UNIVERSITY OF KWAZULU-NATAL

IMPACT OF STAKEHOLDERS ON THE IMPLEMENTATION OF WATER INFRASTRUCTURE PROJECTS AT UMGENI WATER

By

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DECLARATION

I, Lungile Brilliance Makhaye, declare that:

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Lungile Brilliance Makhaye

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ABSTRACT

The engagement of stakeholders has become a key strategic area for Umgeni Water. Key statutory stakeholders, contracted or non-contracted, hold immense influence over, and have a great impact on, Umgeni Water's policy development and nature of work. Planning for stakeholder engagement can pose a challenge, particularly for the construction of water infrastructure projects, because relations between stakeholders are not static, but are rather dynamic and in a state of flux. In light of the project delays and financial setbacks that have been experienced while implementing infrastructure projects at Umgeni Water, it has become apparent that there are risks posed by the involvement and influence of key stakeholders. Umgeni Water thus needs to be proactive and put measures in place to ensure the successful implementation of projects. The purpose of this study was to provide a framework to assist management and teams working in the water infrastructure projects to better understand how to engage, manage and sustain successful relationships with stakeholders, in order to successfully implement water infrastructure projects. The engagement of stakeholders has become a key strategic area of focus for the successful implementation of water infrastructure projects. Effective stakeholder management can be achieved through gaining insight into and an understanding of the key stakeholders in terms of their identities, interests, influence and interactions. A literature review was undertaken to gain a better understanding of both the research approach and the problem area. The study was located within the qualitative research paradigm, and 15 in-depth, semi-structured interviews were conducted with the team that had been working on the project under study. The study identified the significant role played by the key stakeholders in the project and investigated the rules of engagement and effective communication approaches applied to ensure sustainability of the stakeholder relationship. It further identified contributing factors to the conflict experienced in the project's implementation. The findings indicated that there were missed opportunities for appropriate stakeholder management throughout the project, which encourages a new way of thinking, focusing on learning, and understanding the new business landscape. Organisations, as complex adaptive systems, are comprised of both internal and external agents. As stakeholders, these agents are different and dependent on each other in the sense that they constantly interact through feedback loops in order to improve performance and stay competitive. The implications are therefore that the focus should be on the relationships between stakeholders as systems, so as to carefully explore how a change in one system will affect another.

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GLOSSARY OF TERMS

ACRONYM	DEFINITION
COGTA	Department of Co-operative Governance and Traditional Affairs
CIBD	Construction Industry Development Board
CSF	Critical Success Factors
CSMU	Corporate Stakeholder Management Unit
DWS	Department of Water and Sanitation
EIA	Environmental Impact Assessment
ISD	Institutional Support and Development
ITB	Ingonyama Trust board
IWRM	Integrated Water Resources Management
KZN	KwaZulu- Natal
MDGs	Millennium Development Goals
NEMA	National Environmental Management Act
PFMA	Public Finance Management Act
PLP	Project Lifecycle Process
PMBOK	Project Management Body of Knowledge
WSA	Water Services Act
WSAs	Water Services Authorities
WRC	Water Research Commission
UKZN	University of Kwa Zulu-Natal

CHAPTER 1: INTRODUCTION

1.1 Introduction

The provision of safe drinking water is one of the key responsibilities of government in the global economy. In accordance with the Water Services Act 108 of 1997, the provision of clean water has been identified as a key facilitator for development as well as the sustenance of livelihoods (Government Gazette, 1997). Umgeni Water, a state owned water utility, has over the past 40 years been a key stakeholder in the delivery of bulk water and sanitation services to various communities in the province of KwaZulu-Natal (KZN). The Minister of the Department of Water and Sanitation (DWS), Ms Nomvula Mokonyane, in her budget speech delivered on the 15th July 2014, mentioned that the participation of different stakeholders, including community members, is important in the water and sanitation sector. The Minister also stated that water and sanitation forums need to be established, revived and strengthened across all metros and district municipalities in order to extend stakeholder relations.

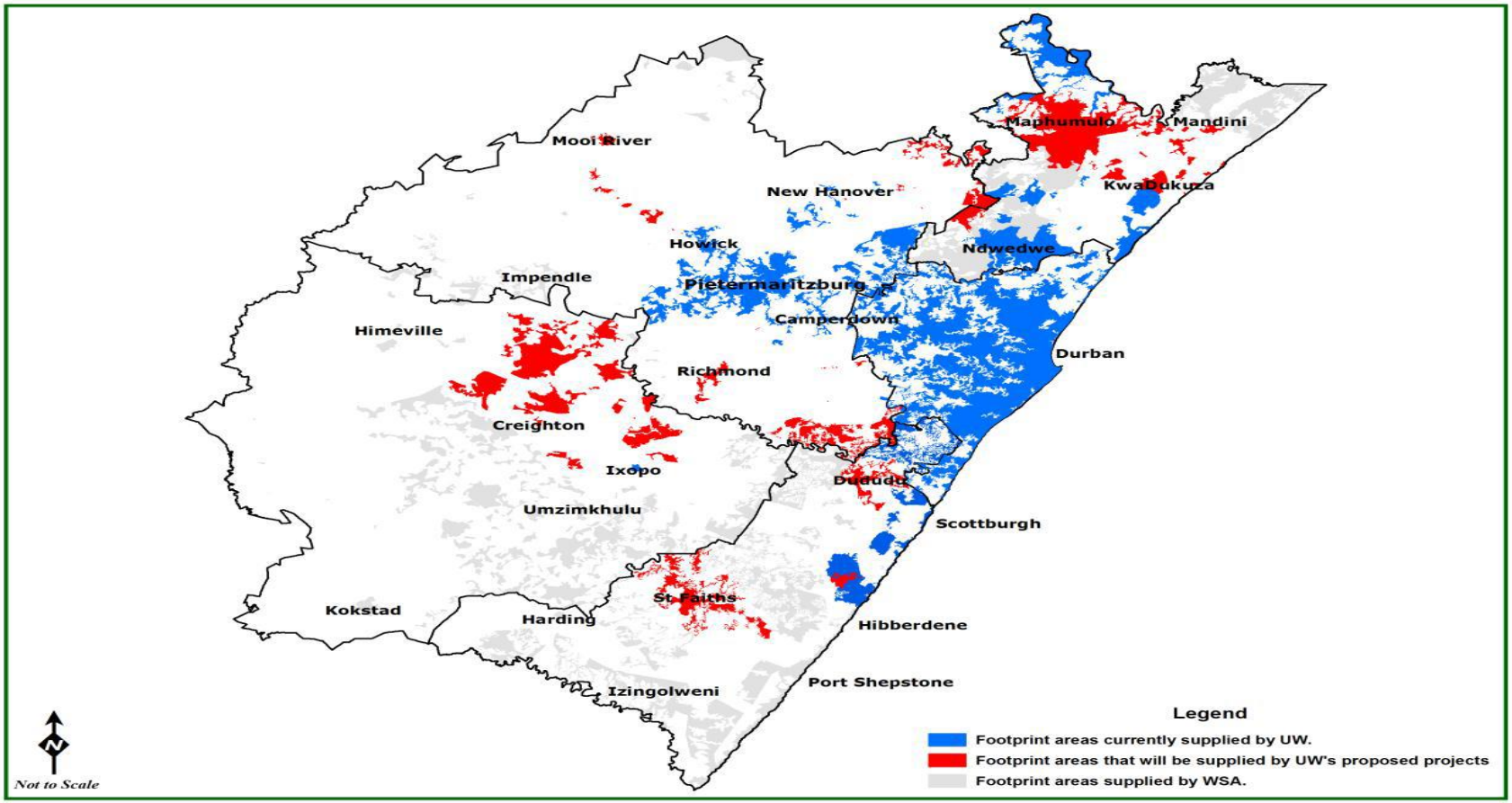
Infrastructure projects as open systems generate public interest and are subject to being influenced by a wide range of factors, including globalisation, population growth and more, over the pressures and demands exerted by various external stakeholders. Studies in the field of construction indicate that modern day project managers are not only faced with ever changing technological advancements, but also the socio-economic, political and cultural dynamic of the stakeholders involved (Olander, 2006). Further studies indicate that the phenomenon of understanding these stakeholders in terms of their influence in the project life cycle is a major challenge for project managers, and that poor management of stakeholders has been identified as a major source of delays and cost overruns in projects (Yang et al., 2009). It is on this basis that the researcher chose the topic for this study, which is the impact of stakeholders on the implementation of water infrastructure projects at Umgeni Water.

As part of the project team, the researcher realises the opportunities provided by the correct management of external stakeholders towards improving project delivery. An overview and motivation for the study is provided in this chapter, and the direction taken by the study is discussed to emphasise the focus. The problems addressed by the study are reflected in the problem statement, while the focus of the research is addressed by the research questions. The study approach followed by its limitations is also discussed in this chapter.

1.2 Motivation for the study

Umgeni Water has evolved from an organisation that was originally supplying water to a few people, but has now developed into the second largest water utility in South Africa, supplying over 453 million cubic litres of bulk potable water annually to six Water Services Authorities (WSAs), comprising one metropolitan municipality, four district municipalities and one local municipality within the province of KZN (Umgeni Water, 2016). In recognition of its enormous capacity, the government has put forth and is currently considering a proposal to increase Umgeni Water's service area to incorporate areas in the far north of the KwaZulu-Natal province and the Eastern Cape, which will encompass adding six more water service authorities in addition to those being serviced currently (Umgeni Water, 2016). Figure 1 shows the current and extended supply footprint.

Figure 1: Umgeni Water's bulk water supply footprint



Source: [Umgeni Water (2014)]

The environment within which Umgeni Water is required to fulfil its function as a regional bulk water service provider is constantly undergoing change, with many factors influencing both the water demand and water supply components of its business. In particular, the economic up- and down turns that the country, including KZN, has experienced over the past few years have had a marked influence. Umgeni Water's infrastructure planning therefore needs to be continually reviewed, updated and adapted in order to be responsive (wherever possible) to this dynamic external environment (Umgeni Water, 2016).

One such dynamic is the drought that has hit the northern part of KZN within Umgeni Water's area of operation. Projected plans conducted 30 years ago could not have predicted the current issue. In trying to accelerate service delivery, some projects have been fast tracked only to find that the recipient municipalities have not completed their infrastructure for reticulation, thus putting a further delay in the supply chain (Metcalf, 2015). Further complications have been experienced at the construction stage, where the dynamics between all the relevant stakeholders can hinder progress and cause unnecessary delays.

This study was inspired by the researcher's own involvement as one of the internal team members in the implementation of the project under study. The researcher's opinion is that the strategies that were applied to engage stakeholders were linear and streamlined to fast track Umgeni Water's project milestones in terms of bulk infrastructure delivery. Complex adaptive systems, according to research findings, teach us that complex adaptive systems are comprised of interconnected agents who at any given point are susceptible to change guided by simple rules (Dodder and Dare, 2000).

Much research has been conducted on partnerships between various sectors, however there is still a gap in the creation of synergy between teams at the project level in terms of understanding that their interactions are interdependent and not autonomous, and that they are all constantly evolving and renegotiating in a world of unpredictability and uncertainty (Chan, 2001). Further studies have also revealed that the adoption of a process or methodology by organisations to manage their stakeholders is not easy, as each stakeholder is different with a variety of goals and needs (Bourne, 2008). Recent studies indicate that the power and influence of stakeholders has become critical to the success of project implementation in most organisations. Successful organisations are now not only expected to make profits and satisfy clients, but also to meet expectations and satisfy the needs of their stakeholders (von Meding, Mcallister, Oyedele and Kelly, 2013).

In light of the project delays and financial setbacks that have been experienced while implementing infrastructure projects at Umgeni Water, it has become apparent that there are risks posed by the involvement and influence of key stakeholders that were initially overlooked in the initial planning process. The study aims to provide input at the project management level into the stakeholder management process, with the hope of providing a framework that can be adapted to improve the current stakeholder management strategies at Umgeni Water. Effective stakeholder management can be achieved by gaining insights into, and an understanding of, the key stakeholders in terms of their identities, interests, influence and interactions (Bourne, 2006). This can be achieved if all involved in a project will acknowledge the interrelationship and interdependence between each other, in order to produce the desired outcome that will benefit all stakeholders involved in a project.

1.3 Focus of the study

This study is based on the recent debacle over the local community clashes with the contractors working on the construction of the ILembe Dam project, in the north of KZN. The reported incidents of work stoppages, theft of site property and threats against contractors are indicative of the gap that exists between Umgeni Water and its stakeholders to function optimally under conditions of pressure and uncertainty. The information gathered at the project level and during interviews with the relevant project managers indicates that relationships with stakeholders is planned for at a strategic level in terms of its management, but is rather vague or ad hoc at the project level; stakeholders at the project level are only consulted based on their interest and level of influence in the project (Mnyaka, 2014). The focus of this study was on stakeholder management at the project level of analysis. A systems approach was adopted using a case study in combination with a literature review. The theoretical premise is that organisations like Umgeni Water and its stakeholders are complex systems that can benefit from systems thinking for the purposes of promoting sustained partnerships in the implementation of bulk water infrastructure projects.

1.3.1 Definition of ‘Stakeholder’ and ‘Stakeholder Theory’

Various definitions of ‘project stakeholder’ have been put forth, but for the purposes of this study and because of its focus on the management of stakeholders at the project level, the definition identifies project stakeholders as those that have an interest in, and who exert influence on, the various phases of the project (Moura and Teixeira, 2010).

In terms of classification, stakeholders can be classified as internal stakeholders, i.e. those that are directly responsible for project execution, and external stakeholders, i.e. those that are affected by the project. Some definitions include the vested interest as defining the stakeholder in terms of their power and legitimate claim over a project (Olander, 2007).

1.3.2 Systems Theory

Systems theory advises that construction projects are complex and thus cannot be understood in isolation. Complexity in construction projects emanates from the interaction of agents that exist within them as open systems. These agents respond to each other, thus influencing changes in the environment and forcing each other to move in cycles of positive or negative feedback loops (Chan). The behaviour of these agents cannot be predicted as they are non-linear and emergent. Project managers are thus forced to apply strategies to adapt and to self-organise in order to accommodate changes provided by the external environment (Brown, 2004).

In order to achieve success and growth, project managers working on construction projects are advised to allow their projects to operate far from equilibrium, thereby allowing the project to be an open system that is constantly challenged which will allow for changes to emerge (Chan, 2001). If the underlying cause of a system problem is not addressed, problems can repeat and grow and cause unexpected consequences. In this study, systems thinking is used to help assist in the assessment of underlying causes of problems and the selection of appropriate approaches towards their resolution. Systems thinking theorists such as Checkland (1985) and Lawton (2005) advocate for the need to understand how a system operates as a whole, including examining its role and influence in the environment.

1.3.3 Partnership Theory

Partnership is defined as a system that can be both formal and informal; it can be a formal and legally binding contract, an informal understanding between two parties, a working relationship, a mutual agreement between institutions or a working cooperative (Bailey, 1994).

Partnerships involve an agreement on how responsibility, risk and benefits are shared over a specified time frame (Osborne, 2010). Policies and procedures are also crucial in partnerships, because these provide for clear guidelines or parameters for each sector in a way that enables cooperative governance. Each sector enters a partnership with the aim to fulfil a desired outcome; therefore the achievement of these goals relies greatly on continuous dialogue and mutual agreement being embedded in the policies and procedures. In this research partnership theory is discussed with a view on construction projects as creating formal alliances between government and private entities in order to achieve a common goal or purpose. They entail agreements on shared responsibilities, resources, risks and benefits over a specified period of time.

1.4 Problem statement

The engagement of stakeholders has become a significant strategic area for Umgeni Water, as key stakeholders have great influence over, and impact on, Umgeni Water's policy development and nature of work. The main concern that this study seeks to address is that even though an organisation can have the technical expertise, high performance teams and finance, it still would not reach its ultimate goal and achieve success without the effective management of its stakeholders. Stakeholders are therefore an essential part of every organisation's strategy.

