WATER AND SANITATION INFRASTRUCTURE AS A VEHICLE FOR LOCAL ECONOMIC DEVELOPMENT: A CASE STUDY OF THE HILTON – MONDI DEVELOPMENT PROJECT

Submitted in partial fulfilment of the requirement for the degree of Master of Commerce in Leadership Studies 'College of Law and Management Studies' and Graduate School of Business and Leadership

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Declaration

I, **Sipho Anthony Ntuli** declare that

(i) The research reported in this dissertation, except where otherwise indicated, is my original work.

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SIGNATURE

November 2015

Acknowledgement

The submission of this dissertation would have been impossible if it wasn't for the support and encouragement of the following people:

To the lord almighty for agreeing to the realization of my dream and for giving me strength during difficult times when my family was shaken when I was busy with my studies.

To my wonderful wife Bathokozile Ntuli, my children Sthandiwe, Sthabiso, Khayelihle and Khayakazi for the sacrifice of their valuable time which enabled me to finish this dissertation.

To my supervisor Dr. Mihalis Chasomeris and his wife for giving me constructive advice and comments and for ensuring that I complete this dissertation.

To all my lecturers at the Graduate School of Business and Leadership, Westville Campus, particularly Jennifer Houghton the project leader.

To Katambwe Ntambwe Leon for his advice on the topic and but most importantly for sharing his dissertation work.

To my friend, Sandile Percival Sithole for encouraging me to finish this research report.

To everyone who contributed in compiling this research report, all the people I interviewed during data collection and to the following organization: the Department of Economic Development Tourism and Environmental Affairs for the scholarship, uMgungundlovu District Municipality for giving me time to complete the degree, uMngeni Local Municipality and to Lauresco Development for initiating the Hilton-Mondi Development Project, the information they provided on the project and for allowing the project to be used as a case study.

May the lord Jesus Christ bless everyone who contributed towards the completion of this dissertation.

Abstract

The purpose of the research study is to evaluate how the construction of water and sanitation infrastructure at uMngeni Local Municipality acts as a vehicle for job creation and skills development using Hilton-Mondi Development Project as a case study. The study begins by looking at the literature review of different types of infrastructure development and their relationship to economic development. There is a particular attention to water and sanitation infrastructure and its impacts on job creation and skills development. There are gaps identified in terms of the impact the Hilton-Mondi Development Project will have on job creation and skills development that could be investigated in the near future. Qualitative research was used to collect primary data and the approach was influenced by factors such as the nature of the problem, data collection methods, data collection tool, analysis and so forth. Nine interviews were conducted with important role players on the project and information collected was analysed using thematic analysis. A multiple data collection method is identified as an approach that could be utilised in a follow up research. Hilton-Mondi Development Project proposed to create 34 500 construction jobs over 10 to 15 years and 9000 permanent jobs. The analysis reveals that water infrastructure development at uMngeni Local Municipality contributed towards job creation and skills development. However it was not possible to assess the magnitude of job creation in relation to the proposal because there was no breakdown in the proposal and secondly the study was undertaken during the first year of its implementation. The study recommends that target setting for short term, medium term and long term goals is critical for the realization of EPWP projects and that targets must be monitored on a continuous basis. For skills development to be achieved, they must be documented in the contract, be monitored and skills development should be accompanied by budget allocation.The conclusion is that water and sanitation infrastructure development is a catalyst that can be used to create job opportunities and to enhance skills development. However there are contractual issues that need to be structured accordingly to maximise the opportunities provided such as the contract between the employer and the contractor, the time at which training commences, adherence to Expanded Public Works Programme guidelines and the proper monitoring and evaluation of the project objectives.

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Abbreviations

ANC	African National Congress
ARRA	American Recovery and Reinvestment Act
CoGTA	Co-operative Governance and Traditional Affairs
COSATU	Congress of South African Trade Union
CBPWP	Community Based Public Works Programme
CSD	Commission on Sustainable Development
EFM	European Forum for Manufacturing
EIA	Environmental Impact A ssessment
EPWP	Expanded Public Works Programme
FIFA	Federation of International Football Association
GDP	Gross Domestic Product
GGP	Gross Geographic Product
HDI	Human Development Index
HMDP	Hilton-Mondi Development Project
IDP	Integrated Development Plan
ILO	International Labour Organisation
IMF	International Monetary Fund
ISD	Institutional and Social Development

MOU	Memorandum of Understanding
NDP	National Development Plan
NEP	New Economic Policy
NEPAD	New Partnership for Africa's Development
NGO	Non –Government Organisation
NIDP	National Infrastructure Development Plan
PGDP	Provincial Growth and Development Plan
PSEDS	Provincial Spatial Economic Development Strategy
PWP	Public Works Programme
SAFCEC	South African Federation of Civil Engineering Contractors
SDF	Spatial Development Framework
SIP	Strategic Integrated Project
SMME	Small and Medium Enterprise
SONA	State of the Nation Address
Stats SA	Statistics South Africa
UN	United Nations

CHAPTER 1

INTRODUCTION

1.1 Introduction

The first chapter introduces the subject under investigation and presents the framework of the study. It reveals what the study seeks to realise, the motivation behind the research objective and its significance to local economic development. The theoretical perspective forms the basis of the concept under investigation. Infrastructure is a broad concept which when used loosely refers to electricity, water supply, roads, sanitation and so for the (Kanbur and Rauniyar, 2010).

The dissertation starts by generally looking at infrastructure development from a broader perspective and narrows down to water and sanitation infrastructure and its impact of job creation and skills development using Hilton – Mondi Development Project as a case study

The organization of chapter one is structured in such a way that it is easy to read. It begins by presenting the background of the study and is followed by an overview of uMngeni Local Municipality particularly the demographics, education and an economic profile of the Municipality**.** The motivation for the research study precede the purpose of the study, the objectives, the importance of the project and questions to be answered by the research study. A detailed analysis of the Hilton-Mondi Development Project using literature review, secondary data from the project proposal, development applications and reporting templates was undertaken. The project alignment to national and provincial plans, the location of the project, the research methodology and the structure of the study are presented in this chapter.

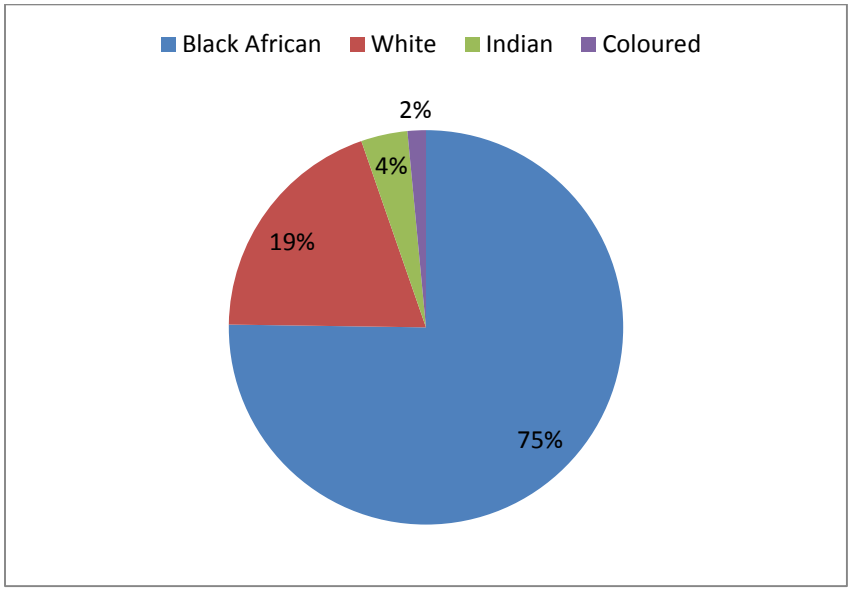
1.2 Background

The study evaluates how infrastructure development particularly water and sanitation infrastructure can act as a catalyst towards job creation and skills development by looking at Hilton -Mondi Development Project as a case study. Hilton - Mondi Development Project is an infrastructure development project that is taking place between Hilton and Cedara interchange at uMngeni Local Municipality. The Municipality is the second biggest municipality out of the seven local municipalities that constitute uMgungundlovu District, in KwaZulu-Natal, South Africa. KwaZulu-Natal is the province with the second highest population after Gauteng province with a high level of unemployment according to Stats SA (2015).

1.2 Demographics

The Municipality is made of the former Transitional Local Council areas of Howick, World's View, Hilton, commercial agricultural land and Traditional Authority. There are twelve wards that form the municipality and 32% of the population of uMngeni is the youth.

Figure 1.1 : uMngeni Local Municipality demographics



Source: Stats SA, 2015

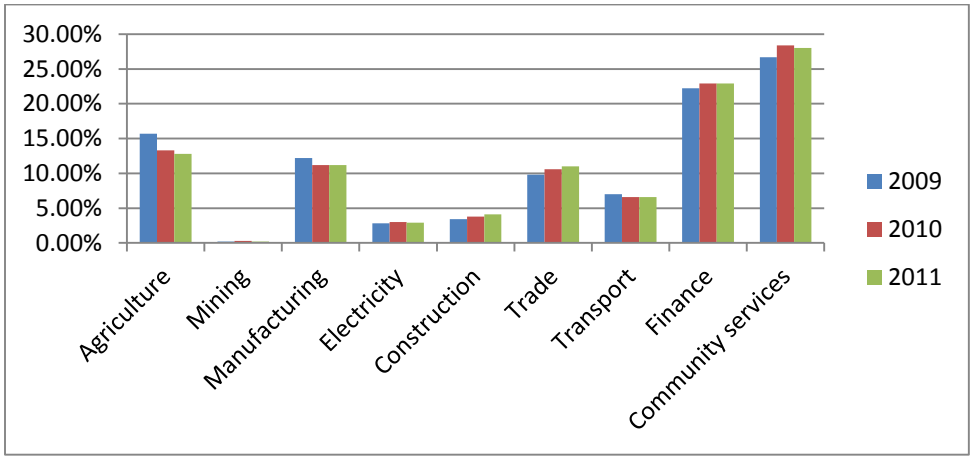
1.3 Education

Only 29% of the population of the municipality has matric or grade 12, 15.5% completed secondary education and 2.2% have higher education (Stats SA (2015).

1.4 The economy

The municipality's main economic sector is agriculture followed by manufacturing and trade. The main economic sector has been in decline of around two percent per annum since 2009 and the decline is higher than the rate of the province as well as the district. With a dwindling primary sector, the secondary sector, trade and manufacturing combined is the second biggest contributor to the Municipality's GDP at 20.6%. Tertiary sector generates 11% of the municipality's GDP while community services and finance are the main contributors to the GDP that have shown an increase since 2009. According to Census 2011, 23.9% of the population is unemployed and the majority is the youth at 32% unemployment (Stats SA (2015).

Figure: 1.2 uMngeni Local Municipality's economic outlook 2009 - 2011



Source: Global Insight, 2014

An overview of uMngeni's demographics paints a picture that show that the majority of its citizens are black. There is a low level of education which implies the majority of the unemployed youth also unskilled. People with higher education are less than 3 percent. The percentage of unemployment is high at 23.9% while the main economic sector is in decline and shedding jobs

since 2009. Community service is the only sector that shows reasonable growth which implies government is the biggest employer in the municipality. The implication is that when people look for jobs, there is a high expectation that it would come from government because community services is the only sector that is growing.

In a country like South Africa where unemployment has reached exceptionally high-level and the majority of the unemployed are unskilled, infrastructure development has been proven to be a critical strategic instrument that provides short term and long term employment during the time of needs and also as an emergency measure. The leading sector that has demonstrated an ability to absorb large numbers of unskilled labour is the construction sector (Ianchovichina et al., 2012).

The scenario portrayed by uMngeni municipality's economic profile, presents an environment where research studies have demonstrated that infrastructure development could have a positive role to play in job creation (Dinkelman, 2011). The objective of the study was to estimate the impact of electricity infrastructure on employment. It is for this reason that an infrastructure development project that is taking place in an environment similar to the one presented by uMngeni Municipality's economy is important to evaluate in order to corroborate the theory on infrastructure development.

Over and above the job creation potential that infrastructure development plays, there is evidence that infrastructure development also meets social goals because water and sanitation also improves the quality of life of the people (Lee, 2011. p. 11).

From a strategic perspective that has been demonstrated in developed and developing countries, investment in infrastructure development have confirmed the ability to create employment opportunities quickly and that has been confirmed by programmes such as the Public Works Programme and the Expanded Public Works Programme (EPWP) (Ianchovichina et al.,2012).

However the failure of a number of infrastructure development projects due to lack of skills required to maintain and sustain infrastructure once the project is completed raised concerns that brought a new dimension to infrastructure development. The challenge has been that when a project is complete, unskilled labour is left with no skills nor anything that shows learning or experience acquired from participating in the project. It is for this reason that skills development or training of beneficiaries mainly the unskilled labour was brought into the fore and became a critical component for infrastructure development projects such as the EPWP programmes during the construction phase (McCutcheon, 2001). The integration of training into infrastructure development projects provoked a strong debate. There are two perspectives being argued by Ianchovichina, 2012. The first argument is that training should be given enough attention if there is a market demand that is competitive and has a high turnover for such skills. The second perspective is that there is no reason to provide training for the infrastructure development if the job is temporary and the objective of the training is to facilitate inclusion into the general labour market and not in the infrastructure sector (Ianchovichina et al., 2012, pp. 217-218). However this debate is not for the purpose of this study.

1.6 Motivation

A research study by van Imschoot (1992) confirmed the ability of infrastructure development to unlock economic development and consequently job creation and skills development. Infrastructure development has been used by many governments from both developed and developing states as a strategy to address high level of unemployment and skills shortages (Richardson and Gillepsie, 1996). It is acknowledged by academia as a vehicle for economic development (Pereira and Andraz, 2012). The roll-out of infrastructure development programmes in developed and developing nations created employment opportunities and improved skills development of the unskilled labour (Richardson and Gillepsie, 1996; Lean, 2001; Duffy-Deno, Kevin and Eberts, 1991).

Inadequate investing in infrastructure development primarily in under developed countries and the disparities created by the apartheid laws in South Africa is known to have contributed negatively towards economic development. Lack of economic development increases the level of unemployment which is exceptionally high in South Africa and at uMngeni Local Municipality. Therefore, the need for this dissertation is motivated by the desire to analyse how water and sanitation infrastructure of the Hilton-Mondi Development Project will affect job creation and skills development after many research studies have verified a correlation between infrastructure development and job creation. A Research study done in Portugal (Pereira and Andraz, 2005) indicates that infrastructure development has been used successfully as a strategy to address unemployment. As a result, it is important to assess how the provision of water and sanitation infrastructure will contribute to job creation and skills development.

1.7 The purpose of the research

The literature review shows that an infrastructure development project undertaken in Morocco which involved the construction of a dam was motivated by the pressure from the citizens for government to do something about the high level of unemployment and lack of training (van Imschoot, 1992). The project corroborated the correlation between infrastructure development, job creation and skills development. From the lessons learned from this project, it is anticipated that Hilton-Mondi Development Project will also contribute towards job creation, either temporary or permanent and to a certain extent address the challenge of unemployment and skills development. is the purpose of the research study thus to evaluate how Hilton-Mondi Development Project at uMngeni Local Municipality, within the district of uMgungundlovu in KwaZulu-Natal will impact on job creation and skills development.

1.8 Objectives of the study

There are two objectives of the study:

1) To establish how the provision of water and sanitation infrastructure through Hilton-Mondi Development Project will contribute towards job creation.
2) To evaluate how the provision of water and sanitation infrastructure through the Hilton-Mondi Development Project will contribute towards skills development.

