professionals that are committed to service delivery.

5.5 Limitations of the study

5.5.1 Resources constraint

As an employee at the City of Cape Town, the researcher was granted only 10 days of study leave to travel to the Eastern Cape to collect data from two municipalities. Permission to collect data at one of the municipalities (SBDM) was granted, but data could not be collected despite numerous email correspondences to get in touch with the managers and officials. Therefore, due to that and insufficient time, the researcher could not conduct interviews with the projected sampling frame, which had an impact on the projected sample size.

5.5.2 Research methodology

The purposive sampling or availability sampling technique may have been compromised the representatives of the sample. To mitigate this limitation, the researcher was assisted by one of the staff members to identify the participants in the Kouga Local Municipality who have knowledge or previously worked in the LED directorate

5.6 Suggestions for future research

The main objective of this study was to assess whether the proposed nuclear power station would impact LED in the Kouga region. This objective was met. Recommendations offer guidance to managers and officials on how to evolve from traditional practices, to developmental, more effective strategies.

5.7 General conclusion

Although there is no precise features to characterise LED, some scholars argue LED is pro-poor, while others maintain it is pro-growth. This makes it difficult to formulate a collective understanding on how to initiate and execute LED. What is generally accepted across the spectrum is that LED is a process aimed at achieving an end goal. The literature provides that LED was a development strategy implemented in developed countries, however the narrative has since changed as developing countries have now adopted this approach to address historical inequalities. In addressing historical inequalities formed under the apartheid regime, the South African government constitutionally legislated LED across all

local municipalities. However, the implementation of this initiative has not achieved much success. This stance seems to suggest planning fails in developing countries, because the planning process has many inherent problems.

One of the issues that became prevalent is that much attention has been focused on large cities, leaving smaller rural towns underdeveloped. Subsequently, in smaller municipalities poor implementation translates to lack of planning and support, coupled with lack of understanding of standard LED practices, lack of conceptual clarity and absence of clear roles and responsibilities of relevant stakeholders to implement LED sufficiently.

The main objective of this study was to assess what impact the proposed nuclear power station would have on LED in the Kouga region. This objective was met. Recommendations offer guidance to managers and officials on how to evolve from traditional practices to developing more effective strategies.

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APPENDICES

Appendix A: CPUT ethics approval certificate

Cape Peninsula University of Technology

P.O. Box 1906 • Bellville 7535 South Africa •Tel: +27 21 4603291 • Email: fbmsethics@cput.ac.za
Symphony Road Bellville 7535

Office of the Chairperson Research Ethics Committee	Faculty: BUSINESS AND MANAGEMENT SCIENCES

At a meeting of the Faculty's Research Ethics Committee on **20 February 2018**, Ethics Approval was granted to **Malwandulwazi Vumazonke (215119193)** for research activities of **Master of Public Management** at the University of the Cape Peninsula University of Technology.

Title of dissertation/thesis/project:	LOCAL ECONOMIC DEVELOPMENT ASSESSMENT ON THE PROPOSED NUCLEAR POWER STATION AT THYSPUNT SITE IN THE EASTERN CAPE Lead Researcher/Supervisor: Prof M Dassah

Comments:

Decision: APPROVED

	20 April 2018
Signed: Chairperson: Research Ethics Committee	Date

Appendix B: Consent letter from Kouga Local Municipality

KOUGA
local municipality
Good Governance through Service Excellence

Cape St Francis
Hankey
Humansdorp
Jeffreys Bay
Loerie
Oyster Bay
Patensie
St Francis Bay
Thornhill

Postal: PO Box 21, Jeffreys Bay, 6330
Tel: 042 200 2200 / 042 200 8300
Fax: 042 200 8606
Email: registry@kouga.gov.za
Website: www.kouga.gov.za

2 October 2017

Mr M Vumazonke and Prof M Dassah

Cape Peninsula University of Technology

Cape Town.

Dear Sirs

REQUEST FOR PERMISSION TO CONDUCT RESEARCH AT KOUGA MUNICIPALITY.

This letter serves to confirm that the Municipal Manager of the Kouga Municipality grants you approval to assess and do research on the proposed Nuclear Power station at Thyspunt Site within the Kouga Local Municipality and the potential of nuclear energy in the region.

Kindly let us know well in advance when you wish to conduct interviews.