Planning for stakeholder engagement can pose a challenge, especially in the construction of water infrastructure projects, because relations between stakeholders are not static, but are rather dynamic and in a state of flux. According to the annual report publications written on Umgeni Water during the reporting period 2012/2013, the organisation has received much acclaim from both the national and local government for the governance and management of its stakeholder relationships (Umgeni Water, 2013). Some significant developments included an invitation for Umgeni Water's Chief Executive to join the KZN Planning Commission, which places Umgeni Water as a strategic partner by propelling the organisation into the mainstream of decision-making regarding the role of water as a catalyst for provincial growth and development (Umgeni Water, 2013). This is testament to the

success achieved by Umgeni Water in managing certain of its relationships; however the success remains at the corporate level.

Despite the aforementioned, the events that unfolded in the implementation of the ILembe dam project mentioned above highlighted challenges in terms of stakeholder relationship management. The reports that were tabled by the project manager regarding progress on the project indicated that an 18-day long strike by local workers caused delays, which set the planned programme back by 45 days (Mnyaka, 2014). The construction site was placed at risk of flooding and damage, and further to this, reports of vandalism, theft, interference and intruders on site were rife. Reports from the Umgeni Water Team indicated that the many meetings with the community and the incessant appeals for co-operation were fruitless (Mnyaka, 2014).

The construction team vacated the site for fear of victimisation, and locals were reportedly putting themselves at risk by roaming the site in search for wood and also allowing their children and livestock to roam the dam basin and surrounds. Failure to implement the project successfully would negatively impact the organisation and its stakeholders, and the Chief Executive of Umgeni Water had already met with and promised the Executive Mayor of ILembe Municipality that the project would proceed (Roux 2014). This prompted the ILembe District Municipality to proceed with the process of installing a water reticulation network. Community expectations were high, and the community awaited the provision of water, but without the construction of the dam, this would be impossible. What, therefore, could have been the factors behind the disruptions, and could they have been avoided?

The aim is not to answer the above questions, but rather to provide a framework to assist management and teams working in the water infrastructure projects to understand how to engage, manage and sustain successful relationships with stakeholders.

1.5 Aim and objectives of the study

The main aim of the study was to examine the impact of stakeholders on the implementation of water infrastructure projects at Umgeni Water. The objectives of this study were to:

- determine how the project team working on the water infrastructure project conducted project stakeholder management;
- determine the impact and influence of the relationship network of stakeholders on the water infrastructure project;
- identify the challenges in the relationships network and how these are managed; and
- identify opportunities for change and improvement in the management of the stakeholder relationship.

1.6 Research questions

The study aimed to answer the following questions:

- How do the project teams working on water infrastructure projects conduct stakeholder management?
- What is the impact and influence of the relationship network of stakeholders on water infrastructure projects?
- What are the challenges in the relationships network and how are these managed?
- What are the opportunities for change and improvement in the management of stakeholder relationships?

1.7 Research methodology

A qualitative strategy was employed for this study, in which a case study in the form of events that were presented over time was explored. The data were collected through 15, in-depth, semi-structured interviews, with participants who were directly involved and affected by the project under study. The focus was on gathering the perceptions and experiences of participants and how they made sense of the stakeholder relationship management that existed while implementing the project under study.

A literature review was conducted in order to investigate the application of the stakeholder management theory, project management theory and complex adaptive systems in terms of their

ability to offer insights into how Umgeni Water can better manage its stakeholders. Data were analysed using thematic analysis.

1.8 Limitations of the study

The study focused mainly on the selected project under construction in the iLembe District. To ensure confidentiality, the specific name of the project, project area and names of participants were not used. The study would have benefited from input given by external stakeholders like local community leaders, but due to time constraints and limited permissions, the study data were sourced only from Umgeni Water internal team members. A recommendation has been put forth in the final chapter to include these stakeholders for future research.

1.9 Structure of the dissertation

This dissertation is divided into six chapters:

Chapter One – Introduction

In this chapter the background and motivation of the study were discussed, and a brief description of the theories relevant to the study was provided. The review of the research methodology was also briefly discussed, ending with an evaluation of the limitations of the study.

Chapter Two - Literature review

In this chapter, a review of literature on stakeholder management covering systems thinking, complex adaptive systems theory, stakeholder theory and partnership management theory is included. All three theories are analysed with the aim of assessing their contributions and relevance to the study.

Chapter Three – Research methodology

In this chapter the qualitative research method chosen for this study, including the research sample, data collection method and instrument, is discussed.

Chapter Four – Results

In this chapter the interview results are presented.

Chapter Five – Discussion

In this chapter, the study results incorporating the literature review and previous studies are discussed.

Chapter Six – Conclusion and recommendations

In this chapter, the key findings, implications for project managers and recommendations for future studies are discussed.

1.10 Conclusion

The environment within which Umgeni Water operates when fulfilling its function as a regional bulk water service provider is constantly undergoing change. Many factors influence both the water demand and water supply components of its business. The paradigm of complex systems indicate competing interests between stakeholders, thus advocating that organisations such as Umgeni Water find more sustainable solutions in order to balance the interests and needs of its various stakeholders. This chapter discussed the motivation and focus of this study.

The following chapter presents a literature review of the chosen theories, including their assumptions, comparisons and contrasting views on stakeholder management.

CHAPTER 2: LITERATURE REVIEW

2.1 Introduction

The arguments presented in this chapter aim to provide a theoretical context for the various stakeholder management theories. The emergence of the stakeholder approach arose during the early 1980s, when managers were overwhelmed by the turbulence and dramatic change in the external environment (Freeman and McVea, 2001). The external environment is composed of some elements over which we have a degree of influence, and many more elements over which we have no influence at all. Knowing which external elements we can influence gives us clues about how difficult influencing them will be and what must be done to improve our situation. Knowing which elements we cannot influence immediately identifies obstacles we will have to work around (Dettmer, 2007).

This chapter aims to draw on the various theories including stakeholder theory, complexity theory and partnership theory to discuss their significance in the evolution of stakeholder management. Insight from these theories will be drawn to find linkages between Umgeni Water's response to management evolution and the deductions made by the theories. The complexity of the environment in project implementation in the present day exerts pressure on organisations to adapt to the changing environment, while at the same time maintaining a balance in terms of accountability and control (Mohan and Paila, 2013). The chapter describes the theories and their assumptions, compares and contrasts views from various authors, whilst also comparing Umgeni Water's response in relation to the theories and its environment.

2.2 The assumptions of this chapter

This chapter is based on the following assumptions:

- All systems have a goal and critical success factors (CSF) that must be satisfied if the goal is to be achieved.
- The goal and CSFs exist in an interdependent, hierarchical structure.
- The goal will be unique to each system.
- CSFs and their interrelationships will be unique to each system and the environment in which the system function or competes.

- CSFs and necessary conditions (NC) are related to each other in a necessity-based configuration that reflects the rule set governing the system's competitive/functional environment.
- The goal, CSFs and NCs can be determined by people within or outside of a system.
- Interdependencies affect system components. A change in one component will produce a collateral change in one or more other components.
- The operation of a system produces both *intended* (desirable) and *unintended* (desirable or undesirable) effects.
- Undesirable effects are undesirable only with respect to the previously defined goal, critical success factors, or necessary conditions of the system.
- Undesirable effects in a system do not exist in isolation from one another.
- All effects within a system (desirable or undesirable) are the product of root causes that may be several steps removed from these effects.
- Events related by verifiable cause and effect will be replicable. Another iteration of the chain should give the same effects if no change to circumstances or to the system are made.
- The success of organisational improvement depends on multiple factors, not all of which are technical or economic.
- The most critical and least understood factors in organisational change are human factors.
- The most critical component of organisational change is firm, conscientious leadership.

Social responsibility, stakeholder needs analysis, intensity and frequency of communication are the highest ranked critical factors for effective management of stakeholders (Yang et al., 2009).

2.3 Stakeholder management

In his definition of stakeholder management, (Freeman, 1994), one of the most influential advocates of stakeholder management, referred to it as a practice which a firm undertakes in order to exert some influence over its stakeholders, especially those that are affected or that have influence over the achievements of its goals.

The way in which organisations engage their stakeholders differs according to the way in which leaders or managers engage their stakeholders. Organisations that are committed to engaging their stakeholders tend to be more advanced in their communication strategies and the way in which they monitor progress, a concept supported by earlier authors such as Clarkson (1995). More recent studies emphasise the importance of both formal and informal communication. Strategies used by organisations to engage their stakeholders provide an indication of the way the relationship between the organisation and its stakeholders will unfold (Rowley, 1997). Various organisations use different forms of mechanisms to connect with their stakeholders, including meetings, newsletters, customer liaison groups, and employee work councils, amongst others. These networks aim to strengthen their networking membership, creating opportunities for information sharing and further engagement to reach common understanding and influence (Rowley, 1997).

Stakeholder management is regarded as relevant for construction projects for the reasons stated by Mohan and Paila (2013). These are as follows:

- Construction projects involve many parties and processes and are thus regarded as complex in nature.
- The nature of the construction projects is such that relationships amongst stakeholders are short term or temporary.
- The needs and expectations of the stakeholders are complex and diverse and require the project manager to possess expertise in communication in order to manage the relationship.
- The roles and responsibilities of the project stakeholders must be clarified in alignment with the project objectives.
- Ineffective management of stakeholders could lead to delays in project completion and cost overruns (risk).

All of the above requires a person involved in a project to understand how the system works, what its goals are, the critical success factors, and the necessary conditions that must be met in order for the system to work effectively (Castillo et al., 2009).

2.4 Goals, critical success factors, or necessary conditions

Frequently a system's manager - and perhaps even owner - has different ideas about the system's goal (Dettmer, 2007). The researcher will show the evidence of such a situation at Umgeni Water with regards to the delays that have been observed in a number of projects that have been implemented in KZN. This situation may not be unique to Umgeni Water projects, hence this study. To help other organisations faced with this kind of a situation as outlined in the problem statement section in Chapter One, the researcher will demonstrate to the reader that such challenges could be overcome by developing a strategy that will help each party find a win-win solution during and after project implementation.

The manager in a system might see the goal a little differently. While they acknowledge the need to make money for their stockholders, they also realise that other things are important – such as competitive advantage; market share; customer satisfaction; a satisfied, secure workforce; or first time quality of products or service. Factors like this often show up as goals in strategic or operating plans (Dettmer, 2007). Based on the above, the research analysed the behaviour of a sample of management stakeholders of the project at Umgeni Water to find out the real issues with regards to the delay in the delivery of projects, which effectively have a direct impact on the implementation of water infrastructure projects.

2.5 Risk-based decision making in the construction industry

In the construction industry, the decision making process takes place at various stages throughout the project (PMI, 2012). For example, at the beginning of the construction stage, decisions are taken in order to determine the set of construction activities and methods needed for doing the work, and to draw the necessary plans for carrying them out (PMI, 2012). Such decisions could have a significant impact on performance. Considering all sets of activities in a project, the sequence and possible methods for the construction process makes the decision making complex, as the number of alternatives can grow very big and each alternative has its own set of risks associated with it.

According to Castillo et al. (2010), it is not possible to manage risk if the risk is not identified, hence underestimating the importance of the risk identification process will negatively affect the effectiveness of a decision. In their work they described a proposed risk-based simulation model for supporting decision making in construction planning to evaluate the cost and risk associated with various alternative methods to carry out the construction process in building pits. They went on to say that the objectives of the simulation model are to assess the performance of all feasible construction alternatives, while taking into account the risk associated with each alternative, the sequence of the activities, and the alternative execution methods.

Umgeni Water uses the Project Management Body of Knowledge developed by the PMI (2012). The plan recommends that project risk management include the process concerned with identifying, analysing, and responding to project risk. It further recommends that project risk management includes maximising the results of positive events and minimising the consequences of adverse events. The research provides an overview of the following major processes:

- **Risk identification -** determining which risks are likely to affect the project and documenting the characteristics of each.
- **Risk quantification -** evaluating risk and risk interactions across the range of possible project outcomes.
- **Risk response development -** defining enhancement steps for opportunities and responses to threats.
- **Risk response control -** responding to changes in risks over the course of the project.

The construction industry, especially construction project management, is multi-disciplinary by nature, and successful project completion requires the contribution of many players, including designers, constructors, owners, and government agencies, all of whom require collaboration. This collaboration is not possible if the level of maturity of leadership is not in existence. As indicated above, each of the role players has his/her own goal, critical success factors or necessary conditions that must be met in order to achieve the overall goal. There will always be competition amongst role players, thus good leadership is required to normalise the situation in order for the project to succeed (PMI, 2012).

2.6 Preferred leadership style in a construction environment

According to Jung et al. (2014), what is often overlooked outside the industry is the modern construction management process that involves complex financial matters and demanding interpersonal skills, with managers engaged in activities such as bidding, cost control, labour and contractor negotiations, project planning, and so on. They added that unlike a managerial position in the manufacturing industry, construction professionals must deal with a wide range of tasks and processes for each construction project. Managerial personnel in the construction industry not only supervise subordinates in their own organisational hierarchy, but also provide purpose, direction, and motivation to contracted crafts people working for trade sub-contractors. With regards to the South African case in question, the manager is expected to deal with municipal Mayors, traditional leaders, and communities. Government legislation requires that all of the above individuals must be communicated with in order for the project to succeed.

In their conclusion, Jung et al. (2014) stated that construction personnel rely on having well-developed interpersonal skills in order to deal with the many different stakeholders and departments they work with. The findings of their study on leadership styles suggested that there are a number of alternative combinations in which a construction professional can consciously conduct himself, to both accomplish project objectives and succeed professionally.

2.7 Stakeholder Theory

According to the literature, the stakeholder concept can be traced back to 1963. However it was not until the early 1990s, through the scholarly work of Freeman (1994) that the foundation for the development of stakeholder theory evolved. In his arguments, Freeman (1994) suggested that an organisation is impacted by both its internal and external role players.

According to Donaldson and Preston (1995), descriptive, normative and instrumental theories categorise stakeholder management theory. The descriptive stakeholder theory describes interactions between organisations and their stakeholders, whilst normative theory prescribes how stakeholders should be treated and ensures ethical considerations. The instrumental stakeholder theory advocates that the effective management of stakeholders yields positive results in the achievement of other corporate goals.

In the review of literature on stakeholder management, it is evident that studies refer to one of the three types of theories as discussed above. The purpose of stakeholder management has been described by researchers as a way of capturing different views of various participants in order to clarify needs and improve communication between them (Mitchell et al., 1997). Some authors who have looked further into stakeholder management and various research advocate that the stakeholder theory focuses on two aspects, namely the identification of stakeholders and an analysis of them (Yang et al., 2009), yet they did not clarify what the analysis entails. For every project the analysis needs to start by analysing the goal, critical success factors and necessary conditions possessed by each stakeholder, in order to find the degree of influence.

The literature reveals the various approaches that were explored in the identification of stakeholders, how their interests can be managed and what influence they have over projects, including the influence and impact of the entire networks of relationships involved in project implementation (Mohan and Paila, 2013).

In his original research, Freeman's managerial perspective identified four key stakeholders, namely owners, customers, employees and suppliers (Freeman, 1994). These were later further modified to include government, competitors, civil society and shareholders. In this way, Freeman (2001) agreed with Dettmer (2007) that it is important to classify stakeholders according to their interest in a project (Mishra and Mishra, 2013). Other authors classified stakeholders according to how well they are known to the organisation (Mohan and Paila, 2013), while others emphasised the importance of mutual interdependence between the organisation and its primary stakeholders (Clarkson, 1995). Weber and Marley (2012) emphasised characteristics such as power and urgency as being important in legitimising stakeholder identification, a notion further supported by Mitchell et al. (1997), who stated that stakeholders who possess more attributes are given power to exert influence within the stakeholder network, thus elevating their interests over others (Mitchell et al., 1997). Some literature depicts power and influence as having a major impact on the success or failure of a project, comparing power influence by position, personal or political affiliation (Yukl, 1998).