1.9 The importance of the study

Studies on the role of infrastructure development towards economic development have been undertaken and many of these studies show two distinguishing features of infrastructure development. The first is that infrastructure development is the foundation for economic activities. Secondly, infrastructure development directly and indirectly affects economic growth (Lean, 2001; Landers, 2009; Pereira and Andraz, 2005).

What is common to many of these studies is the correlation between infrastructure development and economic growth. These studies have also established that inadequate supply of water and sanitation is a hindrance to a number of economic related activities (Truffer et all., 2010). These findings are corroborated by two important strategic documents for South Africa, the National Development Plan 2030 (NDP 2030) and Provincial Growth and Development Strategy (PGDS). Both strategic documents identify infrastructure development as a critical factor affecting economic growth in South Africa (Sleight, 2011)

Infrastructure development is used all over the world to deal with unemployment and skills shortages (Padeiro, 2013; Ozkan et al., 2012). The role played by the construction sector in terms of employment opportunities was confirmed in South Africa, during the construction of Stadia in preparation of the FIFA World Cup in 2010. The rise in employment was followed by a decline following the FIFA World Cup (Sleight, 2011; Pueto Rico Highways and Transport Authority, 2013).

A study done by Anaman and Osei-Amponsah (2007) on the causal relationship between the construction sector and macro economy was undertaken in Ghana. The purpose of the study was to evaluate if the construction sector can be used as a driver of the economy. The results were

similar to what happened in South Africa during the construction of stadia. There was an increase in economic growth which was linked to growth in the construction sector. However the increase was followed by a decline that began on completion of major infrastructure projects.

Research studies shows that the main objectives of the introduction of Public Works Programme in South Africa around 1950s and 1960s, was to create employment opportunities particularly for the unskilled and semi-skilled using intensive labour methods (du Toit, 2005; Phillips, 2004). But the strategy was later reviewed to Expanded Public Works Programme to include human development (McCutcheon, 2001).

Hilton – Mondi Development Project is also a government infrastructure development project funded through Expanded Public Works Programme. The impact and lessons learnt from the project will be of critical importance to Expanded Public Works Programme, to safeguard their effectiveness and value for money. The effect is critical to uMngeni Local Municipality which has a high level of unemployment and unskilled labour. Any project that could have an impact on unemployment facing the country must be subjected to monitoring and evaluation.

1.10 Questions to be answered

There are two main questions the study seeks to answer.

1) How will the provision of water and sanitation infrastructure contribute towards job creation?
2) How will the Hilton – Mondi Development Project contribute towards skills development?

1.11 The Case Study - Hilton Mondi Development Project

Hilton – Mondi Development Project is explained in this section, its location, what it seeks to achieve and projected future impact. The project is an infrastructure development project that involves the construction of Bulk Potable Water supply and the Sewer Reticulation and Link

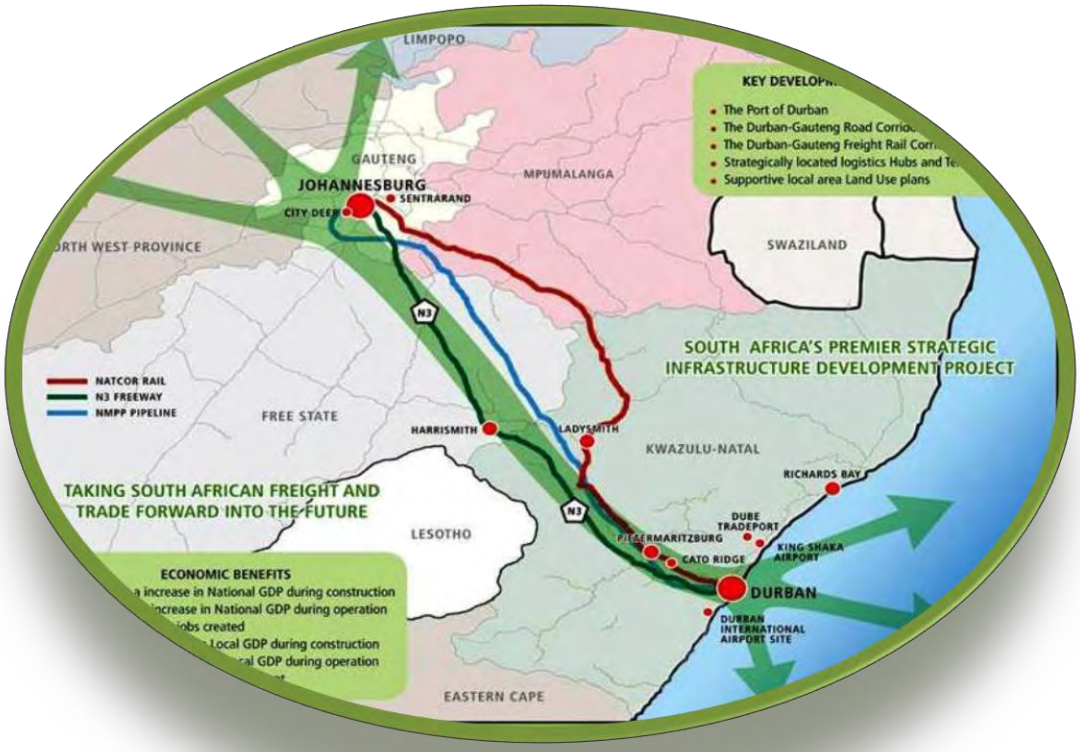
Services and Sewer Treatment Works at uMngeni Local Municipality between Hilton and Cedara Interchange.

The objective of the project is to provide enough Potable Water into the Hilton area and to build a Sewer Reticulation, Sewer Link Services and Sewer Treatment Works to unlock commercial development along the national road from Durban to Johannesburg in an area that is known as the N3 Corridor Development. The Corridor Development is also known as Strategic Integrated Project 2 (SIP 2) which refers to the national road from Durban to Johannesburg and is part of the National Infrastructure Plan (NIP). There are eighteen (18) SIPs that form the National Infrastructure Plan.

The purpose of the National Infrastructure Plan is to unleash infrastructure development along these eighteen corridors to unlock economic development. The project is coordinated from the office of the president which suggests its importance. SIPs are spread in all nine provinces and they form part of the provincial plans. The aim and the objective of National Infrastructure Development Plan was described by President Jacob Zuma during the state of the nation address on 09 February 2012 as follows, "the massive investment in infrastructure must leave more than just power stations, rail lines, dams and roads. It must industrialise the country, generate skills and boost much needed job opportunities" (State of the Nation Address, 2012). Figure 1.3 below presents the location of the HMDP from a national infrastructure development project perspective.

From a provincial perspective, HMDP is a critical part of the Provincial Growth and Development Plan (PGDP) which talks to the Provincial Spatial Economic Development Strategy (PSEDS) in relation to Commercial Business Parks, Freight Transfer and Warehousing. The project is linked to uMngeni Local Municipality's Spatial Development Framework (SDF) and its Spatial Development Strategy, the 8 Integrated Development Plan (IDP) goals linked to the six KwaZulu-Natal key performance areas which include economic infrastructure.

Figure 1.3: Corridor Development Project from Durban to Gauteng



Source: National Infrastructure Plan (2012)

The project will addresses the backlog of piped water and sanitation for uMngeni Local Municipality and responds to the challenge of infrastructure development as identified by (uMngeni Local Municipality IDP 2014/15, 2014). HMDP indicates a strong interconnection of the project with national, provincial and regional plans.

The project is a phased development whose impact is expected to be realized between 10 to 15 years in terms of the business proposal. The first 3 years focuses on the construction of water and sanitation infrastructure development that is expected to unlock further development and create 34 500 construction jobs over 10 to 15 years and 9000 permanent jobs. The project is expected to increase uMngeni local Municipality's revenue by R20 million and commercial investment (Lauresco Development, 2011).

Figure 1.3 above shows the proposed development and its phases; Section A is 21.7 hectares divided as follows, 20 hectares of Warehousing and Light Industries and 1.7 hectares of open space. Section A 2 is 10.1 hectares of Warehousing and Light Industries. Section B is 4.5 hectares which is made of 3.7 hectares of Business Park and Warehousing and 0.8 hectares of open space. Section C is 24 hectares of Business Park and Warehousing Office and the breakdown is as follows; 12 hectares of Business Park and Warehousing, 7 hectares of Business Park Offices and 5 hectares of open land. Section C 2 is 9.7 hectares of Business Park and Offices. Section D is 21.2 hectares of Retail offices and Medium density residents Precinct.

1.12 Key stakeholders in the project

The project is a public private partnership initiative that involves three partners which are uMngeni Local Municipality where the project is taking place, uMgungundlovu District Municipality, whose function is to provide water and sanitation and Laurusco Development, the developer. The land that is earmarked for development through this water and sanitation infrastructure development project is 100 hectares. When the project was conceptualized, the land belonged to Mondi which is why the project is called Hilton-Mondi Development Project. However the land was subsequently bought by Laurusco Development.

Figure 1.4: Proposed Development of Hilton-Mondi area

Source: Artic Sun Trading 17, 2010

1.13 The Memorandum of Understanding

The three stakeholders signed a Memorandum of Understanding (MoU) to assist in realizing the objectives of the project. In terms of the MOU, Laurusco Development committed to donate the land required for both the Sewerage Treatment Works, Bulk Water Reservoir and for the land required for the servitudes. The developer will provide internal services for both water and sewer at the developers cost and in compliance with the Environmental Impact Assessment (EIA). All internal services will be approved by uMngeni Local Municipality and on completion; the assets will be transferred to uMgungundlovu District Municipality on receipt of completion certificate. After completion, the developer will have a contractual liability for a period of 12 months. Internal

roads and external roads access will be constructed by the developer at its own cost to the municipal standard and transferred to uMngeni Local Municipality.

uMgungundlovu District Municipality will construct a 6.5km of 355mm uPVC Bulk Water Gravity Main that is big enough to guarantee the provision of portable water to the boundary of the development and install a bulk meter to measure water consumption. The District will also build Sewerage Package Plant as required by the development with sufficient capacity to meet present and future development needs and charge each property owner in line with the standard tariffs for water-borne sewerage disposal. The first sewer treatment plant will be in Zone A as reflected in Figure 1. 3 above and a further possible in Zone E subject to positive geo-tech results.

uMngeni Local Municipality will be responsible for processing the rezoning applications, waste collection and disposal.

1.14 The project location

From a national perspective, the project is located along the Durban - Free State - Gauteng Logistics and Industrial Corridor also known as Strategic Integrated Project 2 (SIP 2), part of the National Infrastructure Development Plan. From a provincial perspective HMDP is along the KZN Provincial Corridor Development on both sides of the N3 Freeway at uMngeni Local Municipality, between Hilton and Cedara Interchange. Hilton is about 10 Km from Pietermaritzburg, the Capital of KwaZulu-Natal and the legislative sitting of the KwaZulu-Natal Province. The administrative town of uMngeni Local Municipality which is Howick is another 14 km from Hilton. The project is surrounded by Ward 6, 7 and 8 which are urban in nature.

Figure 1.5: The project location in relation to the N3 Corridor Development

Source: Artic Sun Trading 17, 2010

1.15 Research methodology

Literature review forms the basis of this research study and a range of secondary data including books, journal, website search, publications, government policies, government programmes, and strategies from different countries around the world, case studies, master plans and so forth were reviewed. A broad perspective on infrastructure development ranging from railway lines, construction, telecommunication, road infrastructure, water infrastructure and sanitation

infrastructure was established through literature review. Different roles played by infrastructure development were observed starting from infrastructure as a support for economic development to infrastructure as a driver for economic development.

Qualitative methodology was used to collect primary data and factors such as the nature of the problem, data collection methods, data collection tool, analysis, influenced the choice of the research method (Creswell, 2009). Data was collected through the scheduled interviews with project partners, public sector players, stakeholders. Some respondents were identified during the interviews.

1.16 The structure of the research

The study is structured as follows. Chapter one introduces the research study through the background, the purpose, the objectives, questions to be answered and the motivation for the research study and the importance of the study is explained. Hilton – Mondi development Project is presented in this chapter, where the project is taking place, its relation to national and provincial strategic objectives, key stakeholders to the project, roles of different stakeholders, the research methodology applied.

Chapter two focuses on the theoretical background which is the basis for the study, different infrastructure development programmes and projects are presented to assist in debating the research problem.

Chapter three discusses the methodology and the techniques used to collect primary data and secondary data and challenges encountered during the study are discussed.

The findings of the research study are discussed in chapter four. The discussion includes comments made by respondents and their expectations.

The summary of the research findings is presented in chapter five with lessons learnt and recommendations on how infrastructure development projects could be improved to ensure maximum benefits to the community.

1.17 Conclusion

A general conclusion that seeks to ascertain whether infrastructure development particularly water and sanitation can be regarded as a vehicle for local economic development is declared. The motivation and the importance of the study are explained. Critical questions the study seeks to answer are defined. The case study and its relation to other strategic objectives are presented in this chapter. Hilton-Mondi Development Project is located in an area that is prioritized for development by both the National Development Plan and the Provincial Growth and Development Plan which implies chances for investment are immense, something that will uplift the economy of uMngeni Local Municipality and create job opportunities. The qualitative research methodology to be used to collect data that will assist in determining whether water and sanitation infrastructure development's effects on job creation and skills development is described.

CHAPTER 2

Literature Review

2.1 Introduction

Infrastructure development is a broad concept that covers a number of sectors from construction, transport, airport development, electricity, port development, dam construction, sanitation treatment plant, water reservoir, government capital projects and so forth. Many aspects of infrastructure development have been researched and the research dates back to the early 1930's but there is no generally accepted definition. The range and the nature of infrastructure development makes it difficult to have a common definition because infrastructure ranges from government investment on infrastructure development programmes to specific projects such as the construction of public hospital, road maintenance and highway repair (Bruce et al., 2005). Infrastructure development also refers to traditional infrastructure such as communication infrastructure, sewer system, water distribution, electricity and so forth. (Roller and Waverman, 2001).

The contributing factor to the lack of common definition is that infrastructure development is a complex phenomenon and knowledge comes from different disciplines. While some research studies emphasis the importance of differentiating between different types of infrastructure development because their impact is different, for example the impact of electricity infrastructure is different from the impact of transportation infrastructure development. Of the many types of infrastructure development, this research study focuses on water and sanitation infrastructure development and seeks to determine how it impacts on job creation and skills development. This chapter has three sections.

Section two starts by looking at infrastructure development and its impact on economic development and job creation. It concludes by looking at the number of different roles played by infrastructure development ranging from being a support for economic development during the early stages of assets building to being a driver for economic development. Section three discusses water and sanitation infrastructure and economic development. Its impact on job creation and skills development is discussed in detail. The social implications of water and sanitation infrastructure, the effect it has on social needs and the quality of life are briefly discussed. Infrastructure development became a government strategy during emergency and when governments were under pressure to deal with the challenges of poverty and unemployment in developed and developing nations and that function is discussed in this section. Government investment on infrastructure development programmes particularly Public Works Programme that focuses on intensive labour method and the Expanded Public Works Programme is examined. The last section of the chapter briefly explores water and sanitation and its impact on entrepreneurial development, and water and sanitation infrastructure as a revenue generator. The chapter concludes by examining the environmental impacts of sewer treatment plant.

2. 2 Infrastructure development and economic development

Numerous research studies that look at the effect of infrastructure development towards economic development have been undertaken and most of these studies show two distinguishing features of infrastructure development. The first is that infrastructure development provides the foundation for economic activity. Secondly, infrastructure development generates economic spill-over and directly and indirectly affects economic development. These research studies range from telecommunication infrastructure, railroad infrastructure, construction, roads infrastructure, water infrastructure, sanitation infrastructure and so forth. (Roller and Waverman, 2001; Pereira and Andraz, 2012; Lean, 2001). Common to all these studies are inferences that contend that there is a relationship between investing in infrastructure development and economic development.