Yours faithfully,

Miss C Strydom

Acting Director LED and Tourism

Kouga Municipality

Appendix C: Consent letter from Sarah Baartman District Municipality

STANDARD BANK BUILDING
32 GOVAN MBEKI AVENUE
PORT ELIZABETH, 6001
TEL: 041 508 7111
FAX: 041 508 7000
www.cacadu.co.za

Sarah Baartman
DISTRICT MUNICIPALITY
Province of the Eastern Cape

Previously Cacadu District Municipality

Inquiries *Mr D Magxwalisa*
E-mail *dmagxwalisa@sbdm.co.za*
Our Ref: *12/3/2/23 & 18/2/R*

Telephone *[041] 508 7141*
Facsimile *[041] 508-7136*

22 September 2017

ATTENTION: Malwandulwazi Vumazonke
Researcher,
Cape Peninsula University of Technology

Email: *malwandevumazonke@gmail.com*

Cc: *dassahm@cput.co.za*

RE: REQUEST FOR PERMISSION TO CONDUCT RESEARCH ON THE PROPOSED NUCLEAR POWER STATION TO BE LOCATED IN KOUGA LOCAL MUNICIPAL AREA WITHIN THE SARAH BAARTMAN DISTRICT

Dear Mr Vumazonke

The letter serves as reference to your request dated 25th July 2016 on the above subject matter. The District Municipality sincerely apologizes for such a delayed response as the timing of your request coincided with the national local government election period. Nevertheless we welcome your request and fully support your subject and focus area for Local Economic Development.

Therefore the letter grants you the permission to go ahead and engage with us and seek advice where necessarily in pursuit of this assignment.
It is in the interest of the District Municipality to work with Private Sector agencies in bringing service closer to the people and interested parties.

Further enquiries and contact for your project can be directed to Mr D Magxwalisa @ (041) 5087141 or email to dmagxwalisa@sbdm.co.za..

Kind Regards

Mr D Magxwalisa
Project Manager: Local Economic Development

Appendix D: Grammarian letter

22 Krag Street

Napier

7270

Overberg

Western Cape

20 November 2019

LANGUAGE &TECHNICAL EDITING

Cheryl M. Thomson

LOCAL ECONOMIC DEVELOPMENT ASSESSMENT ON THE PROPOSED NUCLEAR POWER STATION AT THYSPUNT SITE IN THE EASTERN CAPE

Supervisor: Prof. Maurice Oscar Dassah

This is to confirm that I, Cheryl Thomson, executed the language and technical edit of the above-titled Master's dissertation of **MALWANDULWAZI VUMAZONKE,** student number **215119193,** at the CAPE PENINSULA UNIVERSITY OF TECHNOLOGY in preparation for submission of this dissertation for assessment.

Yours faithfully

CHERYL M. THOMSON

Email: cherylthomson2@gmail.com

Cell: 0826859545

Appendix E: Interview schedule – information letter for participants (managers and officials)

Researcher: Malwandulwazi Vumazonke

Supervisor: Professor Maurice Oscar Dassah

I am currently pursuing a Master's Degree in Public Administration at Cape Peninsula University of Technology (student number: 215119193). As a requirement to complete my Master's, I have to submit a desertion based on a research. The main research objective of this study is **to** assess whether the proposed nuclear power station at Thyspunt will impact Local Economic Development within the Kouga region.

Description of the study procedure

If you provide consent to be part of the study, you will be subjected to an audio recorded in-depth interview at your preferred time whereby the duration of the interview will be 30-35 minutes.

Confidentiality

The research is for academic purposes. Furthermore, your identity will not be discussed.

Right to refuse or withdraw

Your participation in the study is completely voluntarily and the participant can withdraw from the study at any time.

Right to ask questions and report concerns

If requested, a summary of the results of the study will be sent to the participant/s. If there are any other concerns about the rights as a research participant that may have not been answered by the researcher, the participant/s may contact my supervisor, Professor Maurice Oscar Dassah, who can be contacted at dassahm@cput.ac.za. Telephone no: 021 460 3304.

Consent

Permission to conduct this study was requested from the Sarah Baartman District Municipality. The dignity of all the research participants, their time and valuable inputs towards accomplishing the intent of this research, were taken into consideration. The

researcher further explained that the data will be used confidentiality and that identifiable information concerning the participants will not be disclosed. Your signature below indicates that you decided to as research participant for this study, and that you have read and understood the information provided.

Participant's signature ..... Date.....

Researcher's signature..... Date.....

Appendix F: Data collection tool (interview schedule)

1. To what extent is local economic development sector prioritised at Kouga Local Municipality?

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2. What barriers hinder the effective implementation of local economic development strategies in local government?

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3. What strategies has the municipality established to sustainable development as reflected in the Kouga Local Municipality Integrated Development Plan?

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4. What is the relationship between local economic development and nuclear energy within Kouga Local Municipality?

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.....
.....

5. What infrastructure would be suitable for the proposed nuclear development in Kouga Local Municipality?

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.....
.....