Further input from Bourne (2008) gave rise to the development of the Stakeholder Circle methodology, which provided a five step process in the engagement of stakeholders. These steps involved the identification of stakeholders; documenting their expectations (goals), prioritisation, and visualisation by mapping out the power influence and relevance of each stakeholder; the engagement and communication with stakeholders throughout the project life cycle; and finally the

monitoring of the effectiveness of the communication strategy. This, however, seemed to be a tool that was aimed at organisations that were hoping to engage their senior internal stakeholders, which based its approach on command and control.

Anyone with an understanding of the systems approach to management should have an understanding that one person's system could be another person's process, and vice-versa. For example, a production manager might see his or her operation as a system, but the chief executive officer of the same company might see it as a process that is only a part – albeit an interdependent part - of the larger company system.

The company itself is part of a larger system that might be called the national industry base, which in turn is part of a still larger system called the nation's society. Umgeni Water is a legislated organisation, i.e. the span of control comes from the national government of SA. This makes it a classic case of the command and control situation, hence the study.

The stakeholder theory has received some criticism from authors such as Yang et al. (2009), because it fails to provide insights into the changing aspects of the interaction between the various stakeholders, thus leaving a gap in addressing issues of emergence and co-evolution through the various interactions between stakeholders (Beaulieu and Pasquero, 2002). Further criticism suggests that the stakeholder theory assumes homogeneity amongst groups, whereas it is argued by some that heterogeneity is of great importance to the management of stakeholders, as it gives an organisation insight into the fact that the composition of stakeholder groups changes over time (Beaulieu and Pasquero, 2002). Noting the changes in groups over time and the challenges with regards to public participation, a national framework on public participation was developed in South Africa (Scott, 2009).

2.8 Key legislation governing public participation in South Africa

The notion of public participation in all spheres of government is embedded in the Republic of South Africa Constitution Act, 108 of 1996 (hereinafter the Constitution). In terms of the local spheres of government, the Constitution states:

- Section 151(1) (e). Municipalities are obliged to encourage the involvement of communities and community organisations in local government.

- Section 152. The objectives of local government (are) to encourage the involvement of communities and community organisations in the matters of local government.
- Section 195(e). In terms of the basic values and principles governing public administration – people's needs must be responded to, and the public must be encouraged to participate in policy-making.

Water utilities as public entities operate in accordance with the Water Services Act 108 of 1997 and the Public Finance Management Act 1 of 1999, and are categorised as National Government Business Enterprises (Umgeni Water, 2016). The primary activity of the water utilities, as per Section 29 of the Water Services Act, is to provide water services to other water service institutions such as the water service authorities. The function of a Water Services Authority lies with the district municipalities in South Africa. Umgeni Water as a utility has a responsibility to ensure that it is able to respond to the needs of its water service authorities as its major customers (Umgeni Water, 2016).

The Republic of South Africa Constitution Act, 108 of 1996, places an obligation on local government to encourage the involvement of communities and community organisations in matters of local government. The promulgation of the Municipal Systems Act, 33 of 2000 focused the attention of municipalities on the need to encourage the involvement of communities in the affairs of the municipality (Government Gazette, 2000a). To show that the public participation is high on the South African government agenda, the whole of Chapter Four of the Municipal Systems Act is devoted to public participation (Government Gazette, 2000a).

While there are many laws that require some form of public participation in local governance, the Systems Act Government Gazette (2000a) is fairly prescriptive in many instances regarding what is required to be done by municipalities with respect to a number of their functions in so far as public participation is concerned, but it is in many instances unclear in terms of the methodology thereof, leaving this to the discretion of municipalities. This has posed many challenges for municipalities and other entities like Umgeni Water, which provides water to municipalities who are major customers.

Since the promulgation of the Municipal Systems Act No 32, 2000 Government Gazette (2000b), it is evident that the community consultation and involvement process is still in its infancy and that municipalities are often not fulfilling their legislative obligations. The converse however is also true,

in that the communities themselves have not involved themselves sufficiently in the affairs of the municipality, choosing to become involved only when things have gone severely wrong.

The then National Department of Provincial and Local Government now renamed the Department of Co-operative Governance and Traditional Affairs (Cogta), under the leadership of the Public Participation and Empowerment Chief Directorate identified the absence of a structured participation process as a serious impediment. Despite Cogta publishing the National Policy Framework for Public Participation and the municipalities adopting it, the problem still exists during the implementation of projects at local level. The researcher acknowledges that the document is a valuable source of information for municipalities in the implementation of a public participation framework. This framework and other frameworks that have been developed, for example the guidelines for project managers working in construction projects (PMI, 2012), are used in the analysis and discussion to help formulate conclusions and recommendations for this study.

The Construction Industry Development Board has also developed guidelines for project managers working in construction projects (CIDB, 2000). The toolkit suggests that project managers must assess and measure the application of power based on their position within the organisation and determine which type of power is legitimate. The toolkit advises against coercive power, as it will antagonise and cause conflict in the project, while reward power is encouraged as it improves performance. Expert and reference power would depend on how a person is viewed within the project in terms of their demonstrated expertise, knowledge and affiliation. Project managers are encouraged to seek facts, allow conflict to occur, and practice effective communication at all times (CIDB Act, 2000).

2.9 Complex Adaptive Systems

An analysis by Freeman and McVea (2001) concluded that stakeholder theory draws from systems theory in that it recognises organisations as open systems that interact with various entities, which makes it crucial to create joint strategies to manage the system as a whole beyond just the individual relationships formulated by individual entities. The notions of interdependence and integration make up the whole system and seek to explain the interconnectedness between them (Mainardes et al., 2011).

The world as viewed by complexity theorists today is not linear, but is rather turbulent, ambiguous, unpredictable, and uncertain (Levy, 2000). Leaders in government, public entities and the private sector are therefore challenged to explore new ways of management and strategy formulation. Complexity theory suggests that success or failure in an organisation is an outcome of how it interacts with its environment and how it adapts to unpredictability (Levy, 2000). Implications for stakeholder management are such that there is emergence and unpredictability due to the complexity of the relationship that exists between the parties involved.

Organisations exist to compete with each other by staying at a competitive edge. In enabling competition, constant interaction through feedback loops must exist between organisations and their environment in pursuit of improving performance (Matthews and Shulman, 2005).

In the case of Umgeni Water, the environment consists of a range of important governmental role players over and above local municipalities. These role players are important to local governance and therefore to public participation. Complexity theory suggests organisational learning as a strategy for achieving success and competitive advantage (Barnett and Hansen, 1996). The researcher is making an effort to assist Umgeni Water to develop strategies and policies that would assist in managing external stakeholders in such a way that conflict is minimised. Complexity has linkages with stakeholder management due to the fact that it is a result of the interaction and interconnectedness of the relationship that exists between various agents within a system and between the system and its environment (Chan). Advocates of complex adaptive systems speak of organisations as having behaviours that emerge due to the interacting agents that exist within them as open systems.

Organisations as complex adaptive systems have many agents which respond to each other, creating an environment which is constantly changing and adapting to their environment in virtuous cycles of negative and positive feedback loops (Chan). The National Policy Framework on Public Participation recognises traditional leaders and their councils as a key structure and a key stakeholder group in the community consultation process. It recognises traditional leaders as an important constituency and key interest group in many areas, especially around development and service delivery issues. Umgeni Water, as a delivery agent, is guided by the Gazetted Govenrment Gazette (2003) in terms of how it interacts with traditional leadership to deliver water to its customers. It is important to note that the interaction with this stakeholder is complex, as there are procedures and protocols that need to be followed when dealing with them and there are no set rules of engagement. Sometimes the conflict amongst the traditional leaders has an effect on projects and that makes the

interactions complex, resulting in a complex external environment. The interaction is complex in the sense that the organisation cannot predict the behaviour of its agents, thus it cannot apply approaches that focus on parts but rather on wholes (Anderson, 1999).

Complexity theory speaks of these relationships as non-linear and emergent, in the sense that when the external environment gives out new information or technology, organisations respond by adjusting themselves to be at the level introduced by the new information or technology (Brown, 2004). Emergent properties result as the organisation tries to adapt and self-organise to fit in the new information. Organisations are thus constantly forced to explore their fit into the bigger environment, looking at new possibilities and adjustments to stay competitive (Maxfield, 1997). Advocates of complexity support the notion that for success and growth, organisations as systems must operate far from equilibrium, allowing themselves to be constantly challenged and to change with the system in which they operate (Chan).

A further and related area which needs clarification surrounds the relationship between municipal processes that requires public consultation on the one hand, and national and provincial departmental processes that require public participation on the other. As an example, in pursuing various development projects, national departments like the then Department of Water Affairs and Forestry, now DWS, established development and/or management committees, which involved representation from local communities and consultation processes with local communities (Pollard and Du Toit, 2008). These processes often occurred independently of municipal public participation processes and structures, including ward committees. Based on experience, the researcher has found that not all public consultation that occurs in local communities are driven by, or under the authority of, the municipality, despite the fact that the municipality is an important stakeholder with more power than other stakeholders. Complexity theory suggests that organisations must adjust to changes as they occur, and that their focus should be on learning and understanding the new business landscape that comes with adjusting to demands from various stakeholders during project construction (Brown, 2004).

Informed by the complexity theory approach, the researcher supports the National Policy Framework on public participation which recommended that where provincial governments engage in consultation with communities around projects, they should use Ward Committees as the local community representatives (Centre for Public Participation, 2009). The Framework goes on to say

that the same should apply to projects driven by partnerships between various organs of government (Centre for Public Participation, 2009).

In their writing on complexity, Dodder and Dare (2000) spoke of complex adaptive systems as being composed of constantly interacting agents that are aligning themselves to work alongside each other, learning and collecting information within an environment created by their interactions. In construction projects, one may find interacting agents such as contractors and suppliers who have to work alongside each other to create new products. Maxfield (1997) advocated that complex adaptive systems contain agents with limitless possibilities and capabilities that can influence changes in their behaviour based on experience. In complex adaptive systems, order is not pre-determined but rather emergent, and this emergence is always moving and constantly changing.

Advocates of complex adaptive systems speak of open systems that have emerging behaviours due to the interacting agents that reside within them. Anderson (1999) described this interaction as being unpredictable because complex adaptive systems coevolve with their environment. Literature by Maxfield (1997) spoke of tendencies by open systems to have long periods of stability followed by short periods of rapid changes.

Studies have also revealed that a spontaneous interaction between agents in complex adaptive systems may lead to self-organisation (Maxfield, 1997). This interaction depends on a number of factors including the balancing of the agents' own interests. This balancing act might not be obvious to the other role players as they also might be busy with their own interests. The external environment also plays a role, as do the cognitive biases, habits and other human interaction activities expected within a social situation. Self-organisation means that systems evolve in an intrinsically unpredictable manner into an undetermined future; they co-create their future (Heylighen, 2008).

In addition to this, Jackson (2003) described path dependence as a characteristic of complex adaptive systems in the sense that one small change introduced in initial conditions can result in bigger changes elsewhere, thus also highlighting the element of risk in the involvement of multiple stakeholders with deferring interests. Sometimes the involvement of multiple stakeholders can become quite complex, and extremely complex situations can result in managers finding themselves in both intimidating and frustrating environments. The National Policy Framework on Public Participation states that it is important that state-owned entities have direct feedback regarding the

situation with different clients on the ground and how they perceive their services (Centre for Public Participation, 2009).

A review of the literature tells us that complex adaptive systems are susceptible to external impacts and thus are constantly looking at selecting appropriate models or schemas that will make them competitive in the environment in which they exist, i.e. they adjust their fitness landscape in order to try and stay at the top (Brown, 2004). As the organisation moves from one landscape to the next, its competitiveness and fitness against others and its environment is being tested.

Construction projects can be considered open systems, where the agents are the network of people involved in the process including project sponsors, customers, workers, managers, engineers, suppliers, communities, and in some cases, politicians. Formal and informal communication paths connect these agents through nodes representing the project. The literature has revealed that the interdependence of the system agents within Complex adaptive systems can give rise to an emergence of activities that are not necessarily due to environmental changes (Schneider and Somers, 2006).

Complexity theory suggests that the outcome of a project is highly dependent on the interaction between human agents, based on their knowledge, beliefs and on what they learn in the project. Complex adaptive systems, when confronted by a complex task, are inclined to move to the edge of chaos (Alavi and Leidner, 1999). Umgeni Water faces a challenge in terms of the volatile situation pertaining to political interference. A complete mind-shift and appreciation for learning to cope with relationships and unpredictability is recommended where learning to adapt and co-evolving with the environment is encouraged. Recognition of patterns that drive the behaviour of systems and the environment they compete in is crucial to promote transformation within systems operating in the global context (Sotolongo 2004).

The Municipal Systems Act places specific responsibilities on the municipality to engage with the community when implementing projects, which could be by national government or entities of the national government (Government Gazette, 2000b). The chapters of the Act are, however, not always specific as to who is to institute engagement and who should assume responsibility for its co-ordination. These administrative issues are left to the discretion of the municipality. It is clear, however, that unless the participatory functions and processes are institutionalised and properly

coordinated, conflict with communities will remain with us for a long time and service delivery will be delayed.

It is clear that most projects are dynamic and contain agents where the most important or powerful changes occur through the interacting relationships between agents at the micro level, thus putting emphasis on the emergence that occurs through the evolution of individuals and small groups who are affected by the changes shaped by their interactions (Olson and Eoyang, 2001). Complexity theory suggests that it is only at a critical level of diversity that a system can produce novelty (Allen, 1998). As far back as 1978, Argyris (1976) suggested that learning only occurs when there is an interchange between agents or double loop learning, from which competition and conflict emerge leading to coevolution by these agents in a drive to stay fit in the landscape of uncertainty and unpredictability (Waldrop, 1992). It was important for the researcher to discover how this challenge is being managed by other role players in the international space.

2.10 International perspectives of complexity in water governance

In discussing the international perspectives of complexity in water governance, the researcher is aware that the challenges that countries face are different when dealing with this issue. In developed countries, the issues could be more advanced than South African issues, as the interest in projects could emanate from a vastly different perspective than that of South African and KZN issues. The researcher was able to find out from the literature that internationally it emphasises issues relating to authority, norms or normative frameworks, and the impacts of different perspectives or definitions as the source of complexity for water governance.

Secondly, it draws empirical evidence of the perspectives from two river basin organisations (local scales), and it demonstrate the conditions in which challenges are perceived to be complex and the implications for the authority, norms and normative frameworks described in the literature. Wallis and Ison (2011) described the complexity of water governance as involving uncertainty and interconnectivity with other issues, as well as a range of perspectives, including traditional methodologies in problem-solving and technological advancement. This research seems to agree with this perspective based on the researcher's experience with the management of projects at Umgeni Water. Moore (2013) also emphasised that complexity arises from the dynamic relationship between people and situations and not within situations in themselves. Hirsch (2006) referred to the multiple scales, stakeholders' interests, and competing agendas as contributing to the complexity.

In a South African context, this agenda is informed by the political and social issues that are not only affecting water projects, but cut across all infrastructure projects that are implemented by the national, provincial and local governments. Given that the portrayal of complexity in water governance lacks analytical specificity, and that multiple scales exist in water governance that may perceive this complexity either similarly or differently, a clearer characterisation of the challenges deemed complex in water governance is needed (Moore, 2013). While in South Africa the focus of public participation is on how to reach the poor and marginalised sectors of society, the very same society has different needs and expectations about projects that get implemented in rural areas.

Water has historically been acknowledged as a developmental and scarce resource, whose management has been largely directed by engineers with an emphasis on technical approaches to its supply (Barraqué et al., 2008). As a result, policy formulation, funding and practical research has focused on water infrastructure development that is channelled towards providing services for domestic, irrigation and industrial use. Researchers Molle et al. (2009) refer to this typology as the hydraulic mission. It is contended by some authors that the approach adopted in the development of infrastructure like pipelines, dams and water pumps is still very influenced by the hydraulic mission to this day (Molle et al., 2009).