The connection was confirmed in a study on investment in telecommunication and agriculture infrastructure in China which transformed the Chinese economy. Two noticeable impacts that

were recorded after a massive investment in infrastructure and attributed to that investment was the growth of small enterprises and entrepreneurship by 35% (Rimmer, 1997). The second effect was increased production that emanated from the investment in agriculture infrastructure in rural China and confirmed by the Census data which recorded an increase in agricultural production after 1978 (Fan and Zhang, 2004)

The Planning Commission of India also undertook a study in 2006. The aim of the study was to measure the effect of infrastructure on industry performance. Data obtained by the Center for Monitoring Indian Economy identify inadequate investment on infrastructure as a main constraint towards the country's growth. The study concluded that infrastructure investment will improve the country's competitiveness and expand its export capability. Similar findings were established in Malaysia between 1976 and 1980 (Lee, 2011). It is these types of research findings that stimulated interest which began to look at the impact of infrastructure development on economic development (Pereira and Andraz, 2005). The effect of infrastructure development and economic development can be concluded by quoting John F Kennedy who said "it was not the wealth of a nation that build roads, but the roads that build the wealth of a nation" (Pillay, 2012, p. 1).

Lack of investment in infrastructure was on the other hand seen as a hindrance to development in developing countries (Mitra, et al., 2012). In South Africa, two important government strategic documents are worth mentioning, the National Development Plan 2030 (NDP 2030) and the Provincial Growth and Development Plan (PGDP) developed by the province of KwaZulu-Natal. Both documents identify under investment in public infrastructure as key issues affecting economic growth in the country (Sleight, 2011).

These documents go further to identify what is referred to as development nodes and corridors that have been classified as "economic support areas". These nodes include SIP 2 which is the Durban-Free State-Gauteng logistics and Industrial Corridor, SIP 6, the Municipal Infrastructure Project

and SIP 18 which is Water and Sanitation. It is in these nodes where government and private sector will invest for growth (Umgeni Water, 2014, p. 40 - 41).

Improvement of water resource and responsive economic infrastructure networks are important strategic objectives of the National Infrastructure Development Plan and water and sanitation is Strategic Integrated Project (SIP) 18 of the National Infrastructure Development Plan (Umgeni Water , 2014).

2.3 The roles of infrastructure development

An analysis of the history of infrastructure development, which includes water and sanitation, shows different roles played by infrastructure development since the early 1930s when the focus was on building the assets (Luiz, 2010; Truffer et al., 2010). The emphasis on building assets was aimed at supporting the growing economy. The prioritization of this role was implemented in Malaysia between 1957 and 1970 when the New Economic Policy was developed. The New Economic Policy (NEP) prioritized investment in infrastructure to support the growing economy and resulted in 20% of the Malaysia's budget being invested in infrastructure development. The Malaysian Plan outlines the role infrastructure must play to achieve the goals of the NEP (Lee, 2011, pp.1-4). Between 1990 and 2007 Malaysia invested RM 175 billion (Malaysian Ringgit) on infrastructure (Lee, 2011, p. 7). Umgeni Water Infrastructure Master Plan for the province of KwaZulu-Natal affirms this role by allocating the bulk of its water infrastructure in areas that are categorised as "economic support areas" and "economic value adding areas" (Umgeni Water, 2014, p. 40).

Soon after many African countries attained independence, the role played by infrastructure development changed from supporting economic development to being the driver of economic development supported by economic policies that were implemented in the late 1970s coupled with massive infrastructure investment (Anaman and Osei-Amponsah, 2007). In Indonesia, infrastructure development programmes acted as a catalyst for economic development and

influenced development including the sewage systems that connected millions of people that had no sewer before (Kusharjano and Kim, 2011).

2.4 Infrastructure development and job creation

Jiwattanakulpaisarn et al., (2009) confirm that increased productivity that is directly linked to improved infrastructure has an impact on job creation. In Portugal infrastructure development led to the creation of 230 jobs for every 1 million euros invested in transport infrastructure where the biggest contributors were port development, municipal roads and national roads (Pereira and Andraz, 2005). The impact of transport infrastructure sector varies per specific sectors, for example, international airports influence job creation around accommodation and food services while railroads influence the retail sector (Padeiro, 2013).

Of the various infrastructures, the construction sector is the biggest contributor to job creation which stems from the multiplier effect and the demand for material from other sectors (Lean, 2001). Construction is the leading generator of employment opportunities especially for the unskilled and semi- skilled workforce (Ozkan et al., 2012; Pradhan and Bagchi, 2013). A study done in the Middle East and North Africa uncovers that 18.2 million people were employed in the construction and infrastructure services sector and of the 18.2 million; 11 million were in the construction sector and 7.2 million in infrastructure services (Ianchovichina et al., 2012). In Iran, 40% of its employed people are in the construction and infrastructure service sector while Egypt and Yemen records reveals that 11% of the employed persons are in the construction sector (Jiwattanakulpaisarn et al., 2009).

The importance of investing in infrastructure was highlighted at a round table discussion of the European Forum for Manufacturing (EFM) to politicians in the European Parliament on 15 May 2012. The discussion was sponsored by the Committee of Europe Construction Equipment (CECE) and the European Construction Industry Federation (FIEC) (Wezel, 2012). During the discussion, speaker after speaker emphasised the importance of the link between growth and

investment in infrastructure. It was emphasized that investment in infrastructure would improve the competitiveness of the European Union and its potential for job creation. The conclusion was that investment in infrastructure cannot be delayed and that it must be supported by regional policy and sound lending policy from the European Investment Bank (Wezel, 2012).

In South Africa, the important role played by the construction sector in job creation was experienced during the construction of Stadia in preparation of the 2010 FIFA World Cup. Soon after the construction of infrastructure and stadia, the industry experienced a slowdown that was confirmed by Group Five CEO, Mr Mike Upton, who agreed that after the World Cup, Group Five revenue dropped by 19% (Sleight, 2011). This aligns with the findings of a research study done in Ghana which concluded that after the completion of major infrastructure projects was followed by a decline in the economy (Anaman and Osei-Amponsah, 2007).

The provincial Department of Transport in KwaZulu-Natal introduced a programme known as the Zibambele Programme in 2000. The aim of the programme was to create job opportunities and provide income to rural households. The programme was about the upkeep of KwaZulu-Natal rural access roads. There were about 10 000 contractors involved in the programme during the 2002/3 financial year. The success of the programme in creating job opportunities for rural people inspired the provincial department to increase the target for contractors involved to 14 000 and ultimately to 40 000 with a budget of R56 million (Phillips, 2004, p. 4-5).

Puerto Rico invested US $1billion on infrastructure which was projected to create 12 000 jobs (Pueto Rico Highways And Transport Authority, 2013). The American Recovery and Reinvestment Act of 2009 (ARRA) which led to the establishment of Infrastructure Bank, was a vehicle for creating and sustaining jobs during economic recession in the United States of America. It was an Act that was passed to ensure job creation through infrastructure investment (Landers, 2010).

Scotland invested in advanced communication infrastructure that was designed to enhance economic development and to make sure that existing companies of Highlands and Islands Region do not lose business as a result of poor communication data. The investment created an opportunity for data intensive business to expand, enabling new businesses to emerge and created an environment that was attractive for investment. While the initiative improves employment levels, 186 new jobs were created in five years excluding the multiplier effect. The investment resulted in many companies expanding their business which further contributed to more job opportunities (Richardson and Gillespie, 1996).

2.5 Water and sanitation infrastructure and economic development

The provision of water and sanitation in an on-going and sustainable manner and the reduction of backlogs was the goal of the New Partnership for Africa's Development (NEPAD) in Africa (Stephen, 2003). Access to water and sanitation is goal number ten of the Millennium Development Goal. Besides the economic impact of goal number ten of the Millennium Development Goals, it is also important for the achievement of other goals such as education, gender, infant mortality, maternal health and so forth. The goal calls for the provision of water and sanitation to protect people and the environment and the goal aspire to reduce by half the number of people without access to water and sanitation by 2015 (United Nations, 2002).

An evaluation of progress on goal number ten undertaken in 2002 acknowledged that achieving the goal was a daunting task that was on track and could be achieved by 2015 (Anand, 2006). However another report from the World Water Assessment Programme highlighted serious concerns regarding access to sanitation and the estimation was that by 2015, 2.4 billion people throughout the world will still be without sanitation (Landers, 2009, p. 23).

The importance of water and sanitation was further emphasised during the World Summit on Sustainable Development commissioned by the United Nations (UN) through the Commission on Sustainable Development (CSD) 10 at the Summit held in Sandton, Johannesburg, South Africa

from 26 August to 04 September 2002 (United Nations, 2002). The Summit brought together important role players, stakeholders including heads of states to bring to the world's attention the challenges facing the world. The challenges were about improving people's lives and conserving natural resources with increasing demands for food, water, sanitation, shelter, economic security and so forth.

In China the shortage of water was affecting economic growth over and above the forecast that the population growth is expected to grow by 54 % by 2030 which will add more pressure on increasing demand for water. The Asian Development Bank estimated that between 2011 and 2050, US $3 trillion will be needed by the Pacific region for development and that the bulk of that funding would be for water (Chen and Warren, 2011). In Malaysia billions of US dollars were invested in water and sewage system from 2001 to 2005 followed by 2006 to 2010. The investment was aimed at driving economic development (Lee, 2011, p. 2).

The impact of water infrastructure towards economic development cannot be underrated. In rural areas, the provision of clean water facilitates the participation of women in income generating activities which contributes into the household's income and releases young girls to attend school which later enables them to participate in labour market activities (Ilahi and Grimard, 2000).

In Australia investment in water infrastructure raised agriculture productivity by 36% between 2000 and 2005 and further unlocks investment of US $1.7 billion between 2007 and 2008 (Chen and Warren, 2011, p. 94).

The relationship of water and sanitation infrastructure towards economic development saw countries like Poland in the eastern bloc using water and sanitation infrastructure investment to convince the European Union (EU) to allow the country to become members (Hamilton, 2001, p. 15). Hungary used the same approach when they made huge investment in local government

water and wastewater treatment plant infrastructure in order to attain membership of the European Union (Jokay, et al., 1998).

Because of the important role played by water and sanitation towards economic development, every three years the World Water Assessment Programme, a programme at the United Nations, writes reports that emphasise the important role played by water in development and in economic growth (Landers, 2009). The United Nations Millennium Project Task Force on water and sanitation recommended that water and sanitation should be part of the development agenda (Anand, 2006).

2.6 The social implications of water and sanitation infrastructure

The provision of clean water is a basic human right that contributes towards health care and enhances the quality of life. It is also important for the achievements of other goals such as education, infant mortality and maternal health. Access to water and sanitation prevent other issues such as water contamination, cholera, diarrhea and so forth (Anand, 2006). In Ghana, investment in water improved the health of children while in Brazil; children's height was found to be affected by access to modernised sewage disposal, piped water and electricity (Ilahi and Grimard, 2000).

The social implications of infrastructure development were also established when government introduced Community Based Public Works Programmes (CBPWP) where some of the criteria for approving projects was that the project should build assets that are required by the community and which will improve the welfare of the community (McCutcheon, 2001). When Public Works Programmes were first introduced in the United Kingdom, it was regarded as an anti-famine programme because most of its programmes were focused at addressing starvation. In South Africa it was used to address the problem of poor whites during the great depression of the 1930s (McCutcheon, 1995, p. 334).

The provision of running water is known to release women from non-paying jobs of collecting water into income earning jobs and ultimately increases personal and household income and ultimately the Human Development Index (HDI) (Kusharjano and Kim, 2011, p. 122).

The United Nation held a conference on water and sanitation in 1977 and the conference was followed by the declaration of the International Drinking Water Supply and Sanitation Decade in 1980. Sanitation was declared a basic human need and water was declared an economic commodity (Smout, 2000). Soon after the advancement of water and sanitation into the international agenda by the United Nation, between 1981 and 1990, 190 000 people were provided with clean water and 119 000 people were provided with sanitation (van Imschoot, 1992).

Studies suggest that infrastructure acts as a catalyst for economic development that results in job creation, at the same time the Human Development Index (HDI) improves when people earn higher income, eat good food and live a healthy life due to employment opportunities that ensue from economic development (Kusharjanto and Kim, 2011). This relationship between infrastructure development and the Human Development Index was validated in a study that was undertaken in Java which concluded that a 1% increase in water supply leads to a 0.03% increase in the Human Development Index. The study further recommended that government should invest in designing policies that encourage infrastructure investment to accelerate economic and human development (Kusharjanto and Kim, 2011, p. 122).

2.7 Water and sanitation infrastructure and job creation

Water and sanitation infrastructure development has been the subject of study for a long time and studies vary from water infrastructure management, ecological to economic analyses (Truffer et al., 2010). Many of these studies agree that in-adequate supply of water and sanitation is a hindrance to a number of economic related activities. A number of research studies declare that

water and sanitation infrastructure impact positively towards job creation (Buch and Dixon, 2009; Ianchovichina et al., 2012). The positive impact starts from the construction phase throughout the life cycle of the project (Koo et al., 2008)

In Morocco, a critical shortage of water encouraged the government to seriously consider constructing a dam; however the decision by government to construct a dam was motivated by the appeal to address the challenges of unemployment, underemployment and vocational training. The same motive was observed in Sudan where the construction of water reserves was designed to employ more people and to be labour intensive. Job creation was the main objectives of water works programme in Madagascar, however the programme went further and encouraged the development of small local enterprises (van Imschoot, 1992, p. 127-128).

In four countries which include India, Madagascar, Morocco and Sudan, water infrastructure development projects were facilitated through the Public Work Programme using labour intensive methods. The four countries spent between 33% and 77% of the project budget on remuneration. In India and Sudan which recorded 67% and 77% respectively, 48% of each countries expenditure went to women involved in the construction phase (van Imschoot, 1992, p.129).

Another example that corroborated the relationship between water and sanitation infrastructure development and job creation happened in India where there was a construction of a purification pond for 18 months. Of the US $215 000 project budget, 52 % was spent on wages. In Sudan substantial job opportunities were recorded when 3 programmes for improving water infrastructure were undertaken in the White Nile, from 1987-1990, North Kordofan from 1989-1990 and North Darfur from 1989-1990. The following days of work, 232 000, 96 000 and 19 000 were created respectively by the 3 programmes. All programmes made sure that between 3% and 5% of the construction cost went to local manufacturers (van Imschoot, 1992, p. 130). This ensured job creation and local economic development was maintained.

Other possible employment opportunities created during water infrastructure development include digging of trenches for pipelines, cleaning and rehabilitation of canals and so forth. In Madagascar, for example, water infrastructure facilitated the construction of irrigation systems and created job opportunities, but further employment opportunities were generated when small irrigation schemes were maintained subsequently 180 days of work per hectare were created per annum (van Imschoot, 1992).

In the United States 680 000 jobs were created during infrastructure development in 1990. Of the total figure, water and sanitation combined created 100 000 job opportunities (Andreassen and Berman, 1994, p. 25). By 2005, US $41 billion was earmarked to be spent on infrastructure development and the estimation was that 833 000 new jobs would be created as per the Bureau of Labour Statistics in 1994 (Andreassen and Berman, 1994).

How water and sanitation infrastructure impact on job creation is very dynamic, in Branenburg, in East Germany after 1990, 50 billion euros was invested in transforming water supply and waste water disposal systems and 930 million euros was spent in sewage disposal systems. The investment raised household's connection to public supply and disposal system from 53% to 85% from 1990 to 2007. Of this expenditure, a reasonable percentage of the construction costs was spent on the local communities in terms of wages which had a spillover effect on local businesses because of an increase in earnings by the local community (Huning et al., 2011, p. 1504). This demonstrated how water infrastructure development can act as a catalyst towards local economic development.

2.8 Size of the scheme

Research suggests that small and medium water infrastructure development projects have economic benefit to businesses within the region of implementation and that benefits are for short and long term (Gadenne and Hefferran, 2012). The most benefits seem to come from small and medium size projects that provide the most opportunities through labour intensive methods and

training compared to big projects such as dams that require mechanisation. Small and medium size projects were also found to attract labour from the poorest sectors of the population that need money and food. Community water schemes and sewage systems serving about 10 000 people were identified as most critical for job creation (Haarmeyer, 2011, p. 43).

Umgeni Water built a scheme in the Tribal Authority of Vezokuhle at Sisonke District Municipality, in KwaZulu-Natal. The scheme was managed by a committee made of local people. During the construction phase, labour intensive methods were used and only local labour was involved in the project. Capacity building and training programmes were afforded to these people and by 2003 the scheme had 3 permanent staff members and was serving 6 000 people (Stephen, 2003, p. 51-53).

2.9 Water and sanitation infrastructure and skills development

When there was a mind shift in terms of the role of infrastructure from building infrastructure assets that support the growing economy towards infrastructure as a driver for economic development, the issue of sustainability and capacity emerged. Skills development became prominent from the eighties towards the nineties during the evaluation of projects. One of the reasons mentioned earlier regarding the mind shift towards skills development was the issue of sustainability in that many projects that had been implemented were unable to yield the expected benefits. Irrigation infrastructure, for example, would be constructed and handed over to the beneficiaries without ensuring that the beneficiaries understand how to operate and maintain the infrastructure (Frank, 1999).

It was these challenges that prompted a need to look at human resource development instead of focusing only on building assets when infrastructure development was being developed as a concept. Since then training programmes or skills development became permanent features for infrastructure development projects. Training focuses mostly on the beneficiaries to make sure that they would be able to operate and maintain the infrastructure provided. As a result, many

water infrastructure development programmes focuses more on human resource development as opposed to the physical infrastructure (Frank, 1999, p. 52-54).

In Morocco, and many other countries, people employed without any skills at the beginning of projects, completed the programme having acquired skills in formwork, masonry, stone cutting and in the production of precast concrete elements (van Imschoot, 1992, p. 134).

When South Africa intensified infrastructure development programmes after 1994 the focus was on traditional infrastructure such as water supply, roads, electricity and so forth. However employment opportunities and skills development were central to these programmes (Blaze, 2008). The benefits from infrastructure development to a certain extent depend on the purpose. If employment opportunities are generated as primary objectives, benefits are maximised if skills development or training is provided during the construction phase (Gadenne and Hefferan, 2012).

A classic example of an infrastructure development project which balanced job creation and skills development was implemented at Ilinge in Transkei in 1986. The project was a public works programme and it included the supply of water and sewage reticulation and treatment. The service of a consultant to trained small contractors on the use of intensive labour methods was sourced. The programme was able to achieve the development objectives of increased employment per unit of expenditure but also contributed in the development of individual skills during the construction of assets (McCutccheon, 2001). Because of the success of the project it was escalated to Soweto where the service provider was appointed to do the upgrade of water mains for the Soweto City Engineer's Department using the same method used at Ilinge in the Eastern Cape. The success of the two projects placed more emphasis on nurturing and on the training of contractors to learn how to use intensive labour methods (McCutcheon, 1995, p.334). This is very important especially for the EPWP projects that are being implemented throughout the country.

In Limpopo the Gundo Lashu programme, initiated in 2001, selected 24 small contractors thirteen of whom were women. These contractors received a 3 years full time training on intensive labour methods. In 2003/4 financial year, the programme received a budget of R50 million from the provincial government and in the same year each contractor employed between 60 and 100 workers and their payment was task based in line with EPWP guidelines. The programme was so successful in creating job opportunities but most importantly in increasing skills levels of the small contractors (du Toit, 2005).

2.10 Public Works Programme and job creation

It is the responsibility of government to deal with poverty, unemployment and inequalities in any country. When unemployment reached unacceptable level, it is the responsibility of government to come up with solutions. It is also common for government neither to seek solutions from the private sector nor to partner with the private sector in seeking for solutions. Private sector is also known for its tendency towards wealth creation which is contrary to labour intensive methods. So, it was the desire for solutions that forced government to explore unconventional methods for employment creation which brought about the Public Works Programme because the private sector could not come up with unemployment solutions (Gadenne and Hefferan, 2012).

During the 1950s and 1960s, international organisations like the International Monetary Fund (IMF), the International Labour Organisations (ILO) and the World Bank were major sponsors of Public Works Programme (du Toit, 2005, p. 659). In countries like Zimbabwe, Botswana, and Burundi, Public Works Programme was formally incorporated into government plans and policies in the 1970s. When Public Works Programmes were first initiated, they were rolled out as poverty relief programme aimed at alleviating poverty and at a lower extent to create employment opportunities (du Toit, 2005). The importance of Public Works Programme was at the centre of discussion between the African National Congress (ANC) and the Congress of South African Trade Union (COSATU) in 1991 when the issue of creating one million jobs was mooted.

In South Africa, unemployment reached a crisis level in 2003 and government was under pressure to deal with the high level of unemployment. Government responded with a strategy that proposed that unemployment must be reduced by half between 2003 and 2014 and Public Works Programme was to play a leading role in responding to the unemployment challenges. The target was that 450 000 jobs will have to be created per annum against an average of 120 000 jobs created annually between 1996 and 2002 (du Toit, 2005). The target seems to be a tall order if one compares the jobs created between 1996 and 2002.

However the approach by the South African government confirmed research studies which uphold that infrastructure development is a sector that is mostly targeted by government when job creation is needed in the economy in both developing and developed countries (Gadenne and Hefferan, 2012, p. 43). The American Recovery and Reinvestment Act of 2009 (ARRA) laid the foundation for the establishment of an Infrastructure Bank which was used as a vehicle for creating and sustaining jobs during economic recession in the United States of America (Landers, 2010).

2.11 Labour intensive method

Structural unemployment was too high in South Africa in 2003. The narrow or official definition cited 4.6 million people as being unemployed while the expanded definition put the figure at 8.3 million (Phillips, 2004). The majority of the unemployed were unskilled and semi-skilled work force. Public Works Programmes were unable to cope with the challenges and intensive labour methods that were introduced.

Labour intensive method is defined by McCutcheon to imply operations where more labour is used instead of other means of production or in simple terms it mean the substitution of equipment where possible with manual labour to create more employment opportunities (McCutcheon, 1995, p. 332).

When labour intensive programmes were initiated in South Africa between 1980 and 1994, such initiatives showed little difference from the Public Works Programme in terms of the number of

job opportunities. One of the reasons was that expenditure fail to produce the intended outcome nor did it reach the targeted recipients. Another failing point was that intensive labour method was only on paper. While many private contractors claimed to have adopted the use of labour intensive methods, there were no commitment contractors and many did not have the capacity to handle labour intensive work. As a result, not enough jobs were created by the private sector (McCutcheon, 2001).

The South African Federation of Civil Engineering Contractors (SAFCEC) realised twelve years later in 1992 that intensive labour methods could be used by the industry and they recommended that the approach be aligned with design. The federation further recommended that training and capacity building was required because new skills had to be re-learnt to ensure that labour intensive methods succeed because technology had taken over most of the functions. While the approach would create jobs for the unemployed, training would also improve the skills levels of the work-force and give them an opportunity for future employment (McCutcheon, 2001, p. 279).

The application of labour intensive methods in countries like Botswana and Kenya displayed positive results. In Kenya, 10 000 people were employed during the construction and maintenance of assets while Botswana recorded 3 000 people employed on similar programmes (McCutcheon, 2001).

2.12 Expanded Public Works Programme

The introduction of the word Expanded to Public Works Programme meant that public works programme would no longer focus only on job creation. This marked a strategic change from infrastructure or assets development towards community development or human resource development. As mentioned earlier, some of the infrastructure development programmes successes were restricted because the beneficiary lacked the skills and the capacity to manage and maintain the infrastructure provided. Expanded Public Works Programme introduced new criteria that were to be adhered to if projects were to be funded through EPWP. One of the criteria was

that the building, maintaining and rehabilitation of infrastructure should serve the basic needs of the communities and encourage inclusive economic activity (McCutcheon, 2001, p. 279). For Community Based Public Works Programme (CBPWP), the criteria for Non-Government Organisations (NGOs) was that CBPWP should build assets that are required by communities, which will improve community's welfare and that assets should be managed and maintained by the community on completion (McCutcheon, 2001).

The South African government set aside R15 billion for the implementation of Expanded Public Works Programme (EPWP) and the projection was that 1 million jobs would be created between 2004 and 2009. Of the one million jobs to be created, the projection was that 750 000 were to come from infrastructure development. Without going into much detail on the success and the failure of the Expanded Public Works Programme (EPWP), ultimately 1 069 819 temporary jobs were created through the Expanded Public Works Programme however the actual expenditure of the entire programme amounted to R42 billion which was more than double the initial budget of R15 billion (McCutcheon and Parkins, 2012).

Community Based Public Works Programme was allocated R100 million between 1995 and 1996 and another R85 million in 1997. The second budget was specifically allocated to rural areas where 140 000 temporary jobs were created and 19 000 were described as sustainable (McCutcheon, 2001, p. 279-282).

It is important to also briefly reflect on the limitations of the Expanded Public Works Programme and the Community Based Public Works Programme that were recognised after implementations. The limitations centered on planning, data collection, monitoring and control mechanism (du Toit, 2005, p.3; McCutcheon and Parkins, 2012).

Most of the data and reports on Expanded Public Works Programme and Community Based Public Works Programme only focus on job creation. Reports and evaluation studies did not reflect the

types of programme undertaken. As such, water and sanitation programmes and projects undertaken during this phase could not be obtained to reflect their impact on jobs and skills development. Also time constraints did not allow the researcher to further investigate the matter.

2.13 Water infrastructure and entrepreneurship development

Davis et al., (2001) conducted studies in two cities of Wobulenzi and Lugazi in Uganda after the improvement of water infrastructure, Davis found that the improvement of water infrastructure was beneficial to small and medium enterprises. It was also learned that after the improvement of water supply, some businesses introduced new products into their shops because of reliable water supply. Others were employing more staff because they had more space to keep goods in space that was initially reserved for keeping water. A restaurant owner reported that having reliable water supply enables him to open his shop earlier and to serve his customers because in the past he had to close down his shop and go out looking for water. The owner of a butchery reported having made more business after the connection of water supply because his butchery was clean and he could clean his goods and knives frequently (Davis, et al., 2001, p. 1761).

During the construction of water scheme at Vezokuhle Tribal Authority at Sisonke District two individuals were selected and assigned for training in plumbing that would be required to deal with operations and maintenance post construction. The transportation of material during construction was assigned to local subcontractors which encouraged entrepreneurial development (Stephen, 2003, p. 54).

2.14 Sewer Treatment Plant and the Environment

Over and above the employment and skills development that will be generated during the construction of a Sewer Treatment plant, its construction will have multiplier effects like many other infrastructure development projects. The Hilton area is currently using septic tanks and if Hilton has a high water table, deteriorating septic system could affect ground water and waterways which could threaten the quality of water (Landers, 2010, p. 30). Therefore the construction of

the sewer treatment plant which could lead to new connections to the treatment plant will reduce the negative environmental impacts that could results from weakening septic tanks (Stormer et al., 2009).

2.15 Water infrastructure and revenue generation

Water and sanitation infrastructure development established in Harrismith corroborated the argument that water infrastructure could contribute towards revenue generation for the local municipality. During the construction of water and sanitation infrastructure in Harrismith, the community of Harrismith Central indicated that they were willing to pay for the service. The positive attitude from the community of Harrismith Central was going to contribute positively towards municipality's revenue (Hlahla, 1999, p. 581). Revenue generation is very important for the maintenance of infrastructure (Gopakumar, 2009).

There is a debate on water infrastructure projects and the argument that costs outweighs the economic benefits and the counter argument (Gadenne and Hefferan, 2012, p. 43). The debate would be an important issue to follow from a South African context where the provision of water is an electioneering tool as well as a human rights issue. How the balance is structured between the provisions of free water as an election promise, water as a human right issue, inability to pay for water due to high levels of unemployment, indigent policy particularly in rural municipalities, poor maintenance of water infrastructure resulting in water loss would be an interesting issue to investigate under this debate. However the debate is not for the purpose of this study.

The decommissioning of septic tanks and the installation of new sewer lines in the Hilton area will have economic spinoffs to uMgungundlovu District Municipality in the form of revenue that will be generated from the service. Something similar happened in Hungary where the funding of municipality's infrastructure such as water, sewer and so forth was undertaken by a local municipality through funding that was raised from grants, loans and other donation. (Jokay et al., 1998, pp. 3 - 4).

2.16 Conclusion

Infrastructure development is a complex subject that does not have a common definition because it covers several disciplines. From the early 1930s, different researchers have been investigating linkages between infrastructure development, economic development, job creation and skills development and the conclusion has been that infrastructure development has a positive impact in all of them (Pereira and Andraz, 2005; Buch and Dixon, 2009; van Imschoot, 1992). The history of infrastructure development identified different roles played by infrastructure development including the strategic change from the physical infrastructure to the incorporation of human resource development that addresses the challenge of sustainability (Frank, 1999). The negative impact of under investment in infrastructure that characterized developing countries has been articulated.

Studies of water and sanitation infrastructure in particular confirm the ability to act as a vehicle for job creation and skills development are strengthened by government strategies. Investing in water and sanitation infrastructure could also be used as a revenue generator for local municipalities. Based on the literature review, it is critical to assess how the provision of water and sanitation infrastructure through the Hilton-Mondi Development Project will fair and the research methodology used by this study is discussed in chapter three.

CHAPTER 3

Research Methodology

3.1 Introduction

The purpose of this section is to discuss the research methodology used during the study, the sampling method, the procedure and the manner in which the secondary and primary data were collected. Challenges encountered during the research and the analysis that follow are also discussed.

The choice of the research approach was influenced by numerous factors which includes the research process, data collection methods, the sample size, the nature of the problem, data collection tool, duration of the research, the cost of research and the analysis of data (Creswell, 2009; Tustin, et al., 2005). The objective of the research study was to evaluates how water and sanitation infrastructure development impact on job creation and skills development.

3.2 Qualitative method

A qualitative approach was chosen as the method through which primary data was to be collected and there are a number of factors that contributed to the choice of the research approach. These factors include the nature of the research approach which is exploratory in nature and seeks to get insights in a less structured manner. The amount of time available to conduct the study by the researcher which was very limited, results from the study were not meant for generalisation, instead the research seeks to extract views and opinions from the respondents (Creswell, 2009; Tustin, et al., 2005). The approach would enable the researcher to test the validity of a theory in real context and to evaluate government strategies and their effectiveness (Leedy and Ormrod, 2014).

Qualitative approach is sometimes referred to as value judgment because it generates information that cannot be generalised. The approach pursues an understanding in a less structured approach (Tustin, et al., 2005). It uses in-depth interviews and selects a small sample of people (purposive sample) who will be able to share information on the situation that is being investigated. Its importance is based on the fact that it enables the researcher to test theories in a real context (Leedy and Ormrod, 2014).