Another view from the global perspective is that large infrastructure projects have been viewed as opportunities by politicians to gain votes as they provide for employment opportunities and tangible benefits that are visible and thus can entice the public, whilst also creating business opportunities for certain governmental departments and the private sector.

It is important to note that all systems possess some form of hierarchies. Production processes in global organisations form part of bigger systems called the operations, which includes engineering. The operations system is but a part of yet another larger system known as the business division. The business division is part of an even larger system called the corporation (Dettmer, 2007).
In the case of Umgeni Water, as with any other projects, there are constituent stakeholders including consultants, contractors and internal departments that are involved, and who are subjected to such hierarchies that make the situation complex. Even though there has been wide criticism by some authors of the hydraulic mission (Wester et al., 2009), the need for a supply of clean water for human consumption has great reliance on this technical approach for water provision. The determinant of whether or not to change this approach relies greatly on the realisation of a desired outcome.

According to some authors there is some degree of resistance to change created by reliance on the technical solutions provided by the hydraulic mission (Butler and Goldstein, 2010) thus creating a rigidity trap for developing countries. Such action denies innovative approaches that could emerge to bring about solutions to the complex problem of water. Some scholars have in the recent past attempted to raise awareness regarding the consequences of the scientific views on water governance and policy, advocating for knowledge sharing in order to influence or enable change in how water provision is approached in the future (Steyeart and Ollivier, 2007).

Another element identified in the global governance of water is that of ignoring the need to better understand socio-political and institutional dimensions to decision making about water (Franks and Cleaver, 2007). Integrated Water Resources Management (IWRM) is arguably one of the more recent approaches that advocates expert knowledge in the promotion of efficiency, equity and environmental sustainability (Molle et al., 2009).

The understanding and addressing of the multiple dimensions of any water governance challenge requires more than expert knowledge, and more than an assumption that all actors involved in decisions about water will tend towards altruistic cooperation with others. Instead, working towards these aims demands that the underlying competition for water as a scarce resource needs to be addressed (Mollinga, 2009). Global research is lacking in terms of the type of power, authority, and legitimacy that different actors may have in the water sector that may affect issues of efficiency, equity and sustainability (Franks and Cleaver, 2007).

Without substantive research and theorisation, it is difficult to find suitable frameworks and analytical tools to describe and address the social-political-ecological challenges in water governance that are considered the most complex (Moore, 2013). The confusion and uncertainty created by severe ecological issues lead people to struggle to make sense of their circumstances.

Faced with this situation what becomes important is leadership, thus leaders should find out if the society at large agrees that the effects are negative with respect to its presumed goal, critical factors, or necessary conditions. It becomes easy if from the start of the project, parties agree to high level goals, critical success factors and/or necessary conditions to meeting the set goal (Moore, 2013). Based on the above, it is clear that one needs to find leverage in order to solve the so-called complex system problems. They are complex because they have many factors, organisations and individuals

involved, not because they are impossible to resolve. Partnership theory also needs to be explored to find out its approach to resolving complex problems.

2.11 Partnership Theory

The development of partnership approaches has evolved in many countries due to the global changes that have exerted pressure on governments in terms of public service provision. Political, socio-economic and resource constraints are some of the factors that have led to challenges for governments. A realisation that no one actor possesses all the necessary competencies to deal with the demands raised by the governance of various areas thus emerged (McQuaid, 2010). These factors led to the endorsement of the partnership approach as co-operative efforts between various actors to work together towards achieving specific goals or strategic objectives (McQuaid, 2010).

2.11.1 What is partnership?

Partnership is defined as collaboration between individuals or organisations, both in the public and private sector, for the achievement of common goals or strategic objectives. In public-private partnerships, emphasis is placed on mutual agreement by various actors towards the improvement of urban economies and quality of life. Bailey (1994) contributed to defining public-private partnerships, describing them as an integration of various interests in order to prepare for agreed upon strategic objectives in a given area. Sellgren (1990) chose to define partnerships from the economic development perspective, and cited the inclusion of funding by various agencies as an element or criterion for partnership (Bennett and Krebs, 1994).

The research findings by Osborne (2010) suggest that the transformation of most governments shaken by the turbulence and complexity of public policy has caused a shift towards government functions being performed by private agencies with more competencies, in order to give them accountability, focus and to allow for effectiveness.

In some cases, however, it was found that the very nature of these partnerships caused exploitation and ambiguity in terms of accountability (Osborne, 2010). Defining a partnership was thus not an easy concept for most authors.

In an attempt to put more emphasis on defining partnerships, Montuori and Conti (1995) differentiated partnerships according to the relationship between the partners involved. The authors drew on previous writings and outlined a dominator model and a partnership model as two distinct

approaches to emphasise differences between partnerships. The dominator model is explained as one that discriminates and put emphasis on power hierarchies dominated by command and control, where a partner at the top of the pyramid is feared and thus seem to be the dominant decision maker. Conflict in this model is avoided and/or repressed, and often has explosive results if manifested (Montuori and Conti, 1995). Their partnership model, however, has flatter hierarchies and more interaction between partners; conflict is addressed in an open manner with interventions for resolution.

There is an open dialogue and mutual respect between partners. The latter model has received much support from scholars and authors, yet some warn against the assumption that in a partnership there is homogeneity between partners. This would be an unrealistic assumption and would not sustain successful partnerships, taking into consideration that stakeholder groups are different and often bring unique qualities not familiar or supported by other groups in the partnership (Beaulieu and Pasquero, 2002).

Various authors have explored the dimensions, characteristics or traits of partnerships. Some traits that have been common amongst scholars include the five dimensions or traits as discussed by (McQuaid, 2010). Firstly, the author mentioned the purpose of the partnership or what the partnership seeks to achieve as an important trait, in the sense that partnerships are driven by varied reasons. A partnership may seek to attract extra external resources, maximise efficient use of internal resources, or it may be driven by a project that requires long term implementation (McQuaid, 2010). In project specific driven partnerships, Warhurst (2001) emphasised the importance of stakeholder expectations, policies, innovations, management of reputations and proper governmental plans as important attributes.

Secondly, the key actors involved in the partnership and structure of the relationship are an important factor. This concept was critically acclaimed by Checkland and Scholes (1990), where the involvement of various stakeholders was perceived to be an important process in which there is an opportunity for creative and deep thinking into how things will evolve in the future and how this will impact on all stakeholders.

Key actors in a project driven partnership can include governments, public bodies, communities, grant makers, non-governmental organisations, and the private sector. The involvement of these partners may vary according to their areas of operation, influence and public service mandate

(McQuaid, 2010). Another dimension for key actors in a partnership is the structure of the partnership, which ranges from constitutional, which is mandated by government, to contractual, which is legally binding and non-contractual, which are just general agreements for cooperation (McQuaid, 2010). Thirdly, the timing or stage of involvement in the partnership process is important, as changes over time - through the scope of the project, the turnover of the project partners or the duration of the project - may have adverse effects on the partnership as a whole, since the composition of the stakeholders is diachronic and thus changes over time (Beaulieu and Pasquero, 2002).

Fourth, the geographical area of the project may have an effect on a partnership based on the internal and external influences in that particular area. The fifth dimension is on how the partnership is going to be rolled out or implemented. This involves an exploration of mechanisms on the provision, control and roll-out of resources (McQuaid, 2010).

2.12 Stakeholder management in the water supply chain in South Africa

Prior to 1974, water in South Africa was distributed by a range of local entities, including municipalities, water corporations and the Department of Water Affairs. In 1974, however, the then central government decided to centralise water provision and gave jurisdiction for supplying bulk water to water boards across the country (Frost, 2001). The management of water resources requires careful planning to efficiently and sustainably meet the demands exerted by human and ecological communities under the constraints of a limited supply and the seasonal variation of global climatic conditions (Giacomoni et al., 2013).

The Minister of Water and Environmental Affairs is the Executive Authority (EA) of water boards, including Umgeni Water, and is mandated to monitor performance with regards to service delivery, operational efficiency, water quality, infrastructure investment, financial and commercial viability, and governance and regulatory compliance.

This EA oversight role is exercised in terms of the stipulations of the relevant sections of the Water Services Act, Act 108, amended in 1997, the Public Finance Management Act, 1 of 1999 (PFMA), as well as Regulations Gazettes in terms of these Acts and other relevant legislation and policy requirements (Umgeni Water, 2013).

2.12.1 Integrated Water Resource Management

Integrated Water Resources Management (IWRM) is the process of meeting the needs for use of the water resource, as expressed by the stakeholders, in such a way as to ensure the equitable, beneficial and sustainable use of the water resource (IWRM, 2004). The Department of Water Affairs and Forestry developed guidelines for stakeholder participation in order to propose a framework for stakeholder participation, the formulation of procedures, and the identification of the awareness and training material needs with respect to this procedure (Giacomoni et al., 2013).

Observations over the past decades in South Africa and other developing countries have shifted focus on the development dynamic to try and accommodate the poor. The IWRM principles have become key to the transformation process in the water sector, and efforts are made to include those who have been previously marginalised. A significant notion at the core of these principles is the decentralisation mechanism as a sustainable solution in the management of natural resources. Knowledge about local resources was enhanced through the introduction of the participatory methods. Ideally these localised systems provide for flexibility to adjust to changes and influence larger systems, a notion supported by the complex adaptive system oncology as discussed above.

A number of principles were developed by the Department of Water Affairs to support stakeholder participation in integrated river management. Commitment to these principles, together with the application of guiding processes, will support a governance system around the sustainable use and management of rivers. Some of the governance principles are derived from the South African context embedded in the Constitution and other legal frameworks guiding the supply of water. Chapters Two and Three of the South African Constitution advocate for the establishment of an open society where democratic values and social justice are observed. A right to an environment that is safe and not harmful to societal well-being is emphasised, whilst coherence and cooperation between various spheres of government are also encouraged.

The National Water Act of 1998 spells out the goals of sustainable use and equitable distribution and access, and provides guidelines for the decentralised management of the resource through Catchment Management Agencies and other water resource management institutions (Van Wilgen et al., 2003). Principle 23 of the White Paper on National Water Policy for South Africa, meanwhile, is comprised of explicit requirements for the involvement of civil society as responsible participants in the management of water resources (De Coning and Sherwill, 2004).

The National Environmental Management Act (NEMA) of 1998 also specifies a requirement for co-operative governance, public participation, and a mutually supportive spirit to achieve integrated and sustainable environmental management.

2.11.2 Stakeholder relationship management by water utilities

Water utilities as public entities operate in accordance with the WSA 108 of 1997 and the PFMA 1 of 1999, and are categorised as a National Government Business Enterprise (PFMA, 1999). The primary activities of the water utilities, as per Section 29 of the Water Services Act, is to provide water services to other water service institutions such as the water service authorities (WSA, 1997). As state entities, water utilities have a responsibility to ensure that they are able to respond to the needs of their water service authorities as their major customers. Strategies therefore need to be intricate and forward looking.

Water utilities thus form strong links with their municipal customers; forecasts look as far as three decades into the future to accommodate their water and infrastructure requirements. Yet in complex adaptive systems this notion is discouraged as the external environmental poses major challenges which might impact planning for the future (Chan, 2001). Water scarcity, urbanisation and population growth are some of the major challenges. The implications are such that due to the uncertainty of the environment, the ability to perform competitively in future environments depends greatly on the robustness of the fostered strategies (Beinhocker, 1997).

Water utilities put together capital expenditure programmes to ensure the provision of adequate and effective water impoundment, treatment and supply infrastructure, which are reviewed every five years to assess future demands. Plans are made in support of the municipal economic growth projections, alignment to the strategic growth objectives of the province, the provincial development plan, and the Integrated Development Plans (IDP) of municipalities (Water, 2015). Regular meetings with water service authorities are held to discuss and assess growth potential, and water demand is assessed within each area of supply to identify needs.

A water utility will thereafter conduct a feasibility study to explore various options of service delivery, whilst also conducting economic analyses through a detailed investigation to inform the design of the project for construction (Umgeni Water, 2013).

2.11.3 Project management

Project Management, as defined by the Project Management Institute in the PMBOK, is defined as the application of knowledge, skills, tools and techniques to project activities to meet the project requirements (PMI, 2012). Water utilities make reference to the PMBOK as a guide for project managers to execute their construction projects. A project is defined as a provisional venture undertaken to construct or produce a unique service or product. The project may be conducted by a small group of individuals or a consortium of businesses. One of the key aspects discussed in the PMBOK is the management of stakeholders (PMI, 2012).

Project stakeholders are explained similarly to the context discussed above, in the sense that they also capture the essence of active involvement and vested interest in the project. Identified stakeholders include project managers, communities, municipalities, internal and external funders, contractors, customers, project team members, government regulatory agencies, competitors, potential customers, consumer groups, environmental agencies, lobbying organisations and society at large (PMI, 2012).

The management of stakeholder expectations may be challenging as a result of stakeholders often having different objectives and interests that may be conflicting. As stated in the discussion on complex adaptive systems, connections between humans exist at all levels, thus the rules that govern the interactions between them are socially constructed and not fixed as a legal requirement or law of nature (Maxfield, 1997). Stakeholders therefore play a critical role in the success or failure of a project.

The training of project managers is seen as a crucial element in the management of stakeholders. The principles suggested by the PMBOK advocate for stakeholder management to identify the effect of the planned project on stakeholders in terms of their culture and ability to accept or resist changes that may occur (PMI, 2012).

The PMBOK further advocates for the development of a communication strategy in order to engage affected stakeholders, thus managing their expectations and improving their acceptance of the expected objectives of the impending project (PMI, 2012). The importance of planning for change and the provision of necessary support, monitoring and evaluation are emphasised as being important for project managers. Communication is regarded as being key to maintaining strong relationships with stakeholders, even far beyond the project itself. The evolutionary trajectories are such that the

future history of a given system from a set point in time cannot be determined by complete knowledge of the present state (Maxfield, 1997), thus stakeholders can change during a project and so would the expectations. Stakeholder expectations must thus be managed throughout all phases of the project life cycle.

Knowledge derived from the CIBD (2002) indicates that conflict in projects occurs when stakeholder expectations are not clearly defined from the outset. In the discussion of the toolkit for project managers, the guidelines advise that most projects have experienced challenges or failures because they did not recognise and address stakeholder expectations at a project's inception, thus leading to frustration and disappointment which has a huge impact on the project. Advice is given to project managers to be clear in their communication, manage their stakeholders, pay attention to the internal and external environment, deal with conflict and make good and clear decisions (CIBD, 2002).

2.12 Conclusion

The discussion in this chapter showcases that in today's turbulent environments, successful organisations are those that have recognised the need to take responsibility and involve a range of stakeholders in their business processes, not only to satisfy legal requirements but for long term value creation. The process of engaging stakeholders creates opportunities for open dialogue, thus embracing change that may be brought about by the interaction between the various role-players. The discussion of the various theories showcases insights from various authors on the importance of stakeholder management and how it has evolved. Linkages between stakeholder theory, complex adaptive systems and partnership theory showcase how stakeholder thinking is unfolding today. Stakeholder theory concerns itself not only with those responsible for decision making, but also on the beneficiaries of a decision, thus making procedure as important as the final distribution (Phillips et al., 2003).

The literature review provided a general overview of the stakeholder engagement processes and analysis thereof. In practice, the literature suggested that a combination of various stakeholder analysis and engagement methods is regarded as the most effective tools in the management of stakeholders. The notion of corporate social responsibility as the basis for stakeholder recognition demands that managers face the challenges of dealing with a wide range of stakeholders and to capture the new realities of workplace ethics and the management of stakeholders.

The methodology of the primary research is discussed in Chapter Three.

CHAPTER 3: RESEARCH METHODOLOGY

3.1 Introduction

The review of literature on stakeholders, complexity theory as well as national and international experiences in water governance discussed in the previous chapter is put into context through the discussion of the research methodology that was applied to this study. The researcher, as the advocate of the study, utilised various methods in scientific research with an aim to discover new knowledge. The research methodology in scientific research affords the opportunity for other researchers to duplicate the process and also to verify the correctness of the knowledge presented.

Burns and Grove (2014) defined research as a systematic study or inquiry that authenticates and improves existing knowledge by developing new knowledge. In research there is an element of ongoing examination and research, with the intention of discovering new patterns or new explanations of reality.

An understanding of the philosophical assumptions that underpin research is important for a researcher so that they can critically evaluate the literature and current research in the chosen field of study. Studies reveal that a researcher's own beliefs about the world and their quest for knowledge will be reflected in the way the research is designed, the data collection and analysis, and in the way the findings are reported.

A qualitative research methodology was chosen for this study as it provides a systematic approach and meaning to situations and life experiences by describing and giving them meaning (Burns and Grove, 2014). This methodology gives insight into the dynamic and holistic nature of human beings, thus providing knowledge on the complexity of human interaction.

3.2 The research design

There are two broadly recognised research paradigms, namely the positivist and the phenomenological paradigm.

3.2.1 The Positivist Paradigm

This paradigm assumes the world is external and objective, with the researcher looking for cause and effect and using statistics to determine an objective view (Saunders et al., 2009). This paradigm tends to produce quantitative data and uses a large sample to test hypotheses in an artificial setting, yielding high reliability but low validity of results. Strategies adopted by this paradigm include an experimental design, which involves studies adapted from physics and biological sciences that are used for business research to identify causal relationships (Saunders et al., 2009). The process involves manipulation of the independent variable and its effect on the dependent variable.

In business research, experimental design would involve selecting a sample of participants and dividing them into two groups; one group would be introduced to the independent variable and then the evaluation of the two groups is done on the dependent variable. Surveys involve the careful selection of a sample from a population in order to make inferences about the larger population (Saunders et al., 2009). Applicability and generalisation of findings is assessed through the use of statistical techniques, as well as questionnaires and interviews, to determine the perceptions, opinions or preferences of the chosen participants. Questionnaires and interviews were used in this study but in a different context.

3.2.2 The Phenomenological Paradigm

The world is seen as socially constructed and subjective, with the researcher as part of the observation of human interaction. The aim is to find meaning and establish different subjective views (Saunders et al., 2009). The paradigm produces qualitative data using small samples and natural settings. The data are subjective and rich with results that are low on reliability but high on validity.

Examples of such data collection methods include the use of case studies, which involve telling stories usually in chronological order, using information collected from a multitude of sources (Saunders et al., 2009). Data can be collected using observations, interviews and document collection. The phenomenology strategy was chosen for this study through which the researcher was able to gain participant understanding and their perception of the research problem.

Action research is another example of qualitative methods, which promotes change within the organisation through a cyclic process of planning, implementation and a review of the outcomes of each action. It is undertaken with the aim of increasing understanding through learning from the experiences that will bring about change within the organisation (Saunders et al., 2009). Grounded theory is an approach where theory emerges from and is grounded in the data collected (Saunders et al., 2009), and the researcher is concerned with the identification of phases or stages of the process and change over time. Ethnography requires a researcher to be an active participant in the real life context of the study as a participant observer, which makes it time consuming and thus not a widely used research strategy (Saunders et al., 2009).

According to Creswell (2013), the role and experience of the researcher is an important factor in the selection of the research design. The researcher is employed at Umgeni Water as a Social Development Programme Coordinator, a role that oversees the institutional support and development by ensuring that there are linkages between the organisation and its role players, specifically the communities. The researcher worked on the project in question for a period of one year prior to the study, and continued to work on the project for the duration of the study. The study provided an opportunity to address issues that will impact Umgeni Water in terms of their interactions with stakeholders in the future.

The parameters mentioned in the research question focused on the relationship network in an infrastructure environment, which influenced the choice of the site under study. The researcher was known and worked with most of the participants which contributed to easier accessibility to the site and to the quality of the information received (Bowen, 2005).

Familiar environments can pose a challenge for researchers as there are opportunities for biasness and compromise of data (Creswell, 2013). The researcher had to be careful to apply strategies to address issues of validity, as discussed in later sections in this chapter.

3.3 Qualitative research

Qualitative research, involves getting to know behaviours and events through active involvement in their natural setting. The primary focus of qualitative research is on the perceptions and experiences of participants and on how they give meaning to a particular phenomenon.

Qualitative research was chosen for this study because the researcher knew little about the topic of study and wanted to explore meaning by focusing on the human experience of others, who were directly or indirectly involved with the phenomenon under study (Jeanfreau and Jack, 2010). Studies reflect that the main strength in qualitative research lies in the in-depth understanding that it provides from a thorough examination of social processes over time. Qualitative research also provides for flexibility, allowing the researchers to modify their research design at any given time (Creswell, 2013). It is also a cost-effective method that can be undertaken with minimal or no equipment, thus requiring less budget. As an employee in the organisation under study, the researcher's approach was influenced by the fact that there might have been some degree of bias. As one of the team members, the researcher was aware of the dynamics involved, most of which were cultural. Grounded theory would have been appropriate if the study was focusing on culture, however the researcher was looking at getting a perspective on an identified problem area.

The researcher's approach was to use certain theories to guide the study. In choosing the strategy, the researcher saw the benefit of using qualitative research, as it provides a theoretical lens that shapes the type of questions asked and informs the methods for data collection (Creswell, 2013). A literature review was undertaken to gain a better understanding of both the research approach and the problem area. The study aims to bring forth an understanding of the roles played by various stakeholders in the governance of water infrastructure projects implemented by Umgeni Water, in order to improve stakeholder relationship management. Quantitative research would have been limiting for this study as it would have forced the researcher to consider a potential cause for the community unrest and thus conduct a study to verify its effect. Babbie (2010) mentioned that in a quantitative study, the data are collected using specific research instruments and results are based on a larger sample size, with data being presented in statistics or numbers.

In choosing the research strategy, the researcher took into consideration their previous involvement in the project and the challenges that emerged due to the social interaction between the various stakeholders.

The research question was formulated with an aim to uncover or explore the reasons behind the events that unfolded on site, and what motivated the behaviour and attitude of the affected stakeholders. The researcher chose the qualitative research paradigm and used purposive sampling to identify 15 participants, who were interviewed using in-depth, semi-structured interviews.

Various techniques can be utilised to collect qualitative data. Creswell (2013) argued that it is still a challenge for most writers to agree on exact methods for collecting, analysing and reporting on qualitative data. In support of his statement, Creswell (2013) recommended that researchers consider the study area, participants and the events leading to the study as parameters to inform how they collect, analyse and report on qualitative data. The researcher took this into account when choosing the research method and employed in-depth, semi-structured interviews in a sample chosen from a team involved in the project under study. Semi-structured interviews are widely used in empirical studies as they are more flexible and allow for both the interviewees and the researcher to elaborate and explore information that might not have been initially considered important (Gill et al., 2008). Other methods of data collection in qualitative studies include observation and focus groups. Observation involves studying people in their natural environment by direct observation of their behaviour and interactions, taking care not to disturb their natural environment (Saunders et al., 2009).

The selection of participants took into consideration their involvement in the project under study, i.e. the relevance and usefulness of the data for the study. The participants were interviewed individually in order to get more diverse and detailed contributions. Focus groups could have been appropriate as one of the qualitative methods, however since they use group dynamics to generate data, the views, experiences, and beliefs of individual participants would have been compromised and thus limited the findings of the study (Gill et al., 2008).

3.3.1 Collection of primary data

Collection of data involves setting the boundaries for the investigation through data collection methods and establishing the procedure for recording information (Creswell 2013). The researcher aimed to investigate the perception of the impact of stakeholders on the implementation of water infrastructure projects at Umgeni Water.

The project that was studied is a dam construction project implemented by Umgeni Water in northern KZN. Data for the research were collected primarily through 15, in-depth, semi-structured interviews, which were conducted with the team that had been working on the project under study. Interviews as a research instrument were used because of their ability to acquire various insights with regards to the research topic.

The respondents included two Project Managers, two Design Engineers, two Process Engineers, two Planning Engineers, one Water and Environment Manager, three Institutional Support and Development (ISD) Facilitators and three Environmental Scientists. These respondents had been employed by Umgeni Water and working on projects for over 10 years. Studies reveal that qualitative research uses sampling methodologies that do not aim to draw statistical inferences but rather draws on a sample that will provide an in-depth understanding of the world viewed by the participants (Wilmot 2005).

The research questions posed by this study aimed to get different views and perspectives on the role, rules of engagement and challenges faced by stakeholders involved in project implementation. The selection of participants was based on their knowledge and experience of the area and project under study. This sampling methodology known as purposive sampling is often employed in qualitative research and was thus the methodology seen suitable for this study.

Relying on available subjects, however, is extremely risky and comes with many cautions. For example, this method does not allow the researcher to have any control over the representativeness of the sample, i.e. the researcher cannot control how well the characteristics of the sample (gender, age, race, education, etc.) match the characteristics of the larger population it is intended to represent. The characteristics of individuals are used as the basis of selection, most often chosen to reflect the diversity and breadth of the sample population.

The selection of the sample of respondents was based on their experience and respective expertise according to their involvement in the implementation of infrastructure projects at Umgeni Water. Length of service was considered important in terms of the in-depth knowledge and quality of the information received. A sample of 15 interviewees was selected as indicated in Table 1. The sample population shows that nine of the respondents were male. Although this was not done intentionally by the researcher, the selection of the sample was limited by the fact that 68% of the workforce at Umgeni Water is male, whilst only 32% is female (Umgeni Water, 2016).

The population of the respondents also showed that the respondents represented different stakeholder groups considered critical in the implementation of the infrastructure projects. The population showed four stakeholder groups consisting of engineers (six respondents), project managers (two respondents), environmental scientists (four respondents), and social facilitators (three respondents). The population of the respondents also showed that the majority of the respondents (six) were in

their forties, whilst the younger generation was represented by only one respondent. The sample of the respondents also showed that five of the respondents had more than 20 years' work experience, whilst five of the respondents had more than 10 years work experience. Although the demographic information of the respondents, such as gender, was known to the researcher, the population was the result of an open invitation to participate and was representative of the different business functions and target population.

Table 1: Demographic information of the respondents

Respondent	Title	Department	Gender	Race	Age	Length of service
R1	Project Manager	Project office	Male	African	46	17 years
R2	Project manager	Project office	Male	White	40	8 years
R3	Design engineer	Planning Services	Male	White	38	5 years
R4	Design Engineer	Planning Services	Male	White	55	28 years
R5	Process Engineer	Process Services	Male	Colored	52	25 years
R6	Process Engineer	Process Services	Male	African	40	15 years
R7	Planning Engineer	Engineering services	Male	African	43	17 years
R8	Planning Engineer	Engineering services	Male	White	41	14 years
R9	Water and Environment Manager	Water & Environment	Female	African	40	15 years
R10	Social Facilitator	Water & Environment	Female	African	37	13 years
R11	Social Facilitator	Water & Environment	Female	African	55	30 years
R12	Social Facilitator	Water & Environment	Female	African	50	25 years
R13	Environment Scientist	Water & Environment	Female	African	28	5 years
R14	Environment Scientist	Water & Environment	Male	Indian	45	20 years
R15	Environment Scientist	Water & Environment	Female	Indian	55	30 years

3.3.2 Interviews

Interviews in qualitative research seek to describe and understand meanings behind what is said by the interviewees. The usefulness of interviews is evident in getting information about the participants' experiences, and it affords the interviewer an opportunity to get in-depth information on the interview topic (Valenzuela and Shrivastava, 2002). The design of the interview schedule was first done at a broad level after the initial enquiry into relevant literature. The schedule was influenced by the researcher's interest into finding out the following information from respondents,

- Awareness of existing policies and procedures within the organization
- Stakeholder participation approaches by the organization
- Management of risk
- Sharing of knowledge
- Community participation
- Conflict Management

This schedule was simplified further into interview questions as attached in Appendix 2.

Valenzuela and Shrivastava (2002) advised that the environment in which the interviews are undertaken must be conducive and allow for minimal distractions, which were taken into consideration during the study. The researcher booked a venue in one of the organisation's boardrooms to allow for comfort and less interruptions. Fifteen interviews were conducted face-to-face with the individual respondents. Prior to each interview, the purpose of the interview was explained in writing, addressing issues of confidentiality, format and the duration of the interview. Valenzuela and Shrivastava (2002) further advised the interviwer to apply certain technique during the interview process such as listening carefully to respondents without interruption, asking follow up questions and probing, avoid interuption and leading questions, treat respondents with respect and make them feel comfortable.

All the respondents were requested to sign the informed consent forms attached in Appendix 1, in which they were given an opportunity to agree or disagree to being recorded. Two of the respondents (R4 and R8) expressed concern with being recorded, so only written notes were taken. The rest of the interviews were recorded and later transcribed.

3.3.3 Collection of secondary data

Guiding principles, policy documents and reports on the selected water infrastructure projects at Umgeni Water were gathered. Other records that were explored included signed agreements with stakeholders, progress reports and minutes of meetings held (Mnyaka, 2014). A literature review on stakeholder management, project management and complexity was undertaken to gain a better understanding of both the research approach and the problem area. Studies reveal that data collection in qualitative research results in the emergence of patterns through a recurrence or circular process (Creswell, 2013). The collection of secondary data thus enables the researcher to pursue other concepts or questions through a process known as triangulation, which is endorsed for enabling data verification (Saunders et al., 2009). An important document that was crucial to the study, *Umgeni Water Stakeholder Management Strategy*, was utilised as a reference document in the analysis.

3.4 Data analysis

Thematic analysis was used for this study with an aim to determine common thoughts and to gain more understanding of the data collected from the interviewed participants. Thematic analysis is a type of qualitative analysis used to analyse, classify and present emerging patterns or themes relating to the data by illustrating the data in greater detail through interpretation (Alhojailan, 2012).

This type of analysis was seen as appropriate for the researcher to examine data in order to gain a more clear and logical understanding of the respondents' thoughts and to transfer their experience into the study. Most qualitative studies advocate thematic analysis as one of the best methods to use, as it allows the researcher to get close to the data and investigate broader patterns (Braun and Clarke, 2006). In conducting thematic analysis, the researcher applied the six steps as depicted by Braun and Clarke (2006) which are:

1. **Familiarising or getting to know the data -** Following the guidelines from the authors, the verbal data from the recordings was transcribed into written format. During the transcription process, the researcher was afforded an opportunity to rewind, re-listen and re –write each transcribed data in a format that allowed the researcher to view all responses from the respondents against each question.
2. **Collating of relevant data through coding -** Data that appeared relevant and interesting to the researcher was identified and labelled. This involved extensive scrutiny of the data where lists of words, phrases and paragraphs were highlighted and underlined in the way that made sense to the

researcher as suggested by Braun and Clarke (2006). Repeated or similar information was labelled. In some cases the responses were suggestions or recommendations.

3. **Exploration for themes emanating from the initial codes -** Following the guidelines from Step 2, the initial codes collated from all data were categorised into themes using visual presentations to map out the themes.
4. **Review of themes -** During this step the entire data is scrutinised with an aim to discover underlying patterns and bringing several codes together. Themes were refined in terms of their relevance. Themes that were found lacking in terms of relevance were discarded, whilst others themes were broken down further to provide more meaning.
5. **Definition and naming of themes -** Further analysis of themes in terms of how they connect to each other and how they fit into the research question was undertaken. According to Braun and Clarke (2006), this process culminates into the main results of the study where the new knowledge from the perspective of the participants is presented. In cases where there is emergence of complexity from the themes, sub-themes were identified as indicated in Table 3 in Chapter 4. Support of the themes and sub-themes was presented by the inclusion of direct quotations from respondents also presented in the next chapter.
6. **Writing of the report -** A presentation of findings in terms of the interconnected of themes, interpretation of results based on results from similar studies, theories and other relevant concepts is presented in a report discussed in Chapter 5, whilst the write up of conclusions drawn and recommendations from the study is the basis of chapter 6 of this study.

The information received from the respondents further required the researcher to investigate other secondary data sources, in order to understand how their principles are applied in Umgeni Water's implementation of their construction projects. The presentation of the analysis of themes is presented in the next chapter.