Hilton – Mondi Development Project was chosen as a subject to study because case studies provide an opportunity through which the qualitative approach can be conducted (Creswell, 2009). The project would give the researcher an opportunity to concentrate on a single case because of its exclusivity. It would promote an understanding of similar circumstances and is appropriate for understanding how certain things change due to intervention. Information obtained from this study could be used to corroborate the theory despite the fact that it cannot be generalised (Leedy and Ormrod, 2014).

The conditions that must be adhered to for choosing the approach is that, the study should ask the why and the how questions, there should be no control of the event being studied and that the study should focus on the contemporary events as opposed to the historical event (Wahyuni, 2012). The Hilton-Mondi Development Project is taking place during the course of the study and the objective of the study is to evaluate how it will impact on job creation and skills development. The interview schedule includes open ended questions that seek to elicit insights and value judgment from interviewees in a less structured and more flexible manner. All these factors concur with the above conditions and make the project suitable for study. The case study will allow the researcher to explore and to collect detailed information that will be important for analysis (Creswell, 2009).

There is a strong recommendation that a case study should use multiple methods of data collection and analysis to enable comparison (Wahyuni, p. 72, 2012). Unfortunately for a number of reasons

which includes time constraint, a single researcher and more, it was not possible to use multiple methods of primary data collection, the limitation that goes with the chosen research approach is acknowledged.

3.3 Data collection

There are different types of data used in a research study. The first type of data is known as the primary data. Primary data is defined as data that is collected to solve a particular problem. It can be collected through fieldwork which can be contracted or can be done by the researcher. The other form of data is called secondary data and is usually collected from books, journals, government strategic documents, online data and so forth. For this study, primary data was collected through schedule interviews by the researcher. Administration and management of the research work was also done by the researcher. However, before the data collection process on the chosen case study began, permission to use the project as a case study was requested from the three key partners of the project.

3.4 Primary data

Primary data is collected to address the research objective that could not be resolved by the secondary data. It entails the collection of problem specific information that would assist in solving a specific problem. For the purpose of this study an in-depth qualitative approach using interviews was used to collect primary data. In-depth interviews were used because the intention was to explore and to obtain views from the respondents on the Hilton-Mondi Development Project and its effect on job creation and skills development (Tustin, et al., 2005; Creswell, 2009).

3.5 Secondary data

Secondary data is defined as information that is already available and is cheaper to obtain than the primary data. It is useful in decision making and for interpreting and evaluating primary data (Tustin, et al., 2005).

There are a number of reasons why analysing secondary data is important. Analysing secondary data helps researchers to ask new questions that were not the focus of the original study. It assists when researchers want to relate their primary data to existing information (Irwin, 2013). Existing data gives other researchers an opportunity to either verify or to refute previous research results. Confirmed data is used for education and for further research (Tustin, et al., 2005). Analyzing secondary data also gives an understanding of the methodology used to collect data.

3.6 Documented data

Another form of secondary data used during the study includes Statistics South Africa information, uMngeni Local Municipality Integrated Development Plan (IDP) documents, project proposal, information used during the application process, drawings and photos, government strategic documents and so forth. All these documents provided context to what the project is all about, what has been done and future plans. Research studies on Expanded Public Works Programme and South African reports gave examples in terms of infrastructure development, job creation and skills development.

3.7 Literature review

Literature review provides a theoretical background of previous research studies on the problem statement (Leedy and Ormrod, 2014) and can be used as a framework. It can also be used to benchmark from other studies and assists in crafting questions that need to be asked by the researcher (Creswell, 2009, p. 25-26).

A wide range of secondary data source was used in this study. They include books, journals, government programmes, policy documents and project reports, conference reports, dissertations, internet sources, business plans, project proposals and so forth. The focus during the analyses of these documents was to establish whether there is corroboration between infrastructure

development, job creation and skills development with a strong focus on water and sanitation infrastructure development.

3.8 Sampling method

A sample is defined as the group of people who have been chosen to provide the necessary information. The group is drawn from the total population. Because some elements of the population are excluded, that results in a sampling error. There are different sampling methods and different reasons for choosing a particular sampling method (Tustin, et al., 2005).

Like in any descriptive study where the researcher chooses a sample of the population, for the purpose of this study, a purposive sample that is a non-probability sample was chosen to collect primary data.

3.9 Purposive sampling

A purposive sample is designed to collect specific information as per the criteria of the required information. Its objectives is to understand a specific situation and involves choosing specific cases which if studied generate in depth understanding of the situation under investigation (Leedy and Ormrod, 2014, p. 277). In a purposive sample, respondents are chosen with a particular purpose in mind and the sample is not representative (Tustin, et al., 2005). Respondents are chosen because they are better placed to assist the researcher to understand the problem under investigation (Creswell, 2009). A purposive sample from all the partners, experienced individuals in water infrastructure provision and important role players involved in the implementation of the project was drawn.

The interviewees were made of the following people. Of the nine interviewees, three were engineers from Umgeni Water, Aurecon and Makhaotse, Narasimure and Associates. There was a managing director from the developing company who was one of the interviewees. A manager from uMgungundlovu District Municipality who is a technician by qualification was one of the

interviewees. Interviewees included a site manager. The Chairperson of a local business chamber was interviewed. The last two interviewees was a senior planner and a general manager with the local municipality.

3.10 Procedure

Appointments were made by the researcher with all respondents before the interview and some respondents met their commitments and others had to be reminded when they were not available for interview. The objectives of the study was explained to all interviewees and the reason for their nomination was provided. Permission was requested to record the interview. The purpose of the recording was to close the gaps, to ensure that all information is captured and to ensure that transcription could be checked against the recording to guarantee the accuracy of the transcription, which is critical during analysis.

Respondents were asked to sign the consent form and they were made aware that they could withdraw anytime from the interview if they so wish and that they should not answer questions they were not comfortable with. Open ended questions were asked from all respondents as they appear on the interview schedule (see Appendix 1). Such an approach is important if the purpose is to get information, opinions and understandings because respondents are able to present their points of view which are not predetermined by the researcher. Such data is appropriate for discussing interviewee's perceptions and for explaining such perception (Galanes, 2003).

3.11 Interview schedule

An interview schedule is a guideline used by researchers when conducting interviews. It is made of a list of questions that has been purposefully designed and must be answered in order to test a theory or a hypothesis (Tustin, et al., 2005).

For this study, an interview schedule was developed for data collection. There were a number of reasons for the choice of the approach which include the fact that, suitable projects that could provide the type of information required was difficult to find, time was prohibitive or limited and finding participants was difficult. Another challenge was that the research was undertaken by a

lone researcher (Peil, et al., 1982; Wahyuni, 2012). The approach was chosen because it assists in establishing rapport with the respondents, enhances response rate and improves data quality (Leedy and Ormrod, 2014; Peil, et al., 1982).

Interviews started during the month of October 2014 and finished in the month of November 2014. Interviewees were drawn from the public sector, private sector, the construction sector and business formation. Many of those chosen had senior or executive responsibilities on the Hilton-Mondi Development Project. They were approached individually and many showed interest and willingness to be involved in the study although some of them were very hesitant from the beginning until the purpose of the study was explained.

The purpose of the interview was to gain information on how the Hilton-Mondi Development Project could contribute towards job creation and skills development during and after the construction of water and sanitation infrastructure. Each interview took between 30 - 45 minutes. Interviews that took longer did not necessarily produce more information except in situations where interviewees were clarifying their position and points. Interviewees were also asked to make further comments after they had responded to all the questions. Some interviewees took the opportunity and provided valuable information on how the Hilton-Mondi Development Project would impact on job creation and skills development.

Primary data was collected through face to face interaction using the interview schedule. During the interview, notes were taken and interviews were recorded as well. Permission was obtained before the interviews were recorded. All interviewees were asked to sign consent forms to indicate their willingness to participate in the study. The consent form also asked interviewees to indicate if their names and the companies they work for could be used in the report or if they would prefer anonymity. All respondents preferred not to disclose their identity and that of their companies because they were not responding to the interview on behalf of their companies.

3.12 Data analysis

Data analysis is about interpreting and analysing volumes of data that have been collected. It begins by setting objectives for analysis which assist in directing the analysis process and guarantee relevance. Relevance ensures that analysis answers the research questions, use the information completely and avoid redundancy (Tustin, et al., 2005). In a qualitative study, data analysis begins while the researcher is collecting information when the researcher compares data.

Qualitative analysis have different steps that start from the bottom up and they range from data transcription, segmenting information into categories using codes, generation of themes or categories, description of themes and to interpretation of data (Creswell, 2009). These steps are critical to check for accuracy and consistency of the findings. In a qualitative study, interviews afford interviewees an opportunity to provide their viewpoint, perception and explanation without predetermination by the researcher (Galanes, 2003).

Data was analysed using qualitative content analysis or thematic analysis as per individual responses to the interview. Thematic analysis is also referred to as comparative analysis and is useful to identify themes (Galanes, 2003; Wahyuni, 2012). No qualitative research methodology software was used during the study however responses were carefully analysed, coded, checked and validated.

3.13 Challenges during the research

Many challenges were encountered during the research study. Interview appointments were not met and in one instance the respondents wanted to dictate to the researcher what should be asked and was unenthusiastic to follow the sequence on the interview schedule. He felt that he had responded to all the researchers' questions from a single response he had provided to the researcher. His view was that the interview schedule should have been structured in a way he was happy with which was to enable him to convey the message he has long been conveying to

government as a developer and unfortunately the interview schedule was not structured the way he would have been able to say what he wanted to say. After a discussion on how the interview should have been structured, he finally responded to questions he thought were important.

Another respondent who was identified for an interview was scared that the project was being investigated and was very reluctant to agree to be interviewed. Finally he agreed after further and explanation that the project was not under investigation.

In one incident an interviewee who had failed four times to meet his commitment, availed himself for the interview. An introduction was made and the purpose of the interview was explained and he signed the consent form. Before the interview began, he said there is a meeting he has to attend which he forgot about, he stood up, apologise, promised to come back for the interview and left. He never came back despite the fact he was spending time in the same building with the researcher. He is one of the respondents that had been earmarked for the interview because he was involved during the initiation of the project. In the end he was not available for an interview.

Another interviewee whose views about the project would have been very important who happened to be a local councilor and was sitting on the project steering committee could not be interviewed. After numerous attempts to set an appointment with him and messages left on his cell phone requesting an appointment, he never responded. His views would have been very important because he was part of the group that objected to the approval of certain parts of the development although the objection was eventually rejected.

A senior official from a credible organisation with massive experience on the nature and types of projects confirmed the appointment. He received the interview schedule two days before the interview. During the interview he remembered that there was another meeting he had forgotten

about he had to attend. During the interview his level of concentration on the questions was very low.

3.14 Conclusion

Qualitative approach was used to collect primary data during the research study and an overview of documented data such as project proposal, project application and agreements gave valuable information for the study. A purposive sample drawn from stakeholders involved in the project conceptualization, development and implementation were interviewed through the interview schedule. However there was a slight disappointment with the number of respondents that had been earmarked for the interview. Four respondents who were identified for the interview could not be interviewed for a number of different reasons including double booking and failure to respond to request for appointment. Appointments were made prior to the interview but it was difficult for many of the respondents to honour their commitments. However data was collected from 9 interviews. Despite the challenges encountered, the volumes of data collected during the 9 interviews forms the basis of the data analysis that follows in chapter four.

Chapter 4

Presentation and Discussion of findings

4.1 Introduction

This chapter presents the findings of the research study. Section 4.2 introduces the chapter by providing a brief history of the project to give context. The findings and the analysis of data collected from interviews with purposive sample of nine interviewees are in Section 4.3. It begins by evaluating an understanding of what Hilton-Mondi Development Project is about and responses are discussed in section 4.4. Section 4.5 examines the findings and the analysis that responds to the first objective of the study. The second objective of the research study is dealt with in Section 4.6. Throughout the chapter the findings and the analysis is narrated in relation to the literature review to contribute towards the research objective.

4.2 The history of the project

Hilton-Mondi Development Project is an initiative that began in 2010 when Lauresco Development made a proposal to uMgungundlovu District Municipality for an infrastructure development project that involved the construction of a Sewerage Treatment Works and Bulk Water supply that will support development. Lauresco Development wanted to unlock along the N3 Corridor. The proposal was submitted to uMgungundlovu District Municipality on the basis that water and sanitation is the core function of the district municipality in the area that was earmarked for development. The area that was identified for development is at uMngeni Local Municipality between Hilton and Cedara interchange on both sides of the N3 carriage way. Mondi was the owner of the land when the project was conceptualized.

Because of insufficient funding from the district, an application for grant funding was made by uMgungundlovu District Municipality to the Department of Co-operative Governance and Traditional Affairs (CoGTA) to fund the project for an amount of R30 million for each project. A grant funding was approved by CoGTA and the project was granted Expanded Public Works Programme status.

On approval of grant funding, an agreement was signed by the three key partners to the project. Subsequently Lauresco Development started rezoning applications of the identified land with uMngeni Local Municipality. The initial application was partially approved because there were objections on certain parts of the applications by a small group of residents of Hilton who did not want a certain portion of the development to take place in the Hilton area. Lauresco Development launched an appeal which was followed by a public hearing. The objection was around all light industries in the pockets of land identified in the development plan. Eventually the objection was dismissed and the entire project application was approved.

In terms of the project proposal and motivation used during the appeal process, Hilton-Mondi Development Project will unlock the development of a mixed use nodes in eastern uMngeni. It was projected that development will create 34 500 construction job and 9000 permanent jobs and increase the municipal rates base by 20% within 10 to 15 years. It is the impact of this water and sanitation infrastructure development project on job creation and skills development the study seeks to evaluate.

4.3 The analysis of the research study

Three steps were followed during data analysis. The first step involved the transcription of all responses to the questions asked. It was followed by an assessment of all responses to each question and the extraction of themes from the responses. Description of data offers the first insight of the nature of responses (Tustin, et al., 2005). All responses relating to a particular

question were captured and categorized and the last step looks at common views from different respondents (Galanes, 2003; Wayhuni, 2012).

4.4 Hilton – Mondi Development Project

The first question asked to all the interviewees was aimed at assessing their understanding of the project and what the project seeks to achieve. In addition, since the project was granted EPWP status, there are basic principles and guidelines that must be adhered to for the project to achieve its objectives. Among all the interviewees involved in the project, there was an overwhelming understanding of what Hilton-Mondi Development Project was about and what it seeks to achieve. Only one interviewee whose inclusion on the list of people to be interviewed was based on his experience on water infrastructure development was not aware of the project.

All eight interviewees understanding of the project was similar in that they all understood the objective of the project as to achieve economic growth and job creation. The common understanding from most of the interviewees was that the project will results in economic growth in the Midlands. Other comments that indicated the level of understanding of the project by different interviewees were as follows; one interviewee defined the project as taking advantage of the opportunity the land strategically offers. Another interviewee defined the project as making optimal usage of the land along the N3 Corridor Development. These comments from the interviewees indicate their understanding of the linkages the project has with national and provincial programmes.

The best understanding of the project was explained by interviewee H who described the project as follows "your questions should not be about job creation, your questions should be on the economic development opportunities it will create, the positive impact it will have on investment and as a consequence of economic growth there will be jobs created. The project is not primarily about creating jobs, the project is about infrastructure upgrading that will create investment opportunities for private sector, partnership ventures that will leverage both private and

government funds and the ripple effect of economic development and the consequence of economic development is job creation"

The above description and understanding by interviewee H is in line with studies undertaken by Pereira and Andraz, (2012) which contends that infrastructure development provides the foundation for economic activities and that economic development generates economic spill-over (Lean, 2001).