3.5 Ethics

Ethical clearance was approved by the University of KwaZulu-Natal (UKZN) and is attached herewith as Appendix 3. A written gatekeeper's consent letter was obtained from the General Managers responsible for the respective departments of the respondents. The letter was attached to the e-mails requesting participation from the selected sample of respondents, together with informed consent forms giving assurances of anonymity and confidentiality. Permission for the use of digital recording was obtained from the respondents with the exception of two, who expressed discomfort

with being recorded. The researcher honoured their wish and captured the discussions in writing, taking care to write important notes that were properly edited after the interview. The researcher further protected the identity of the respondents by using codes (R1-R15) instead of real names during the analysis and presentation of the data. The proper name of the project was also not mentioned in the study to protect the identity of the community residing in the area under study.

3.6 Reliability and validity

The methodology that was chosen for this study identifies with qualitative studies, and thus also takes into consideration approaches that address issues of trustworthiness in qualitative research (Shenton, 2004). Several strategies can be used to address issues of bias and subjectivity in qualitative research. In conducting the study, the researcher interacted with respondents who had varying degrees of knowledge and different attitudes. In his article, Guba (1981) highlighted criteria for establishing trustworthiness in qualitative studies, namely credibility, transferability, dependability and confirmability. Credibility has to do with internal authentication in the sense that a researcher presents a true picture of the phenomenon under study. As a researcher working in the same environment under study, it is important that the findings reflect what has emerged from the data and not the researcher's own inclinations. According to Shenton (2004), threat to researcher bias can be minimised by a conscious effort to constantly reflect on potential biases and how these can be minimised. The researcher applied the suggested strategies by allowing openness to participant perceptions and experiences in order to explore the credibility of the research results.

Transferability refers to external validation in terms of how applicable the study would be to other settings (Shenton, 2004). Negative case sampling is also suggested by Shenton (2004) where the researcher tries to find cases that contradict their expected results.

The researcher used secondary data from the review of literature and rich pictures to present and compare contexts to other similar settings or projects. Dependability, as per Guba (1981), questions how reliable the study would be in terms of it providing a platform in the future for it to be investigated further.

The use of more than one particular approach in conducting field research is a strategy that has been used by researchers both for quantitative and qualitative research. The term used for this technique is called triangulation (Lauri, 2011), which is a process that can assist in confirming the results of the research or to give more context to the data collected by using more than one approach to the investigation of the research question in order to enhance confidence in the resultant findings. Lauri (2011) described different types of triangulation as listed below:

- Data Triangulation- the use of a variety of data sources in a study. Triangulation can take the form of using different methods of data collection, such as focus groups, observations and individual interviews for one study
- Investigator triangulation – the use of multiple or various researchers or investigators
- Methodological triangulation- use of multiple methods to study a single problem or programme and was cited as the most commonly used method (Bryman, 2004).
- Environmental Triangulation - use of different environmental locations in a research study
- Theoretical Triangulation – uses multiple perspectives to interpret a single set of data. The use of a variety of sampling strategies to source data and to use multiple theories to compare the knowledge that emerges are all triangulation strategies as also supported by Shenton (2004). The use of stakeholder theory, partnership theory and complexity theory to draw an understanding and compare theoretical perspectives on stakeholder management was one of the strategies employed by the researcher in this study as presented in the analysis and discussion in Chapter 4 and 5 respectively.

3.7 Conclusion

A qualitative research methodology was chosen for this study. The data were analysed using themes in order to retrieve the meanings expressed by the respondents during the interviews. The in-depth interviews provided a deeper understanding of each respondent's experiences and perceptions, and allowed for open interaction between the researcher and the respondents in terms of clarification and understanding. The next chapter discusses in detail the analysis of the data.

CHAPTER 4: ANALYSIS OF RESULTS

4.1 Introduction

The three previous chapters gave an overview of the study in terms of its purpose, the relevant literature and the methodology employed to collect data in order to investigate the impact of stakeholders on the implementation of water infrastructure projects at Umgeni Water. This chapter aims to present an analysis of the data collected, including the discussions and results from the interactions with the respondents.

4.2 Umgeni Water Project Lifecycle Process (PLP)

The methodology discussed in the previous chapter indicated that interviews were the primary source for the collection of data. The information on the PLP was believed to be useful for the respondents to provide a backdrop to the various phases in the construction process to indicate the respondents' responsibilities, and later to give a synopsis of the various interactions during the different phases of the project.

One of the project managers gave his interpretation of the PLP process as:

A method of standardising project delivery so that all of us apply the same rules and regulations. (R1)

Most project managers agreed that at Umgeni Water there are significant project delays due to lack of standardisation in the project delivery methods. One respondent further elaborated:

There is now an Infrastructure Delivery Management System (IDMS) from Treasury that guides the delivery and governance processes including those of water utilities like Umgeni Water. (R5)

Most respondents indicated an awareness of the various stages of the PLP process. Umgeni Water implements projects that are identified during the strategic planning process and the PLP process is implemented according to the schedule and completion dates forecast during the strategic planning phase.

The design and planning engineers indicated involvement during the initial phases:

During the pre-feasibility phase, a preliminary examination of an area is conducted in order to obtain and evaluate information that will lead to the identification of a likely infrastructure to be developed. (R7)

Another engineer concurred that at the feasibility study phase, a more intensive investigation is conducted to optimise the most beneficial layout for the infrastructure to be built.

At the end of the feasibility phase, we must have one option that is feasible to take to the design phase. (R3)

The respondents revealed that after the feasibility stage, the project progresses into the detailed design phase where the design brief and feasibility report are finalised and presented. All the respondents agreed that it is at this phase, after detailed design, that the project is handed over to the project manager to oversee the construction of the project.

One of the project managers elaborated on what is done during the construction phase.

We prepare a project charter, which is the document that authorises the project to commence. The tender documents are prepared and then the chosen contractor will implement the construction works. (R2)

All the respondents agreed that the construction phase is the busiest phase and one that involves a lot of interaction between the various stakeholders before the project is completed and handed over to the customer at the commissioning and handover phase. Table 2 below depicts the project lifecycle process and various stages of involvement by the respondents.

Table 2: **Illustration of the Project Lifecycle Process (PLP) adopted by Umgeni Water for implementation of its infrastructure projects**

Reconnaissance phase	Pre- feasibility phase	Feasibility phase	Detailed design	Implementation/ Construction	Commissioning and handover phase
Duration **1- 5 years**	**Duration** **1-3 years**	**Duration** **2-4 years**	**Duration** **2-4 years**	**Duration** **2-6 years**	**Duration** **4-8 years**
(Planning engineer)	• **(Design engineer)** • **(Planning engineer)**	• **(Project manager)** • **(Environment scientist)** • **(ISD facilitator)**	• **(Design engineer)** • **(Process engineer)** • **Project manager)** • **(Environment scientist)** • **(ISD facilitator)**	• **(Project manager)** • **(Environment scientist)** • **(ISD facilitator)** • **(Design engineer)** • **(Planning engineer)**	• **(Project manager)** • **(Environment scientist)** • **(ISD facilitator)**

Source: Constructed by researcher.

4.3 Analysis of the research data

The themes and sub themes that emerged after the analysis of the respondent interviews are summarised in Table 3.

Table 3: Identified themes and sub-themes

Theme	Sub theme
4.3.1 Partnership Arrangement	4.3.1.1 Key stakeholders
	4.3.1.2 The role of key stakeholders
	4.3.1.3 Engagement
4.3.2 Communication	4.3.2.1 Internal communication
	4.3.2.2 External communication (consultation process)
4.3.3 Risk Management	4.3.3. Resourcing
	4.3.3.2 Knowledge sharing
	4.3.3.3 Community participation
4.3.4 Leadership	4.3.4.1 Project management
	4.3.4.2 Decision making
	4.3.4.3 Monitoring and feedback

4.3.1 The partnership arrangement

The rich picture depicted in Appendix 4 illustrates the analysis of the partnership arrangement in the iLembe Dam project. Soft Systems Methodology was used as a tool to depict the problem situation, which provided an opportunity to examine the differing views from the various stakeholders involved. The use of a rich picture as part of the SSM model afforded a further exploration by the researcher into the various role players and their contributions to the project.

4.3.1.1 Key stakeholders

Most respondents revealed that Umgeni Water's engagement with various stakeholders was in a form of partnership, where a pool of resources was drawn together towards a common purpose. The analysis revealed that the purpose of forging these partnerships is guided by the early identification of relevant stakeholders and the classification of their roles. One respondent who has worked for a period of 15 years in a management position provided an overview of all the stakeholders considered to be important:

Key stakeholders include both internal and external stakeholders. External stakeholders include the Minister of Water Affairs and Sanitation as a Shareholder, Municipal customers; UW subsidiaries; Portfolio committee; Provincial Stakeholders (Premier's office, COGTA, SALGA, Suppliers and investors; Media environment and communities within our operational area. Internal include Other Divisions, such as Office of the CE, Operations, Finance etc. Also included as internal stakeholders is the Union and staff. (R9)

One respondent identified the purpose of engaging stakeholders as that of fulfilling a business need. The stakeholders identified as fulfilling the business need were those regarded as custodians, shareholders and customers. Amongst these stakeholders was the water service authority, depicted as ILembe District in the rich picture. The respondents agreed on the impact that the district municipality had on the project, in that it is one of Umgeni Water's bulk supply customers and the successful implementation of the project would ensure a sustained relationship.

When it comes to stakeholder analysis one may consider a stakeholder key if the stakeholder has the highest impact and highest influence, this stakeholder would essentially be a determining factor in deciding whether or not the project should go ahead and for me this stakeholder is the customer. The project is done for the customer and if the customer does not want it there is no reason to build it. (R5)

The Department of Water Affairs and the Department of Agriculture and Environmental Affairs shown in the rich picture represent stakeholders that have a legislative mandate. The respondents agreed that they have a major impact on the project as they are responsible for the issuing of permits and water use licences. One respondent in particular emphasised their relevance:

Stakeholders who have a regulatory or oversight function with UW, among them Government Agencies and the different tiers of Government that UW is required to interact with on a regular basis in order to ensure that statutory reporting requirements are met. (R1)

A respondent who had worked in the organisation for 25 years as a social facilitator expressed that the community, depicted as Masibambisane Community in the rich picture, is a major stakeholder.

Community as the end user and recipient of the project I highly regard them as the key stakeholders and their significance is very important in terms of owning and protecting the project so they do not vandalise the infrastructure brought to them. (R12)

There was consensus amongst the respondents that the traditional leaders also had a major impact on the project, however some respondents classified traditional leaders as community and highlighted the importance of building good relationships with the traditional leadership in order to get their buy in.

The target traditional authority affected by the footprint of the project must not be left behind. Sometimes this is not necessarily the community that will utilise the water but the infrastructure (dam) is placed within their locality. (R11)

A common understanding was shared amongst the respondents that Umgeni Water has contractual obligations not only with its customers, but also with its staff members. Key role players within the organisation identified as having an impact on the project are depicted in the rich picture.

At divisional or departmental level, stakeholder identification includes understanding the roles and responsibilities associated with implementing the organisational strategy. (R3)

The interviews demonstrated that the function of managing stakeholders at corporate level was assigned to a specific department or unit, which is responsible for communication with external customers. The study revealed that this role is, however, separate from the everyday implementation of the project, and is also not reflected in the rich picture.

Our Stakeholder Management Unit ensures that the guidelines and mandate of UW is clearly communicated to all stakeholders of which every role player has an opportunity to relay concerns on matters relating to UW core business while legislative requirements and ambit are maintained. (R2)

Information received by the respondents from the construction documents indicated that the services of the contractor were sourced by Umgeni Water in order to implement the construction of the dam. One of the respondents also mentioned that the identification of stakeholders is also undertaken in fulfilment of planned partnerships.

Stakeholders are identified through forming partnerships in service delivery agreements, forming joint ventures towards fulfilling government mandate. (R12)

In the rich picture, Stockwell Construction was identified as an important stakeholder in the dam construction.

4.3.1.2 Role of the key stakeholders

The majority of the respondents made reference to the Project Charter, which is a formal document that defines the main elements of a new project and establishes the authority required for executing it. This Charter was quoted as a key tool that was used to define the parameters of the project and convey the purpose and requirements of the project to the project team.

…the procedure Manual for Project management Office deals with stakeholder identification in the Project Charter template as is understood in terms of PMBOK. (R4)

The study revealed that the Charter further classified the stakeholders according to the input they presented to the project. There was consensus amongst the respondents that the key stakeholders in the implementation of the project included the Department of Water Affairs, whose role was seen as having an impact in terms of monitoring Umgeni Water's performance with respect to service delivery, provision of quality water, infrastructural investment, financial viability and good governance. One respondent emphasised the important role played by the department.

We can build infrastructure but we cannot operate until the Department of Water and Sanitation issues the water use licence. (R5)

Some respondents revealed that Umgeni Water provides in-house expertise, which includes representatives from Engineering Services, Environmental Services, Supply Chain Management and Asset Management. Other roles that were highlighted as important by some of the respondents included the role of management and each respondent's role as part of the project team. One respondent saw her role as that of providing the necessary resources as a manager to guide stakeholder management.

My role is to ensure that there are programmes and plans in place that guide stakeholder management at project level. In addition to that I also need to ensure that there are adequate and competent resources to deal with social facilitation for the various projects that we are implementing. (R9)

Another respondent saw her role as balancing the needs of all stakeholders whilst safeguarding the interests of the organisation.

My role is to act as glue or liaison between Umgeni Water, contractor and the community. (R10)

The majority of the respondents were positive about their role in the project, but expressed concerns about how their roles are perceived by other role players in the project. One respondent expressed that there were certain inconsistencies resulting from a lack of role clarification.

My role in the project is seen as that of resolving conflict, which I find difficult if I was not involved in the project initiation. (R11)

Another respondent indicated that the role of each team player is provided during a specific phase of the project, but some role players are involved late in the project and in some cases there are overlaps.

I was surprised when a landowner indicated that the contractor made them sign a consent form. I thought he knew that was my role. (R10)

Further confusion was expressed with regards to the role of the project manager in relation to the respondent's line manager. Some respondents expressed that their role as project managers was undermined by the respective line management, which impacts negatively on the project.

As a project manager, my role is to ensure that the project is implemented in line with the project charter, Umgeni Water policies and the planned project time lines. (R2)

Respondents revealed that the traditional leader of the area was identified as a major stakeholder due to his role in assisting the organisation to secure servitudes. Most respondents agreed that the

community played a major role in the project, with both positive and negative outcomes. In mitigating the negative impacts one respondent provided this input for management:

Improve on communication and ensure that where it is applicable all necessary agreements are signed for future reference. Present projects to stakeholders, especially customers, communicate the benefits to them and what would be required of them during and after project implementation. (R5)

The role of both the district and the local municipalities was seen as important, as they are responsible for providing water services to the residents of Masibambisane. One respondent summarised the role of the municipalities as below:

The municipality, apart from wanting to ensure that there is adequate water supply in their district also needed to be seen to be supporting the community during their protests. (R9)

Another respondent indicated that the municipality roles were inconsistent at the district and local levels.

Different stakeholders had their own agenda to fulfil so perhaps it is useful to understand what would be of benefit to the different stakeholders. It is important to also consider the political climate at the time. (R1)

4.3.1.3 Engagement

Respondents agreed that engagement of stakeholders had an impact on the project. Most indicated that engagement was done with those stakeholders as prescribed by the project charter and that the engagements were sometimes reactive.

One respondent with less than six years at Umgeni Water, who was the only one with less experience in working in construction projects, had the following advice for management:

In project implementation process the engagement of relevant stakeholders must be prioritised, because at most the engagements are on a reactional basis, particularly project base stakeholders, which have a potential of costing the delivery of the project and coordination of relevant

requirement that supplements stakeholder engagement, i.e. socio-economy, environment and health and safety. (R3)

Another respondent with over 15 years' experience agreed.

Early determination of the stakeholders, bringing together all support to engage the relevant stakeholders, e.g. social facilitation, municipal officers, environmental spokesperson to address the appropriate audience for buy in at planning / implementation stage. (R7)

4.3.2 Communication

Most respondents expressed a lack or very little awareness of the existence of the Stakeholder Management Policy within the organisation. One respondent who was involved in planning expressed the importance of having procedures in place.

No I am not aware of the above policy or procedure. From a project implementation perspective it is fundamental that stakeholder engagement and procedures are put in place to ensure project success and delivery within the required time lines. Often this is not considered and it poses huge project and ultimately organisational risk. (R7)

Another respondent also indicated no knowledge of the existing policy:

I am not aware of any policy but procedures are followed through to engage stakeholders. (R11)

Some respondents showed awareness of the existing policy but indicated a lack of knowledge of what it entails.

I am aware of the policy but am not fully familiar with its contents. (R10)

One respondent made special mention of the Corporate Stakeholder Management Unit as being responsible for communication with external customers, and the same respondent indicated knowledge about Umgeni Water's involvement in engaging stakeholders.

No, I have not seen a documented policy regarding stakeholder engagement. However I am aware that UW has a Corporate Stakeholder Management Unit which is mandated to communicate with key stakeholders on behalf of UW. In addition there is some information around stakeholder engagement on the intranet. (R9)

4.3.2.1 Internal communication

The respondents agreed that communication between internal stakeholders had an impact on the project. An analysis of the responses indicated that communication between internal project stakeholders occurred informally or formally through discussions or electronic mail.

We have regular project progress meetings, and when issues arise we communicate through e-mail. (R4)

One respondent indicated that the project team met monthly and records of minutes were kept electronically.

As a project manager, I have to ensure proper consultation and transparency. The meetings were booked and prescheduled to allow attendance by all stakeholders. (R2)

Some respondents expressed concern with the cross-departmental communication in terms of receiving information late or not receiving feedback on communication sent. One respondent expressed that she drove 200km to a meeting venue only to be told it was changed.

The meeting organiser omitted my name in the mailing list; needless to say I had to miss the meeting, which made me look unprofessional. (R15)

4.3.2.2 External communication

The analysis revealed that communication with external stakeholders was assigned to various delegate employees depending on the level of governance. At the corporate level, communication with state organs, municipalities and government departments was assigned to the Chief Executive.

Respondents revealed that at the project level, communication is tailor-made for different audiences and each Umgeni Water team member has a role to play. Table 4 summarises the responses from the respondents.

Some respondents indicated that communication with stakeholders is rather reactive.

At most my role is most active during the construction phase, when community members raise issues that were omitted or unresolved during the public participation process. (R10)

Another respondent concurred:

The neighbouring communities were not consulted until they raised their concerns about their family graves that were going to be affected by the pipeline. (R12)

Table 4: Summary of stakeholder interactions in the ILembe dam project

Stakeholders	Audience	Reason for Communication	Responsible UW Delegate
Municipal Customer (iLembe District)	• District mayor, • Local municipality Mayor • Local Councillors	• Service level Agreements, • Tariff negotiations	• The Chief Executive
	• District and local Municipal leaders • Traditional Authority • Community	• Project launch	• Umgeni Water Executive and Board members • Project Team
The local Municipality	• Local Municipality • Contractor • Project Steering Committee	• Project briefing and handover	• Project Manager • Social Facilitator
Masibambisane Community	• Local iNkosi • Community • Local councillors • Local mayor	• Public participation process • Public meetings • Landowner consents	• Project Manager • Social Facilitator • Public participation specialist • Environmental Scientist
Traditional Authority	INkosi Maphumulo	• Introduction of the organisation and lobbying for support • Request for the "permission to occupy" communal land • Formal visit to the homestead	• Social facilitator
Local Leadership Structures	Local Councillor and members of the project Steering Committee	• Formal introduction of the project • Establishment of the project steering committee • Employment of the Community Liaison officer and local labour	• Project Manager • Social Facilitator
On site Stakeholders	• Contractor • Project Steering committee • Community Liaison officer	• Establishment of the site rules • Monthly progress meetings • Monitoring visits	• Project Manager • Social Facilitator • Environmental scientist

4.3.3 Risk management

Respondents indicated that there was a lack of understanding on what constitutes project risks. One respondent commented that he was not aware of mitigation measures for managing risks.

I don't know of measures put in place. (R11)

Another respondent had mixed opinions about the management of risks:

UW has competent staff that can deal with most issues arising from influence of stakeholders. For example, if it relates to a negative image due to press articles, the CSMU Manager usually responds and provides factual information. This risk can never be eliminated entirely because it is also influenced by aspects that are outside our control such as service delivery issues, changes to the external environment also has an influence on stakeholder management. (R9)

4.3.3.1 Resourcing

There was agreement between the respondents that their workload affected their availability for the project. One respondent expressed frustration with the workload that affected her stakeholder management.

There are only three social facilitators employed within the organisation supporting a total of 15 projects each, and at times six of the projects are at construction stage at the same time, which is the busiest phase in terms of intervention. One project or another is due to suffer. (R10)

She further gave the following advice to management:

There are project managers that are employed on a contract basis; maybe contract positions can be created for social facilitators as per project demand to lessen the load. (R10)

The building capacity of the community was identified as having a positive impact on the mitigation of risks for the project. Respondents indicated that the induction and training of community members as Project Steering Committee (PSC) members assisted the project to some extent. At the same time, however, it was expressed that the selection of the PSC members did not get community buy-in, as these were imposed by the district municipality.

One respondent expressed frustration at working with the PSC:

ILembe DM presented Ward Committee members as PSC which did not sit well with the community who wanted to choose their own PSC. (R1)

4.3.3.2 Knowledge sharing

Respondents agreed that individuals working in the team did not share information with each other. There was consensus amongst the respondents that each member of the team worked independently of each other until a problem arose in the project. Interdepartmental competition was one of the issues identified by one of the respondents.

There is a feeling of superiority from the engineers and somehow other fields are regarded as inferior. Only when problems arise then they realise they cannot do everything. (R14)

There is also a lack of consultation and knowledge sharing in terms of planning for risk and contingency at the project level. This was expressed by one of the respondents.

There are funds that are put aside to accommodate technical glitches and even for delays due to weather, it is however funny that there is no contingency plan for delays caused by community disagreements. Instead the organisation pays for the contractor for standing time. (R9)

Another respondent put the blame on a lack of proper skills:

It is frustrating that a project experiences delays due to social issues. Political factors were known prior to project implementation. Why these were not properly planned for in terms of social interventions? These impacted badly on the timelines and project sign off. (R8)

One respondent had this input:

The internal stakeholders participating in the project must work as a team and not as individuals. When problems arise the team must provide support as opposed to pointing fingers. The stakeholders to recognise that every stakeholder is the professional expert to contribute in delivering successful water project for the benefit of the community. (R10)

Another respondent identified lack of planning for outside interferences as a project risk.

In our project meetings, it became apparent that all projects have been affected by the public protests, which is something we did not envisage during our planning. (R7)

4.3.3.3 Community participation

Apart from the role played by the traditional leadership in the allocation of communal land for construction, there was consensus amongst most respondents that the involvement of communities in decision making processes was initiated through the establishment of a community structure known as the Project Steering Committee (PSC), whose role was explained as that of creating awareness of the project amongst the community.

The PSC ensures the smooth running of the project, provide advice and guidance to the processes within the area and limit conflict. The PSC plays a liaison role between the community and the various stakeholders working on the project. (R8)

Respondents also agreed that the community participated through the provision of local labour. Most respondents indicated that there were gaps in the terms of proper engagement as to how skilled labour recruitment should be rolled out, which caused a major risk for the project.

The project employed approximately 120 people locally who provided basic skills. The contractor brought his own team of 20 people who were skilled and the community was angered and started the unrest. (R11)

Most respondents agreed that the presence of additional human capital residing in the community can assist in bridging the gap and improving relations between stakeholders.

The project benefitted greatly from the Community Liaison officer whose knowledge of the area helped the contractor gain access to the community without fear. (R1)

4.3.4 Leadership

The respondents indicated that the style of leadership impacts on how a leader is viewed by stakeholders. There was consensus that the ability and skill of project managers to play leadership roles had an impact on the project.

One respondent who was happy with the leadership of the project had this to say:

The project manager was clear about his position and gave precise instructions. He also had a good ear to community needs, which made him popular with the PSC. (R13)

Another respondent disagreed, however:

The service contract for the project manager was due to expire six months into the project with no option for renewal. This was evident in the way the project manager sided with the contractor and did not protect Umgeni Water's interests. (R5)

4.3.4.1 Project management

Most responses indicated that the project was managed as prescribed by the Project Charter. The respondents agreed that the PLP process, as discussed above, was well understood by all project stakeholders.

Project managers are equipped with the necessary knowledge and skills to deal with stakeholders and Umgeni Water continuously trains its staff to deal with various project management aspects one of which is stakeholder management. (R2)

Most respondents agreed that the contractor on site was not properly managed. Part of the difficulty in managing the contractor was due to the stipulations in the contract document.

One respondent indicated that the contractor was not properly briefed about labour recruitment, and said that the project manager could not bind the contractor on what was not covered in the contract.

The contractor stated clearly that he is only obliged to employ unskilled labour. He tendered for unskilled labour and nothing else. On the other hand, the community expected that opportunities for semi-skilled locals and training will be provided based on EPWP. (R10)

4.3.4.2 Decision making

There were differing views from respondents in terms of decision making in project implementation. One respondent expressed his unhappiness with regards to his role in the project.

My role is to deliver the project as per agreed scope, time and cost and to management risks. To do this a bit more authority to make decision on the project would help instead of having to motivate for almost every decision that needs to be made. This is time consuming and takes the focus off critical things. (R5)

Respondents agreed that due to the organisational structure, each team member is bound by decisions made by their functional departments. One respondent saw this as somehow confusing and at times not practical.

My manager always reminds me that I report to him first, and that he does not want to receive reports from another department on work performed by his staff. The project manager on the other hand expects immediate report back after project intervention. (R15)

4.3.4.3 Monitoring and feedback

Respondents indicated that monitoring and feedback had an impact on the project in the sense that the opportunities for improvement were realised by the sharing of lessons learnt. Even though most respondents agreed that there was continuous monitoring of the project during the various stages of project implementation, there were reservations about the overall feedback involving all project stakeholders.

One respondent shared this view:

My overall comment is that as an organisation we need to take stock and go back to the drawing board using the key lessons learnt in the projects we have implemented before. Having the right people to do the right job is also critical. (R9)

Similar views were also expressed by another respondent:

My opinion is at this stage Umgeni Water does not have a good stakeholder management plan in place. If there is a plan it is not being rolled out and propagated to the users like the Project Managers. I believe that there should be collective gathering of information, open discussions and a final collation of ideas and thoughts in authoring a Stakeholder Management Plan. The Stakeholders like all district and local municipalities, iNgonyama Trust should be able to contribute immensely to the success of the plan. (R7)

4.4 Summary of Responses

The Chapter discussed the themes and how they were connected to each other. Direct quotations were used to illustrate respondent views against each theme**.** Qualitative research relies on how people respond in terms of their emotions, perceptions, circumstances, experiences and so forth (Wilson 2014). I is for that reason that one cannot necessarily expect exactly the same answers as they are influenced by each individual‘s perceptions at that moment, influenced by certain circumstances at that time. The researcher’s choice of the interview sample took into consideration the diverse knowledge and perspective of the various groups from each genre including engineering, social science, environmental science and project management. The researcher was aware of her perspectives, expectations and interests specifically to each diverse group of respondents, however, the researcher suspended her opinions and let the data speak for itself through the views expressed by the various respondents. Whilst conducting thematic analysis, there were some observations by the researcher in terms of the emerging themes form the coding of the raw data received from respondents. Project managers for example were expressive to issues pertaining to management of risk and adherence to procedures whilst social facilitators contributed more on sections pertaining to community participation. The chapter did not aim to interpret but rather present views as from the respondents. There is confidence on the part of the researcher that the research accurately reflects the perceptions and intentions of the respondents.

4.5 Conclusion

The results presented in this chapter were analysed using a thematic analysis of the respondents’ in-depth interviews. The next chapter discussed the identified themes, linking them with the previous research findings as per the review of stakeholder, complexity and partnership theories presented in Chapter Two.

CHAPTER 5: DISCUSSION OF FINDINGS

5.1. Introduction

The purpose of this chapter is to discuss the findings from the study with the aim of finding impact of stakeholders on the implementation of water infrastructure projects. The research had the following objectives:

- To determine how the water infrastructure project team conducts project stakeholder management.
- To determine the impact and influence of the relationship network of stakeholders on the water infrastructure project.
- To identify the challenges in the relationships network and how these are managed.
- To identify opportunities for change and improvement in the management of the stakeholder relationships.

The emerging themes and sub-themes emanating from the study as identified in Chapter Four are discussed.

5.2 The partnership arrangement

The sub-themes in relation to partnership arrangements and how they impact on stakeholders are discussed below.

5.2.1 Key stakeholders

The findings of the current study revealed that the identification of key stakeholders in the project were done during the planning stage and were influenced by the project's footprint. Most respondents indicated that the selection and consultation of key stakeholders was done by following formalised standards as per the guidelines and requirements, in order to comply with legal statutes and project management principles. This is in agreement with stakeholder theory, which also identified that the interests of one or a group of stakeholders should not take precedence or be dominant over the interests of all stakeholders (Clarkson, 1995) and also supported by Donaldson and Preston (1995). The current study indicated, however, that certain elements of the projects would not take place without permission from certain stakeholders, who were regarded as crucial to the sustainability of the project, for example, the granting of the water use licence. The Department of

Environmental Affairs was identified as a stakeholder with specific requirements that needed to be met before the project could begin. The Department of Environmental Affairs has its own requirements with regards to environmental issues, more specifically the need to conduct an Environmental Impact Assessment (EIA) before a project can be allowed to proceed. It is important to note that some of the requirements of this stakeholder regarding EIA are not understood by other stakeholders.

It is also important to note that most of these infrastructure projects take place in rural areas, where the issues of the environment are not so high on the agenda of those communities. This situation is not unique to Umgeni Water, but is a global challenge as revealed by the literature. A study by Moore (2013) revealed that stakeholders involved in the governance of water experience complexity in the sense that one stakeholder's level or scale of involvement is different from another's, and that these differences may be a cause of conflict. Stakeholders identified in the study included both internal and external stakeholders, which correlate with the research findings identified in the partnership theory, where key actors in partnership can include government, communities, the private sector, grant makers and non-governmental organisations (McQuaid, 2010).

The PMBOK Guide (PMI, 2012) identified three important processes that are required to achieve stakeholder management, which include the identification of stakeholders; an analysis of stakeholder expectations and their impact on the project; and the development of strategies that facilitate the involvement of stakeholders in decision making and implementation.

The findings of the study indicated that most stakeholders were identified by using existing stakeholders; these were important in pointing out other stakeholders and their interests, especially from the community structures. This concept is defined as snowballing (Yang et al., 2009). The challenge identified in this study was that this method is generally subjective and tends to leave out other stakeholders who are important in the long run.

Several methods have been suggested by various authors on stakeholder identification. The most salient model is one of the methods made popular by Mitchell et al. (1997) and supported by Olander (2007), where power, urgency and legitimacy are regarded as important attributes for stakeholder identification. Individuals or groups must possess one or more of these attributes to be regarded as

stakeholders (Olander, 2007). The results of the study do agree to a certain extent with the suggested model, however most respondents indicated that the focus was mainly on the attribute of legitimacy.

The findings revealed that stakeholder management was basic; there was no clearly defined process on how to deal with stakeholders of different sorts, and it became the project manager's prerogative. A documented approach to dealing with stakeholders in general was identified as a major requirement to help streamline the process. According to Bourne and Walker (2006), stakeholders must not only be identified but must also be prioritised, a concept that was also supported by Mitchell et al. (1997).