While the project was known by all the interviewees except one, the interviewee from the local business formation commented that while he supports the project one hundred percent, but he felt that public participation was very limited and localized to the people of Hilton. People from the surrounding areas like Mpophomeni were excluded from participating in the project.

4.5 Water and sanitation infrastructure and job creation

The project proposal was developed by Lauresco Development and in support of the project proposal was a feasibility study report that was conducted in the area by Professor McCarthy. According to the project proposal, Hilton-Mondi Development Project was to create 34 500 construction jobs and 9000 permanent jobs within 10 to 15 years (Lauresco Development, 2011).

The project also mirrored lessons learned from other projects and the benchmarking of the HMDP was narrated by interviewee H. in an interview that took place on 05 November 2014. According to the interviewee, they as developers undertook a similar project in Richards Bay where Professor McCarthy did a similar feasibility study for the project. The feasibility study predicted that for every R1 million rand spent on infrastructure, 15 permanent jobs will be created and the project created 14.4 jobs per R1 million spent on infrastructure (interview, 05 November 2014).

It was the view of the interviewees that the types of development that will arise from the infrastructure development would yield different types of job opportunities; for example, warehousing would generate less job opportunities compared to service industries, retail outlet, light industries and commercial development. It was suggested that residential properties would create domestic workers, garden services and so forth.

There was an agreement from all interviewees that Hilton- Mondi Development Project would result in job creation. However the interviewees could not quantify the number of jobs to be created because some of them were not aware of the proposed figures and the time frame as per the proposal.

Also the nature of jobs to be created was understood by the interviewees to be two folds. There were direct jobs to be created during the construction phase. These jobs were to be temporary in nature in line with EPWP guidelines. It is these jobs that were created during the construction phase that were regarded by interviewees as guaranteed jobs because such jobs were stipulated in a contract between the contractor and the employer in line with EPWP prescriptive. Most of the jobs to be created during this phase would be for unskilled and semi-skilled workforce since construction work is known to involve extensive use of manual labour drawn from unskilled workforce usually from the poorest sector of the community (Haarmeyer, 2011).

Many of the jobs created during the construction of Bulk Water Supply infrastructure according to the interview were general labour which involved the digging of trenches and the lying of the pipeline, earth works, bricklaying, plumbing and plastering. This confirms studies which argue that the construction sector is a leading generator of employment especially among the unskilled and semi-skilled workforce (Ozkan, et al., 2012) and that these jobs are mostly temporary for the duration of the construction period (Sleight, 2011).

While jobs were created during the construction phase, it was not easy to assess the figures as per the project proposal because the proposal did not specify job opportunities that were to be created during different phases. However it is safe to say that jobs created were part of the 34 500 projected in the project proposal.

The interviews reveal that indirect job opportunities will emanate from the development that will follow. For example the construction of Hilton hospital which was approved on the basis that Hilton-Mondi Development Project particular bulk water supply has been committed otherwise it would not have been approved without commitment of sufficient supply of water into the area.

The first ripple effect of the HMDP was the construction of the Hilton Hospital something that was not even in the plan for the developer but highlights the effect of infrastructure development towards economic development. During the construction of the hospital direct job opportunities were created and more skilled jobs and semi-skilled were to be created on completion of the hospital.

Two of the nine interviewees did not answer when asked if the jobs will be achievable or not. Of the seven respondents that responded to the question of whether jobs will be achieved, six totally agreed that jobs creation opportunities will be achieved. However, they were more confident of direct job opportunities that will be created during the construction phase.

Interviewees were confident that the project will have the ripple effect that will yield the required job opportunities because the project was in line with both national and provincial initiatives of the corridor development. There was also confidence from the developer's side because they have done similar projects before and those projects were successful.

However one interviewee felt that the achievement of job opportunities would depend, one on the phasing of development and secondly on the speed at which infrastructure is provided because infrastructure would unlock the whole development.

4.6 Nature of jobs to be created

A wide spectrum of job opportunities would be created as a result of that infrastructure development. Jobs will range from skilled labour right through to semi-skilled and unskilled labour according to the respondents. These jobs will also be in the short, medium and long term. Direct job opportunities created during the construction phase will include unskilled jobs such as pipe laying, earth works, bricklaying, plumbing, plastering and so forth.

However investment in commercial enterprises would create a range of job opportunities. Residential property would create domestic and garden services opportunities. During the construction of building structures, electricians, civil engineers, bricklayers, plastering jobs would be created.

Office parks on the one hand, would further create jobs for managers and office administrators. The hospital would create jobs for nurses, doctors, administrators, cleaners and so forth. Retail on the other hand would require shop keepers, shop attendance, packers, managers and many other employment opportunities.

Specific skills would be required in light industries over and above labourers depending on the nature of business, warehouse managers and so forth. Further development would create jobs the majority of which would be permanent and long term. People trained in plumbing during the construction phase would have the necessary skills to be utilized during the property development when internal water connections are required.

4.7 Desirability of the jobs created

Looking at the unemployment level of uMngeni Local Municipality which was 24 % in 2011 and the majority of the unemployed is the youth at 32% coupled with low levels of education, the employment opportunity that would be created through the project is highly desirable according to the interviewees. The view was also that in an environment where the level of unemployment is the same as at uMngeni local Municipality, any job is better than no job at all.

Two interviewees felt that if some of the development taking place at Hilton were to take place in another area closer to low income communities, such as Mpophomeni Township, such development was going to have more impact and increase the employment rate at uMngeni which is characterized by residential areas with high unemployment in the township and rural areas while employment in urban areas like Hilton is very high.

4.8 Source of labour

There was a strong confidence among all interviewees that HMDP would to a certain extent address the issue of unemployment at uMngeni because during the construction phase, despite the fact that contractors would come with key staff, the majority of the unskilled labour would be sourced from uMngeni Local Municipality. The view is also in line with the Expanded Public Works Programme guidelines which emphasize the employment of local labour where contractors are encouraged to only bring key staff or scarce skills from outside the area if such skills are not available locally (Public Works, 2015). This view was also emphasized by an interviewee from uMgungundlovu District Municipality who was familiar with the agreement between the contractor and the employer. There was also a consensus among the interviewees that in terms of job opportunities, uMngeni residents take preference.

Indirect job opportunities that would arise due to the ripple effect of infrastructure development would create job opportunities for local people and for people that would come from outside uMngeni Local Municipality. The retail component for example would have a range of job opportunities for unskilled, semi skill, shop assistants, shop managers and security which could be sourced locally and skilled personnel could be sourced outside uMngeni Municipality.

Another concern raised by one interviewee was that migration or relocation of jobs especially to the Business Park and Office Park component, where businesses would move to offices with more suitable environment and lower rental is a strong possibility. It was also felt that some chain stores might have employment policy which could move people from other stores to the new shops because of their experience. However light industries and the service sector would be driven by the market and will create new jobs for people with specific skills that could be drawn from within and outside uMngeni. The hospital, on the other hand, would require skilled people and the chance is that the majority of the people such as doctors and managers will be from outside the area.

4.9 Skills development

Another important objective of the study which affects local economic development was to examine skills development. The project was expected to include training since the project is an EPWP project and the guidelines stipulate that a portion of the project budget must be allocated for training. The construction sector also provides opportunities for training so that on completion of the project, people are left with skills that could make them employable in the future.

Interviewees were asked if there were training opportunities provided during the construction phase. An interviewee from uMgungundlovu District Municipality confirmed that there was a budget set aside for training and that the training component was included in the contract.

Interviewee D, involved in the implementation of the project responded to the question of training as follows, “there will be accredited training, I have already spoken to the contractor, I said to him he should create certificates confirming that these people have worked for Hydro –Tech”. He mentioned two types of training, the “class room teaching” and “onsite training”, according to his explanation, the latter was practical, on the job training and is an extension of the class room training which focused on theory. Practical training is meant to reinforce class room teaching. The training explained above is made possible by ensuring that a portion of the project funding make provision for a training budget. It also emerged during the interview that extensive training cannot be afforded to everyone employed in the project and that a selection process is essential to select suitable candidates with the right aptitude to receive extensive training.

Another type of training explained by interviewee I who was involved in the project and knew the contract between the contractor and the employer, was that “the contract is structured in such a way that the experienced contractor is required to transfer skills to a local emerging contractor that will be approved by uMgungundlovu District Municipality and is registered on its data base. The expectation is that the emerging contractor will be mentored and thereby acquire skills that would be necessary for its growth.

The above responses indicate that there were two types of training that took place as per the information obtained during interviews. The first one was aimed at providing skills required by individuals that will ultimately improve their employment opportunities at the end of the construction phase. The second type of training was aimed at emerging contractors that should be capacitated or mentored by established contractors. All nine interviewees confirm that the nature of training provided during the project was biased towards construction and maintenance.

In terms of EPWP, the idea behind the training of unskilled labour force is to ensure that they become employable in the future. Therefore training and experience obtained during the construction phase will improve their chances of employment because the project is structured in

phases, as more development comes forth; experience and skills obtained during the initial construction phase will enable people trained during the initial stage to tender their skills for similar work. The issue of training was viewed highly and five respondents maintained that it should be accredited in compliance with EPWP guidelines. Respondent E emphasized that it was the responsibility of uMgungundlovu District, the contracting partner to scrutinize the training module and to make sure there was value for money.

4.10 Lessons learned from infrastructure development projects

There are a number of different views raised by the interviewees on this matter. When interviewees were asked about lessons that could be leant from these types of projects, lessons varied from consultation, training, contract, job creation and skills development.

4.10.1 Consultation

Of the concerns mentioned earlier about the consultation process regarding the project and the fact that consultation was limited to Hilton residents. Two interviewees raised important points on the importance of consultation on a wider scale before the commencement of the project. The argument was that poor consultation could lead to a number of problems on sites when people who were not aware of the employment opportunities start questioning the recruitment process. The point was that if opportunities for employment are not communicated widely and explained, if raised during the construction phase, it could delay project implementation and will have cost implications.

Another point was that consultation with all relevant stakeholders from the onset could make sure that project designs are made to be labour intensive friendly to maximize employment benefit for local people. The unfortunate part of poor consultation was that a part of the development was objected for a number of reasons including the views that, light industries, could have a greater impact if implemented in another area where there was a greater need.

Interviewee F emphasised the importance of consultation as follows "in my project I always say, community facilitation must be the first in and the last out on site. All spectrums of planning in terms of authorization that is required and engineering work on infrastructure development must be supported by community facilitation".

4.10.2 Local benefits

Another lesson was that for all infrastructure development projects, uMngeni Local Municipality made it a condition for development applications approval that infrastructure development should maximize local community participation and benefits.

4.10.3 Skills development

During the interview interviewee B emphasised that acquiring skills is not an event but a process. His concern was that the haste at which government project provides training does not necessarily lead to skills acquisition. He argued that training is provided towards the end of project which does not give time for practical experience.

Not enough suggestions were made when interviewees were asked how job creation and skills development can be improved. However, one important comment made by interviewee B was that job creation and skills development should not only be the responsibility of government, private sector should also invest in skills development and use labour intensive approaches.

Training is an important aspect that was raised as requiring improvement, the argument was that it should go beyond project implementation and should be structured in a way that will give trainees experience that can be used in other construction projects.

Related to training, a budget for training was mentioned as another important element that could be looked at to improve job creation and skills development. It was explained that real training that will impact on skills development does not come cheap and that in most instances, there isn't enough budget set aside for training. Interviewee D's comment on this point was as follows, "from my previous experience, I realised that the budget allocation for job creation and skills development is very minimal for these types of projects. There should be enough budgets to allow out- sourcing of the training component".

The last comment on skills development and job creation was that it must be protected in the tender document and that there must be targets which are measurable and should be monitored. If targets are not met, sanctions must be enforced otherwise contractors will not comply.

4.10.4 Infrastructure as an economic development vehicle

Of the nine interviewees, five interviewees felt that Hilton-Mondi Development Project was going to act as a catalyst for job creation and was going to improve the economy of the midlands region and close the gap between Pietermaritzburg and Hilton which would lead to improved standards of living in the Hilton area.

uMngeni Local Municipality was identified as a beneficiary of the project in that the project would improve the taxes and rates base for the municipality. Another beneficiary mentioned was uMgungundlovu District Municipality because it was as a water service authority and responsible for sanitation in the area being developed.

There was a feeling from one interviewee that the successful implementation of the Hilton-Mondi Development Project would act as stimuli for further development that will include Hilton College because the Hilton College area is the only development area available for the municipality.

4.11 Other benefits

The respondents mentioned a number of benefits that would occur as a consequence of the development. There was an expectation that the retail component would give the people of Hilton an option of where they do their shopping. Economic spin offs will give people of uMngeni an option of where they choose to work and live, improve tourism was seen as another benefit that will accrue from the project. Increase Gross Geographic Product (GGP) of uMngeni Municipality was another benefit mentioned.

4.12 Further comments

While the development was welcome it was not easy for many respondents to visualize what would eventually happen. However there was a consensus that the development was in line with the national, provincial as well as local municipal policies. Another comment was that if part of the development was taking place somewhere closer to Mpophomeni Township where the level of unemployment is high, the impact of the project would be greater compared to where it is taking place in terms of job creation. The project was viewed as a flag ship project for both the district and the local municipality in terms of its nature and would bring along a lot of experience going forward.

Even though the project was well received by many respondents, there was an objection during the rezoning application process for part of the development project. Part of the argument was that there was not enough participation from the community. Another view from interviewee B was that the project was going to take away the ambiance of a village and make Hilton a small town and there was resistance against losing the village feel that some residents did not want to lose.

4.13 Stakeholders

Three critical stakeholders for this project were identified as Lauresco Development, uMgungundlovu District Municipality and uMngeni Local Municipality. Mondi and the department of Co-operative Governance and Traditional Affairs (CoGTA) were mentioned by some of the interviewees.

The financial contribution of the three critical stakeholders was as follows; Lauresco Development donated the land for the sewer treatment plant and the servitude for bulk water supply. It was also going to fund internal infrastructure to the tune of R100 million and transfer infrastructure to uMngeni Local Municipality.

uMgungundlovu District Municipality's investment was on the construction of bulk water supply and the sewer treatment plant for R30 million rand each and through the grant funding was raised from CoGTA. There was no financial contribution from uMngeni Local Municipality other than the processing of applications for approval.

4.14 Conclusion

The nature of the project presented in this chapter and the analysis that followed, presented the Hilton-Mondi Development Project as an infrastructure development project with a potential to change the economy of uMngeni Local Municipality. While the nature of jobs created during the construction phase had to be obviously biased towards the construction sector, however the development of the hospital and other developments to follow such as the retail sector will create different job opportunities the community of uMngeni desperately require. The interviewees also confirm that the community of uMngeni will be the priority when it comes to job opportunities. The limitations experienced regarding skills development and the lessons learned present an opportunity that could be utilized in order to improve the implementation of EPWP projects

particularly the skills development component. Options and opportunities to be derived from the project give hope to the thousands of unemployed youth residing at uMngeni.

Chapter 5

The research findings and discussion

5.1 Introduction

This section is the final step of the data analysis and it presents the findings of the research study and discussion thereof. A reflection on the correlation between infrastructure development and economic development that is extensively covered in the literature review section introduces this chapter and the findings with reference to the Hilton-Mondi Development Projects are deliberated on.

There are two main objectives this chapter seeks to examine, and these objectives relate to the questions the research study should answer. The first objective seeks to evaluate how the provision of water and sanitation infrastructure through the Hilton-Mondi Development Project will contribute towards job creation. This objective is answered in Section 5.3. The nature of jobs to be created and where they will be provided is covered as a subsection. How Hilton-Mondi Development Project will contribute towards skills development is the second objective of the research study and is presented in Section 5.4. Training to be provided and future prospects of trainees are discussed in the subsection of 5.4. There are lessons learned from the Hilton-Mondi Development Project that must be considered for future infrastructure development projects. These lessons are argued in Section 5.5. Interviewees were given an opportunity to comment on how they think Hilton – Mondi Development Project will benefit uMngeni Municipality and the region. These comments are reported in section 5.6. General comments from the interviewees on anything they might want to express on the project or anything related to the project is discussed in section 5.7. The discussion is followed by a general conclusion that seeks to ascertain whether water and sanitation infrastructure development can be regarded as a vehicle for job creation and skills development and thus contribute towards local economic development. Recommendations with particular reference to infrastructure development projects conclude the research study.

5.2 Infrastructure development and economic development

While there is no common accepted definition of what infrastructure development is because of its complexity and the fact that there are different forms of infrastructure development as detailed by many different studies (Roller and Waverman, 2001), common to many of these different studies is that they reiterate the correlation between infrastructure development and economic development (Rimmer, 1997).

When all interviewees were asked about their understanding of the Hilton-Mondi Development Project and what the project wishes to achieve, eight out of nine interviewees understanding of the project was that the construction of water and sanitation infrastructure in the Hilton area was a service delivery project that seeks to stimulate economic development at uMngeni Local Municipality. Without looking into much detail of the responses, the understanding by eight interviewees confirms the held view or a theory which contends that infrastructure development is a vehicle for economic development.

The explanation by interviewee H of what Hilton-Mondi Development Project was about, precisely describes the theory. His explanation read as follows;

"The project is not primarily about creating jobs; the project is about infrastructure upgrading that will create investment opportunities for private sector and where partnership ventures will leverage private sector and government funds and get the ripple effect of economic development and the consequence of economic development is job creation".

The above comment corroborates findings of studies since the 1930s which maintain that infrastructure development is a foundation for economic activities and that it generates economic spill-over (Lean, 2001). The interviewees understanding of the Hilton-Mondi Development Project supported this theory.

Another important fact on the correlation between infrastructure development and economic development was the approval by uMngeni Local Municipality of the Hilton Hospital development application which was to be completed almost at the same time with the completion of Phase 1 of the Hilton-Mondi Development Project. Phase one of the project involves the provision of bulk water supply into the Hilton area. According to an official from uMngeni Local Municipality, the approval of Hilton Hospital was based on the fact that a commitment to provide bulk portable water supply into the Hilton area to address water shortages and to unlock further development at uMngeni had been entered into between the district, Lauresco Development and uMngeni Local Municipality.

5.3 Water and sanitation infrastructure and job creation

All interviewees agreed that HMDP will result in job creation and that the jobs will be in two phases, in the short term jobs will be created during the construction phase. Because the project had EPWP status, and job creation during the construction phase is a compliance matter, this guarantee employment opportunities for unskilled and semi-skilled labour during the construction phase.

The second type of job opportunities that would be medium and long term would emanate from private sector investment. The construction of the Hilton Hospital is a classic example in this particular case. It created direct employment opportunities during the construction phase and will further create more employment opportunities on completion for nurses, doctors, security, cleaners, administrators and so forth.

The issue of job opportunities to be created during the construction phase was not a challenge during the interviews because all interviewees agreed that there will be job opportunities. To support the issue of job creation during the construction phase, an analysis of Hidro Tech monthly report to uMgungundlovu District Municipality in compliance with EPWP guidelines reveals the

following: twenty three (23) working days were created per month including training for a period of twelve month for 26 people.

There is no doubt about job creation during the construction phase but what is a challenge is that the business proposals projected 9000 jobs that will be created between 10-15 years and there is no breakdown of targets. Also the period at which the assessment took place was way before the projected period and this was a challenge which hampered an assessment of whether the projected job opportunities would be achievable or not.

Another challenge relating to evaluating the projected figures was the nature of development, in a mixed use development; different types of development will create different job opportunities in the same way different types of infrastructure development influence economic development differently (Padeiro, 2013). The time at which the assessment took place was too early to enable the evaluation of projected figure and it was not the objective of this study.

Interviewee A response was as follows:

"It is difficult to quantify the figures but the developer was talking about 9000 employment opportunities. However it will depend to a large extent on what kind of development will occur. If some of the biggest sites end up with warehousing development, job yield will be small, on the other hand if you have service industries, development will be different, only the commercial and industrial component will have a greater yield".

The district also did not specify the targets that had to be achieved during the construction phase in terms of EPWP guidelines which was to enable monitoring and evaluation. The only available figures are the number of jobs that were reported by Hidro-Tech.

When a question on the source of labour was asked of the interviewees, the answer was that the construction phase will create employment opportunities for local people; however another important scenario that could emerge in terms of employment opportunities was described by interviewee A as follows:

"Shopping Malls will have a wide range of jobs for semi-skilled, lower skilled, shop assistance, shop managers, securities and so forth that could be sourced locally. But some of the large chain stores have their own employment policies and might move people from other stores. Business Park and the Office component will see decentralisation of jobs from Pietermaritzburg or Msunduzi moving to a more suitable environment with lower rental but close to Pietermaritzburg. Only light industries and service sector will create new jobs".

The above paragraph illustrates that there will be an opportunity to source labour from uMngeni, however, labour will also be sourced outside uMngeni.

5.3.1 Nature of jobs

The findings were that direct jobs will definitely be for unskilled and semi-skilled workforce since construction sector is the leading generator of employment among the skilled and semi-skilled labour (Ozkan, et al., 2012). However indirect job opportunities will create a range of work opportunities because of the wide range of land uses. The hospital, retail component, office park, light industries and so forth will attract different professionals and skilled workforce over and above the unskilled and casual workforce. The training component will also provide an opportunity for some labour to migrate from unskilled to semi-skilled as a result of the training that will be offered.

All interviewees agreed that jobs that will be created by the HMDP will be desirable because of the high level of unemployment at uMngeni and in the country particularly among the youth. Interviewee C response to the question of desirability of the jobs reads:

"no doubt, you have seen from the IDP that the unemployment at uMngeni is substantial, with the major unemployment rate being in the township of Mpophomeni. So I think job creation will go a long way to creating a balance in the employment rate".

The point that was emphasised was that employment was desirable but the response also gave context in the sense that the answer went further to elaborate where there was the greatest need. The context was reiterated by interviewee A who said: "I think any job is desirable, if you say it is better to have those jobs than no jobs at all, I will say yes they are desirable. But I think some of the development could have occurred in a better location, in other words if some of the development could have been approved in areas closer to a large concentrations of low income communities closer to Mpophomeni Township it would have had optimal outcome".

The point being emphasised and has been a contention even during the application process is the location of part of the development particularly light industries. There was a strong view that considering the high level of unemployment at Mpophomeni, light industries could have optimal impact if built closer to the township. Another group objected to the building of light industries that was to interfere with the ambiance of Hilton.

5.3.2 Source of labour

Expanded Public Works Programme promotes the employment of local labour during the construction phase. All respondents agreed that the primary target for employment would be local labour except where there are no skills. If one looks at the education level at uMngeni and the percentage of people with higher education, it is apparent that for skilled staff, the possibility is that the majority will come from outside uMngeni because Census 2011 data suggests skills shortage at uMngeni.

5.4 Hilton-Mondi Development Project and skills development

As stipulated on the EPWP guidelines, all EPWP projects should have a training budget. The guidelines further stipulate that training must be conducted by an accredited service provider and the training must be accredited.

It was implied by three interviewees during the interviews that three types of training should take place during construction. The first type of training was reported by an experienced interviewee in water infrastructure projects from a well-established company in the province. Interviewee E who responded as follows to the training question:

"Training must be provided during the construction therefore the contract must be structured in such a way that an experienced contractor is required to impart skills to a local emerging contractor and 10% of the main contract must go to a local emerging contractor approved by the district and registered on its database. So the emerging contractor should acquire skills at the end of the contract from the main contractor". What was clear from this response was that the contract must be structured in such a way that the main contractor mentors a local emerging contractor to strengthen Small and Medium Enterprise (SMME) development.

The second type of training reported on the Hilton-Mondi Development Project was reported by interviewee D, a project manager on site:

"For informal training, I have already spoken to the contractor; I said to him he should create certificates confirming that these people have worked for Hidro Tech, and that they received training on excavation, pipe laying, concrete work, assembling and re-enforcement".

Another type of training described by interviewee I was that training was biased towards the skills required during the construction and operation maintenance. He further reported that budget for this kind of training is always set aside. However he did not give an indication of the percentage of the total budget nor answer whether the service provider and the training was accredited in line with EPWP guidelines.

The opportunity provided by infrastructure development in terms of skills development was further elaborated by interviewee F.

"There are opportunities to allocate a portion of the project budget towards training and I have experience of doing that in another project I have been involved in. But there must be criteria that must be used to select suitable candidates for training and bring in a service provider to train them. The training must be two fold and must include classroom teaching and onsite training which will reinforce classroom learning. The success of this depends on the allocation of training budget because trainees have to be transported to a training venue to receive classroom type of training which is accredited".

It was difficult to establish whether EPWP guidelines on training were adhered to fully because no evidence was available to support that. Neither was there an indication that an accredited trainer was available during the bulk water supply construction of the Hilton-Mondi Development Project. This noncompliance is a serious matter because it affects the type of training unskilled workforce receive and their chances of employment in the near future and affects successful implementation of EPWP.

It was confirmed that infrastructure development provides an opportunities for skills development and that it can be implemented in different forms. However with the exception of informal training referred to by interviewee D, there is no evidence that the other form of training, mentorship and accredited training did take place, it was only mentioned because it should have taken place in line with EPWP guidelines.

As long as training is provided according to interviewee F's explanation, with accreditation, monitoring and evaluation in place, then there is no doubt that trainees will have a better chance of being employed in the near future because their skills level would have been improved. As

interviewee B stated "the whole idea of skilling is to ensure that trainees become employable in the near future". However if this guideline is not adhered to and trainees are exposed to informal training as mentioned during the interview, the prospect of future employment is reduced.

The employment contract between uMgungundlovu District Municipality and the contractor could not be accessed to evaluate if there was enough budget set aside for training and to assess monitoring was executed to make sure that skills development takes place. If there was more available time for the study, attempts would have been made to interview one or two recipients of training to evaluate the nature and extent of training provided. However a follow up study in the near future could be useful to share some light on the future prospects of the trainees.

5.5 Lessons learned from the Hilton-Mondi Development Project

5.5.1 Job Creation

It was noticeable during the interview with uMngeni Local Municipality officials that the municipality had a limited role to play which was limited to processing and approving applications for development. This was further expressed in their preference for certain portions of the development which led to partial approval of the application because they wanted light industries to take place in another area which is a priority for the municipality. This point was explained by interviewee A as follows:

"The municipality ended up in a position where we say as long as the development fits in with our broad philosophy and vision, it is fine. This makes it difficult for the municipality to manage and to ensure the kind of development we want to see. To give you an example uMngeni Municipality is consistent in saying spending should focus on the corridor between N3 and Mpophomeni along the Bulwer road interchange for various reasons including employment creation closer to the Township and to reconfigure urban form, but developers don't see that as a priority".

The challenge in this case was the ability of a municipality to give direction on the nature of development they require and where it should takes place in line with their job creation strategy against the interest of developers.

Another important lesson learned in relation to employment creation for local people is that the municipality makes it a condition for all development applications that jobs for local people must be created. This is a condition that is included in all development applications approval according to interviewee A, but nothing suggest elements of enforcement and monitoring because no municipal official could tell how many of the people employed in the project were from uMngeni.

Consultation is one important lesson that came out clearly during the interview, the idea was that for maximum benefit consultation should not be exclusive, and everyone must be given an opportunity for employment and for participation in the process. Participation was raised as a critical issue that is important to ensure there is r buy in by all relevant stakeholders and that it prevents disputes which could arise on site for example regarding labour recruitment as it happened at the Mandela Capture Site where a contractor was accused of bringing outside labour force. Poor consultation can be costly when disputes arise during construction because it could delay the implementation of the project. In a study done in Ohafia, Nigeria, the conclusion was that local communities were very enthusiastic about consultation and participation in infrastructure development project where they were the beneficiaries and it strengthened ownership and enhanced social cohesion (Ibem, 2009)

Consultation should take place during the planning phase of the project as described by interviewee F when he said "I always say in my project, the Institutional and Social Development (ISD) sometimes referred to as Community Facilitators or Social Facilitators must be the first in and the last out on site. They must be out there with the team that is involved in the planning process". On a case study of an NGO done in the Filipino, planning was define as referring to all elements involved in the preparation of a project (Barnes and Ashbolt, 2010). The importance of

consultation was elaborated further by interviewee E when he said: "consultation will ensure that from the onset even the designs are made with job creation in mind so that wherever possible the design will favor labour based approach compared to machinery".

5.5.2 Skills development

Interviewee B felt that skills development is a process and that it cannot be a once off event because people learn skills over a period of time. For trainees to learn, they must be given an opportunity to apply what they have learned. Therefore training should take place at an early stage of the project so that trainees can acquire practical experience that will enhance their skills level which is critical for future employment opportunities.

A concern was raised though with regard to skills development. In interviewee B's view, "The haste at which government provides training does not provide construction skills". An important learning from the interview was explained by interviewee H who said: "from my point of view, there are many lessons that could be learnt which could apply here. Learning is inherent on the way you structure the contract and guidance must be provided by the contracting party, in this case by uMgungundlovu District Municipality". The conclusion from this comment was that if the contract is structured accordingly and there is monitoring and evaluation to ensure there is compliance from the contractor's side, opportunities for skills development could be greater.

Planning and effective project management is required to maximize skills development and job creation opportunities through infrastructure development projects. However the responsibility cannot only be left to government alone, the private sector should join forces with government and refrain from being profit driven**.**

With reference to skills development, the inclination was that training budget is not enough and therefore for EPWP objectives to be realised, the allocation for training should be improved because in most instances it is minimal. Improvement on infrastructure development projects could be achieved if, according interviewee F, "during the planning and the design stage the focus should be on skills development and job creation that maximise human involvement. Targets must be specified in the tender document and compliance monitored. If guidelines are not complied with, consequences for not meeting targets must be enforced. These measures will guard against non-compliance by the contractors and improve job opportunities and skills development.

5.6 The benefits of the Hilton – Mondi Development Project

It is important to reflect that despite all the constructive comments interviewees made about the project, all respondents were very positive about the project and the economic spin offs the project will bring into the region. The common view was that the project will act as a catalyst to stimulate demand for more residential land and change the look and feel of Hilton which is regarded as a dormant suburb and become an employment attraction that provides alternative employment. The retail component and its job creation potential will guarantee employment opportunities. Interviewee B described the benefits as follows:

"If you look at the supermarkets, they will create about 200 to 250 jobs in that node, when you look at the residential component they will create jobs for gardeners and domestic workers, if they build 1000 units they will create 1500 jobs and this is where I see job creation".

Improved quality of life, economic growth of the area and tourism development is some of the benefits the project is expected to unlock. For both the local municipality and the district municipality the project is expected to increase their revenue base through rates, taxes and tariffs. Investment attraction is another benefit the project will bring into Hilton in the foreseeable future. This is supported by a study that was done by the Federal Reserve Bank of Boston, Massachusetts which found a correlation between public and private investment and concluded that investing in public infrastructure stimulate private investment (Munnel, 1992). Hilton-Mondi Development

project will afford public an alternative of where they do their shopping; they won't have to travel to Pietermaritzburg for shopping.

5.7 Comments

Interviewees were given an opportunity to comment on anything wanted to relating to the project or the interview. The only comment made was that resistance towards the development was based on the view that the project would take away the ambiance and the look and feel of the village that makes Hilton a small town.

5.8 Conclusion

This chapter presented and discussed the findings of the research study. The findings are compiled around the two objectives of the study which are to evaluate how water and sanitation infrastructure contributes towards jobs creation and skills development. The analysis of jobs created was discussed as well as the type and the nature of training provided. Limitations in both job creation and skills development were identified. With a particular focus on the nature of jobs created and the type of training provided. The implication of training on the future prospect of trainees was discussed. There are a number of lessons learned from the study which are important if government wants to improve the benefits associated with infrastructure development projects, especially with regards to job creation and skills acquisition. Constraints in the implementation and monitoring of EPWP guidelines were highlighted, these include inadequate consultation, limited budget for training, the contract between the employer and the service provider and so forth. However there was agreement among all the interviewees on the broad benefits that will arise from the project in terms of job creation and skills development.

Chapter 6

Conclusion and Recommendations

6.1 Introduction

Infrastructure development contributed significantly towards economic development, skills development and job creation. This effect was experienced during the 1930s when the focus was on building assets aimed at supporting the growing economy until today when infrastructure development became the driver of economic development and job creation. Over and above the direct economic impact, water and sanitation infrastructure development releases women from non-paying jobs of collecting water and wood into income earning jobs that increases personal and household's income. The biggest impact of infrastructure development is in the construction sector and its multiplier effect. These important roles played by infrastructure development are reflected in chapter two of this dissertation. It is for these reasons that infrastructure development is regarded as a vehicle for economic development because it acts as a catalysts towards economic development.

Anaman and Osei-Amponsah (2007; Pugh and Fairburn (2008) and Fan and Zhang (2004) confirm that the effect of infrastructure development on economic development led to a situation where infrastructure development was, and is still, used as a strategy for government to deal with challenging economic circumstances. Governments in both developed and developing nations use infrastructure development to deal with challenges such as poverty and unemployment.

The role played by the construction sector in addressing unemployment especially for the unskilled and semi-skilled is well documented and is listed among the most important programmes implemented by governments to create employment opportunities for its citizens. A lack of

investment in infrastructure development, particularly in developing countries, is listed as one of the main challenges that hinders economic development in Africa.

6.2 The findings

6.2.1 Job creation

The deduction of this study is in support of the concept and the argument that contends that infrastructure development can be used as a vehicle for local economic development. This study on water and sanitation infrastructure development in the Hilton area and its impact on job creation and skills development concluded that the Hilton-Mondi Development Project created job opportunities during the construction phase and that more jobs will be created as more developments move into the area. The supposition of the study is that there was an unskilled workforce that was employed during the construction phase and that they received training as per the responses obtained from some of the interviewees. This implies there was skills development received by these trainees. It follows therefore that there was job creation and skills development during phase one of the Hilton-Mondi Development Project and that phase two will result on more job opportunities as demonstrated by the construction of Hilton Hospital.

Eight of the nine interviewees understanding of the Hilton-Mondi Development Project was that the project is meant to stimulate economic development in the Hilton area. This understanding was well put by interviewee H who described the project as an infrastructure project which will leverage investment opportunities for the private sector with the ripple effect being economic development and ultimately job creation. This explanations corroborates with the findings of studies conducted in the 1930s which contend that infrastructure development is the foundation for economic activities.

The study also found that the nature of development determines the extent of job opportunities that will result from the project. This was emphasized by interviewee A, who argued that since the development is a mixed use development, the development of warehousing job yield will be small but commercial and industrial development will have a greater yield.

Poor communication also came up strongly as a hindrance that delays development. An objection against certain portions of the development was due to poor communication.

The study also revealed that developers have an upper hand against municipal plans on the type of development that should take place in a particular area. It was in the municipal plans that the development of light industries should be closer to where high concentration of unemployment was, which is closer to the township and there is an area that had been earmarked for that purpose. This resulted in a situation where the municipality accepted certain portion of the development just because it fits in with the broader philosophy and vision of the municipality.

There are challenges that were identified during the study particularly around training, monitoring and evaluation and insufficient information. Nevertheless, the data collected during the study enabled the researcher to conclude that infrastructure development that took place at Hilton has contributed towards job creation and skills development.

The study concluded that Hilton –Mondi Development Project did contribute to job creation and this position was further confirmed by the EPWP reports that were submitted to uMgungundlovu District Municipality by Hidro Tech. Further jobs were also created during the construction of Hilton hospital which was approved because the bulk water supply project had been committed. All interviewees felt that more jobs are still to be created as a result of the Hilton-Mondi development Project.

6.2.2 Skills development

The second objective which seeks to ascertain the element of skills development was also confirmed despite the limitations that were identified and the view that if limitations could be addressed, skills development can be improved.

Training is another important challenge that came up strongly during the studies. Two critical things regarding training is the scheduling of training which does not enable trainees to apply the skills they have learned. The last issue of training is the budget. The feeling was that training budget for EPWP is not sufficient and is an impediment in achieving EPWP objectives.

6.3 Recommendations

Different types of infrastructure development have different implications on job creation and skills development. Therefore when infrastructure development projects are implemented or planned, consideration should be taken to ensure that infrastructure development will produce the desired outcome. For example, investment in telecommunication has a strong influence in the development of SMMEs and entrepreneurship. While investment in the construction sector as well as transport or highways will lead to different outcomes.

6.3.1 Job creation

During EPWP projects, precaution must be taken to make sure that the creation of job opportunities is not only left to the service provider, the contracting municipality must ensure that maximum job opportunities are created and that mechanisms are in place to monitor compliance. Reporting on jobs created alone is not sufficient, monitoring and evaluation and target setting can enhance the realisation of EPWP objectives.

Monitoring the impact of the project on the surrounding business nodes such as Pietermaritzburg City Centre and Howick is also important because there was a view from one interviewee that another possible impact of the development could be the migration of business from one place to another. For example the office park development. Monitoring the nature of job opportunities that will be created through these infrastructure development projects is essential coupled with the unintended consequence that could emerge as a result of the development.

The activities of contractors must also be closely monitored because the importation of unskilled and semi-skilled labour at the expense of local labour defeats the objectives of EPWP. Evaluating job creation would have been easier had the projection been broken down into phases with short, medium and long term goals and an emphasis on sector specifics.

6.3.2 Skills development

For infrastructure development projects to be successful, it is important to ensure that the issue of skills development or training is well documented and structured in contracts. Enough budget must be set aside for effective training to take place and it must be monitored and properly managed. Compliance is another important component for EPWP that must be closely monitored and failure to comply must be addressed through sanctions. Aspects of complicity from officials responsible for project management, monitoring and evaluation should be investigated because non- compliance by the service provider defeats the objectives of EPWP.

To improve skills development, government can organize training programmes, conferences or workshops for contractors involved in EPWP so that contractors can be aware of what is expected to improve the implementation of the programme (Ibem, 2009).

6.3.3 Recommendation for future studies

There are a number of recommendations regarding future studies of Hilton-Mondi Development Project. The project proposes that 34 500 jobs and 9000 permanent jobs will be created between 10 to15 years. A follow up study will be important to assess job creation opportunities as well as skilled development. The study should also include an assessment of the impact the project has made on the revenue for both uMngeni Local Municipality and the District. The future prospect of trainees will also be of interest to ascertain if EPWP is making progress on skills development.

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APPENDICES

Appendix 1 **Interview Schedule**

Hilton - Mondi Development Project

October 2014

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1. How would you describe Hilton Mondi Development Project and what it seeks to achieve?
2. What are the anticipated direct and indirect job opportunities that will be created through the project?
3. Do you think these jobs will be achievable? (How)?
4. What types of jobs do you expect to be created?
5. Are those jobs desirable?
6. On the jobs to be created, will they be sourced locally or outside the area?
7. Are there any training opportunities to be provided during the project implementation? If yes in which area?
8. Will those trained people be employable in the future?
9. Will the training programme be accredited?
10. From your experience on these types of projects, are there any lessons learnt on job creation and skills development?
11. How can we improve job creation and skills development on these types of project?
12. Over and above job creation and skills development, what will this project unlock?
13. Who are the key role players on this project and what is their financial contribution?
14. What benefits will this project bring?

I APPRECIATE YOUR ASSISTANCE FOR BEING WILLING TO PARTICPATE.

THANK YOU.

Appendix 2 **Consent letter**

Informed Consent Letter 3C

UNIVERSITY OF KWAZULU-NATAL
GRADUATE SCHOOL OF BUSINESS AND LEADERSHIP

M Comm. Research Project
Researcher: Sipho Anthony Ntuli (033 897 6768)
Supervisor: Dr. Mihalis Chasomeris (031 260 2575)

Research Office: Ms. Nomkhosi Luthuli (031 260 8670)

Dear Respondent,

I, (**Sipho Anthony Ntuli**) am a Master of Commerce Degree student, at the Graduate School of Business and Leadership, at the University of KwaZulu-Natal. You are invited to participate in a research project entitled (**Water and Sanitation infrastructure development as a vehicle for job creation and skills development: A case study of the Hilton – Mondi Development Project**).

The aim of the study is to assess the impact of water and sanitation infrastructure development in job creation and skills development. The results will contribute towards the completion of the **Master of Commerce Degree in Local Economic Development**.

Your participation is voluntary and you may refuse to participate or withdraw from the project at any time with no negative consequence. There will be no monetary gain from participating in this survey. Confidentiality and anonymity will be maintained in the report however records identifying you as a participant will be kept by the Graduate School of Business and Leadership.

If you have any questions or concerns about participating in this interview, you may contact my supervisor at the University of KwaZulu-Natal on the numbers listed above.

The interview would take about 30 – 45 minutes.

Sincerely

Investigator's signature_____ Date_____

This page is to be retained by the participant

UNIVERSITY OF KWAZULU-NATAL
GRADUATE SCHOOL OF BUSINESS AND LEADERSHIP

M Comm Research Project
Researcher: Sipho Anthony Ntuli (033 897 6768)
Supervisor: Dr. Mihalis Chasomeris (031 260 2575)

Research Office: Ms. Nomkhosi Luthuli (031 260 8670)

CONSENT

I …… hereby confirm that I understand the contents of this document and the nature of the research project, and I consent to participating in the research project.

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

I give permission for the interview to be recorded.

YES	NO

I give permission for my name and the name of the company I represent to be used in the report.

YES	NO

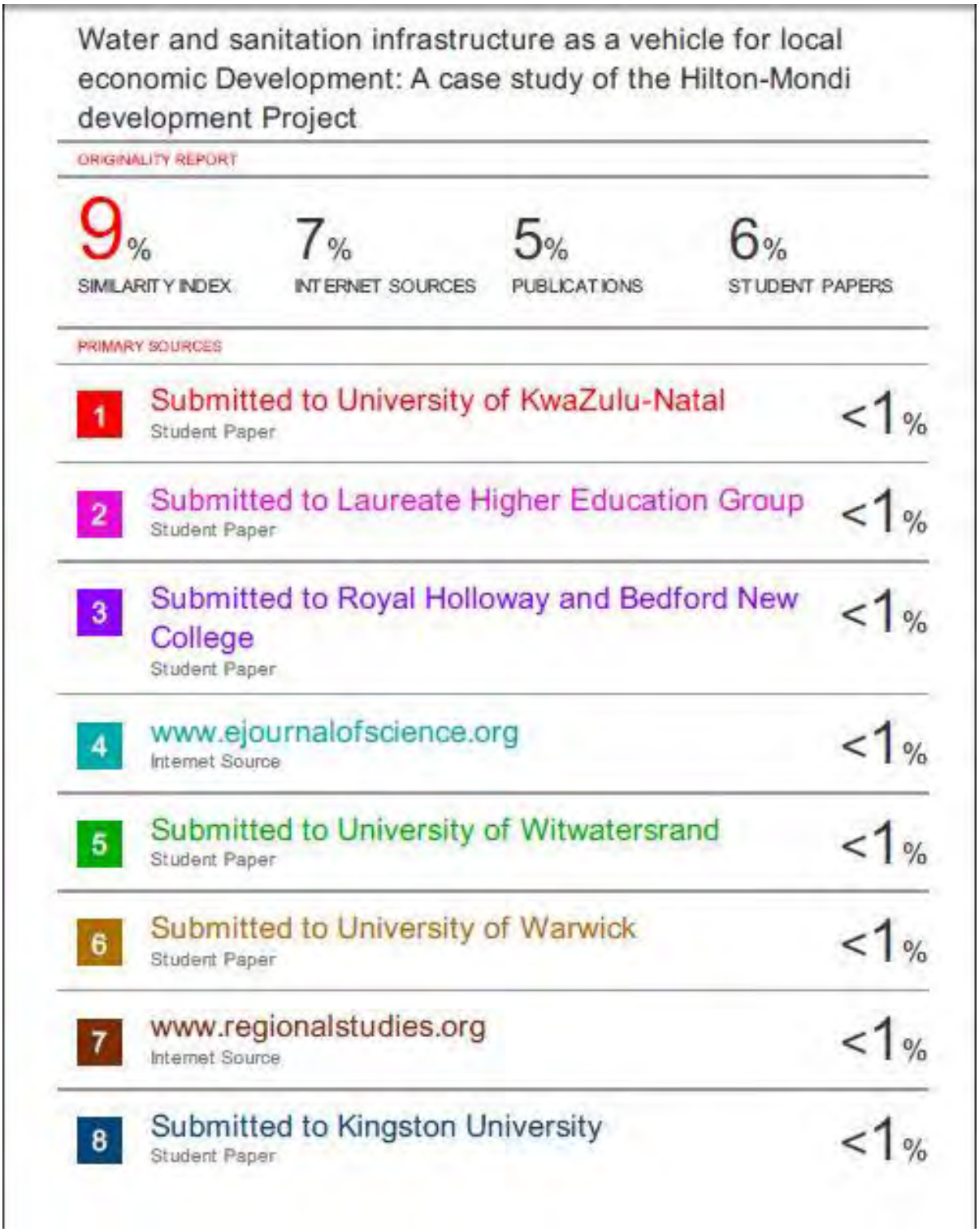
I request anonymity for my name and the name of the company I represent.

YES	NO

SIGNATURE OF PARTICIPANT:_____ DATE:_____

This page is to be retained by the researcher

Appendix 3 **Turnitin Report**



Water and sanitation infrastructure as a vehicle for local economic Development: A case study of the Hilton-Mondi development Project

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Appendix 4 **Ethical clearance**

UNIVERSITY OF KWAZULU-NATAL
INYUVESI YAKWAZULU-NATALI

26 September 2014

Mr Sipho Anthony Ntuli (882213618)
Graduate School of Business & Leadership
Westville Campus

Protocol reference number: HSS/0933/014M
Project title: Water and Sanitation infrastructure development as a vehicle for job creation and skills development: A case study of the Hilton-Mondi Development Project

Dear Mr Ntuli,

Full Approval – Expedited Application

In response to your application received on 19 September 2014, the Humanities & Social Sciences Research Ethics Committee has considered the abovementioned application and the protocol have been granted **FULL APPROVAL.**

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

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

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

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

Yours faithfully

.....
Dr Shenuka Singh (Chair)

/ms

Cc Supervisor: Dr Mthalis Chesmore
Cc Academic Leader Research: Dr E Mnkandla
Cc School Administrator: Ms Zarina Bulbulia

Humanities & Social Sciences Research Ethics Committee
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