In terms of stakeholder engagement, most respondents agreed with the findings in the literature review that project success can be achieved through cooperative strategies between project managers and stakeholders (Chandra et al., 2012).

5.2.2 The role of key stakeholders

The majority of the respondents made reference to the Project Charter, which is a formal document that defines the main elements of a new project and establishes the authority required for executing it (PMI, 2012). This Charter was quoted as a key tool that was used to define the parameters of the project and conveyed the purpose and requirements of the project to the project team. The findings revealed that the Charter further classified the stakeholders according to the input they had in the project. In discussing roles, it is important to note that internal stakeholders, for example employees of Umgeni Water, have job descriptions that spell out the role of each employee participating in the project. Suppliers also have job descriptions for their employees, however sometimes these may not have changed over a long period of time and are therefore not aligned with new projects.

This was confirmed by the respondents when they revealed that Umgeni Water provides in-house expertise, including representatives from Engineering Services, Environmental Services, Supply Chain Management and Asset Management. The external service providers were not interviewed to find out how they manage the issue of roles on a new project. Other roles that were highlighted as important by respondents included the role of management and each respondent's role as part of the project team. One respondent saw her role as that of providing the necessary resources as a manager to guide stakeholder management. All this confirms that internally Umgeni Water has clarity when it comes to roles. This is not just an assumption based on the above, as the majority of the respondents

were positive about their role in the project but expressed concern about how their roles were perceived by other role players in the project. One respondent expressed that there were certain inconsistencies that led to confusion amongst certain stakeholders because of a lack of role clarification. In their admission, this inconsistency was not because of lack of clarity about their role, but it was other stakeholders who were not clear about their roles. It was also clear that this happens without their involvement in the project initiation. The confusion about the roles and responsibilities of stakeholders is indicative of the complexity that exists, in the sense that they are not equal and thus cannot be handled the same, but should rather be divided into groups to better reflect their roles (Aapaoja and Haapasalo, 2013).

Further confusion was expressed with regards to the role of the project manager in relation to the respondents' respective line managers. Some authors classify stakeholders according to how well they are known to the organisation (Mohan and Paila, 2013), whilst others emphasise the importance of mutual interdependence between the organisation and its primary stakeholders (Clarkson, 1995). The project manager may have not been known because of a number of reasons. They may not have been on site all the time, or others may not have seen their relevance to the work they do. Some respondents expressed that their role as project managers was undermined by line management, which impacted negatively on the project. The research found through the literature that there are many role players in the construction industry with different goals, critical success factors or necessary conditions that need to be met to achieve the set goal.

This shows that they are many systems within one system with different goals, and they may see each other as unconnected and interdependent. With the understanding of such behaviour, the CIBD (2002) has developed guidelines for project managers working in construction projects. The toolkit suggests that project managers assess and measure the application of power based on their position within the organisation which is legitimate power. It is clear that this manager is not familiar with the toolkit and for whatever reason they are not using it as a guide.

It is important to note that other roles are legislated and cannot be changed during the project implementation, for example national departments, district and local municipalities and traditional leaders. The above stakeholders will always play a major role in the implementation of projects, irrespective of time and place.

5.2.3 Engagement

Respondents agreed that the engagement of stakeholders had an impact on the project. Most respondents indicated that engagement with those stakeholders prescribed by the Project Charter, were sometimes reactive. From the literature point of view this confusion was caused by the fact that there are different directives to national and provincial departments, government agencies and other spheres of government serving one community. While there are many laws which require some form of public participation in local governance, there are three laws which are central - the Constitution, the Systems Act and the Municipal Structures Act, 117 of 1998.

It is important to note that one fairly new respondent highlighted that in project implementation processes, the engagement of relevant stakeholders must be prioritised, because at most the engagements are on a reactional basis. Another respondent agreed that there should be early determination of the stakeholders, bringing everyone together to engage the relevant stakeholders, e.g. social facilitators, municipal officers, and an environmental spokesperson to address the appropriate audience for buy-in at the planning/implementation stage. In the literature it has been observed that there is an inclination at the inception stage to rush and finalise the design without understanding the actual site or route of the project (Aki Aapaoja and Harri, 2014), hence the need for clarification at the inception and during each phase of the project.

The rich picture indicates another dynamic in the partnership arrangement in the sense that each stakeholder's expectation is different from the others. Conflict may arise if these expectations are not met, a notion supported by Walsh (2004) in that powerful and diverse interest may hinder the development of common ground from which each stakeholder can engage with others.

5.3 Communication

Most respondents expressed a lack of or very little awareness about the existence of the Stakeholder Management policy within the organisation, while some respondents indicated an awareness of the existing policy but had a lack of knowledge of what it entails. One respondent made special mention of the Corporate Stakeholder Management Unit (CSMU) as being responsible for communication with external customers, and the same respondent indicated knowledge of Umgeni Water's involvement in engaging stakeholders. The challenge is that the Corporate Stakeholder Management Unit is not involved in construction projects, which are the core business of Umgeni. It is likely that an incident will happen on site and a call will come from the media and CSMU will not be able to

present the view of the organisation from an informed point of view. The way in which organisations engage their stakeholders differs according to the way in which leaders or managers engage their stakeholders. Organisations that are committed to engaging their stakeholders tend to be more advanced in their communication strategies and the way in which they monitor progress, which is a concept that was supported by the earlier authors (Clarkson, 1995).

Construction projects can be considered as open systems, where the agents are the network of people involved in the construction including project sponsors, customers, workers, managers, engineers, suppliers, communities, and in some cases politicians. Formal and informal communication paths connect these agents through nodes representing the project. More recent studies emphasise the importance of both formal and informal communication. Strategies used by organisations to engage their stakeholders provide an indication of the way the relationship between an organisation and its stakeholders will unfold (Rowley, 1997).

5.3.1 Internal communication

The respondents agreed that communication between internal stakeholders had an impact on the project. The findings indicated that communication between internal project stakeholders occurred informally or formally through discussions or electronic mail. Informal and electronic mail could be a problem when it comes to project implementation, however as some members of the team may not receive the information due to technical problems or other reasons. Informal communication is a problem in the sense that it cannot be proven that the communication has taken place.

One respondent indicated that the project team met monthly and records of minutes are kept electronically. His view was that as a project manager, he had to ensure proper consultation and transparency. He indicated that the meetings were booked and prescheduled to allow attendance by all stakeholders. The literature indicates that projects in the construction industry have different stakeholders at different stages of the project development, and as such a review of prescheduled bookings would allow for more integrated planning and cooperation between all stakeholders.

In a construction industry project, the decision making processes take place at various stages throughout the project. At the beginning of the construction stage, for example, decisions are taken in order to determine the set of construction activities and methods needed for doing the work, and to draw the necessary plans for carrying them out. If the project manager indicates that meetings are

booked and prescheduled to allow attendance by all stakeholders, it may be possible that some members who joined the project at a later stage may have been omitted from the mailing list.

5.3.2 External communication

The findings revealed that communication with external stakeholders was assigned to various employees depending on the level of governance. At the corporate level, communication with state organs, municipalities and government departments was assigned to the Chief Executive. Different organisations use a variety of mechanisms to connect with their stakeholders, including meetings, newsletters, customer liaison groups and employee work councils, amongst others.

These networks aim to strengthen their networking membership, thus creating opportunities for information sharing and further engagement to reach common understanding and influence (Rowley, 1997).

Studies also reveal that a spontaneous interaction between agents in complex adaptive systems may lead to self-organisation (Maxfield, 1997), and that this interaction depends on a number of factors including the balancing of their own interests. This balancing act might not be obvious to the other role players as they might also be busy with their own interests. A review of the literature showed that communicating in a manner that will allow stakeholders to give feedback is one of the biggest challenges, as most communication strategies are often one-sided and lack feedback (Waheed, 2012).

It is important to note that construction projects sometimes happen in areas under the authority of traditional leadership, as did the project under study. The findings revealed that the traditional leader expects some gains from giving access to communal land, so without the expected gains, access to land might be denied. The respondents indicated that traditional authorities are regarded as a major stakeholder and thus prioritised, however some studies warn against a reliance on the commitment of stakeholders too early, especially at project inception, as there are possibilities that certain stakeholders lack the knowledge to influence their opinions. This may change during the implementation phase, when stakeholders have been afforded the opportunity to observe what is happening in the project (Aaltonen, 2010).

In the above situation the project is bound to suffer due to conflicts that may arise, because of what the organisation is communicating against what is expected by the stakeholders. The findings

revealed a breakdown in communication between Umgeni Water and the community, in the sense that the composition of the work teams arranged by the contractor was not properly communicated. This dynamic aligns with the study of complex adaptive systems, where susceptibility to the external environment is common and where there is constant adjustment by systems to move from one fitness landscape to another in the quest to stay competitive (Brown, 2004).

Relationships between stakeholders involved in construction projects continue getting tested throughout the project lifecycle. Respondents revealed that at the project level, communication is tailor made for different audiences and each Umgeni Water team member has a role to play. Communication strategies employed by project teams during project implementation may have positive or negative impacts on the project. This is supported by Waheed (2012), who emphasised that communication that incorporates and respects the views of other stakeholders affords an opportunity for feedback and the creative interchange of ideas between stakeholders.

5.4 Risk management

The findings from the respondents indicated that there was a lack of understanding on what constitutes project risks as far as stakeholders are concerned. The findings also revealed that Umgeni Water implements its projects using the PLP Process, and Table 4 illustrated the various phases of the PLP process including the respondents' involvement at various stages of the project. During interviews with the respondents three sub-themes emerged:

- Allocation of human capital.
- Knowledge sharing internally and externally.
- Public participation.

5.4.1 Allocation of human capital

There was agreement between the respondents that their workload affected their resourcefulness in the project. The findings indicated that there was a structured approach followed by Umgeni Water in terms of work allocation, and that design and planning engineers are busiest during the early phases of the PLP, whilst the Project Manager gets involved at the feasibility phase. At this stage, according to the PMBOK, the Project Manager puts together the project team that is going to implement the project (PMI, 2012). The PMBOK further suggests that it is during this stage that most uncertainty and the risk of project delays are highest.

A review of the literature suggests certain strategies for risk mitigation, which includes the identification of risk (Waheed, 2012) through brainstorming and compiling a checklist of probable risks (Olander (2003), followed by an analysis of the risk to assess its severity, and then finally to prioritise the risk identified.

According to the findings only three social facilitators are employed within the organisation supporting a total of 15 projects each, and at times six of the projects are at the construction stage at the same time, thus one project or another will suffer.

A lack of proper coordination between project teams was one of the major risks identified by respondents, whilst identification and planning for external factors was identified as a risk by a third of the respondents. The importance of risk mitigation at the early stages of project planning was emphasised by Zou et al. (2006) where appropriate project schedules and clear guidelines to project implementation should be presented. However, Yildiz et al. (2012) warned against looking at risks in isolation, as they consider the interdependence of related risk parameters as an important factor to consider. These authors emphasised the importance of developing a risk mapping tool that can map the risk parameters including their interconnectedness. The PMBOK also supports the suggested strategies above, and further suggests a risk management plan in order to respond to risks over a period of time (PMI, 2012). The building capacity of the community was seen as making a positive impact on the mitigation of risks in the project. The respondents indicated that the induction and training of community members as PSC members assisted the project to some extent.

5.4.2 Knowledge sharing

The respondents agreed that they work as individuals more than as a team at Umgeni Water, and they do not share information with each other. There was consensus that each member of the infrastructure project team worked independently of other team members until problems arose in the project. Interdepartmental competition was also one of the issues identified by a respondent. All of the above could be caused by a lack of understanding as to how the whole system works. This is based on the assumption that individual goals are not connected to other team members' goals. This lack of team work is informed by the individualistic thinking within the respective departments working in infrastructure projects.

This is risky in the sense that the goal could not be achieved in such a situation because parts will start competing for the same scarce resource; ultimately the organisation will suffer (PMI, 2012).

According to one of the respondents, there is a lack of consultation and knowledge sharing in terms of planning for risk and contingency at the project level. This confirms the finding above that a guide to the PMBOK is not being used and that any other risk assessment tools have not been considered. The researcher thus noted that there are documents meant to help manage risk but they are not being used at Umgeni Water. The question is whether the leadership is aware of this or not.

Funds are put aside to accommodate technical glitches and even delays due to weather, however there is no contingency plan for delays caused by community disagreements, according to a respondent. Another respondent highlighted lack of skills as one of the contributing factors to project delays. There is consensus that most delays are as a result of social issues. Another claim made by some respondents was that political factors were known prior to project implementation, but were not properly planned for in terms of social interventions. These impacted badly on the timelines and project sign-off. Jackson (2003) spoke of path dependence as a characteristic of complex adaptive systems, in the sense that one small change introduced in initial conditions can result in bigger changes elsewhere, highlighting the element of risk in the involvement of multiple stakeholders with differing interests.

5.4.3 Community participation

According to most respondents, Umgeni Water invited the community to participate in the project through an interactive process led by the establishment of a Project Steering Committee. This structure, according to respondents, was the key driver and glue between Umgeni Water and the community. Most literature supports having community participation, as it is seen as a way in which communities bring about desirable change by taking part in measures designed to improve their living conditions. The coming together of these people in a co-operative way presupposes that there must be effective communication between and among the people (Adedokun et al., 2010).

The findings reveal that the strategies employed by Umgeni Water, even though adequate, showed some inconsistencies, specifically on issues pertaining to local labour employment; even though there was consultation, the community had limited participation in decision making. Studies reveal that without effective communication there could be misgivings and misunderstandings, which

would always result in conflict and lack of co-operation, and subsequently lead to under development (Adedokun et al., 2010).

The Republic of South Africa Constitution Act, 108 of 1996, places an obligation on local government to encourage the involvement of communities and community organisations in the matters of local government. The promulgation of the Municipal Systems Act, 33 of 2000 focused the attention of municipalities on the need to encourage the involvement of communities in their affairs. To show that public participation is high on the South African government's agenda, the whole of Chapter Four of the Municipal Systems Act is devoted to public participation.

5.5 Leadership

5.5.1 Project management

Most respondents agreed that the contractor on site was not properly managed, in part because of the stipulations in the contract document. One respondent indicated that the contractor was not properly briefed about labour recruitment, and that the project manager could not bind the contractor on what was not covered in the contract. The Construction Industry Development Board (2002) has developed guidelines for project managers working in construction projects. The toolkit suggests that project managers assess and measure applications of power based on their position within the organisation, which according to Waheed (2012), is legitimate power. The toolkit advises against coercive power as it will antagonise and cause conflict in the project.

The key tenant of systems thinking is that all elements within a system are related. Project managers who focus solely on meeting deadlines and/or budgets are likely to experience undesirable performances in quality and safety, which will ultimately affect the project's completion and cost.

Project managers should avoid making sudden and drastic changes in the amount of emphasis placed on any one goal, because such changes are likely to lead to undesirable variances associated with other project goals. In addition, a project manager should have a clear understanding of their client organisation's complexity, as well as the socio-economic and regulatory environment in which their project is operating (Winch, 2000). Setting common goals, objectives, and project priorities in consultation with stakeholders improves stakeholder management significantly.

The respondents indicated that style of leadership impacts how a leader is viewed by their stakeholders. There was also consensus that the ability and skill of a project manager to play a leadership role has an impact on a project. Meanwhile, the literature revealed that managerial personnel in the construction industry not only supervise subordinates in their own organisational hierarchy, but also provide purpose, direction, and motivation to contractors and sub-contractors (Jung et al., 2014).

5.5.2 Decision making

According to the respondents, the various departments involved in the project performed their functions and then handed over to the next department. The Project Manager, according to some respondents, could not control the functioning of departments outside his own, even though he was supposed to be the project leader. The PMBOK identifies these characteristics as those of a functional organisation (PMI, 2012). The literature reveals that most organisations equip leaders or project managers to operate in domains where command and control rules, however the same literature suggests a different approach to decision making in complex projects, by allowing solutions to emerge rather than to impose them (Snowden and Boone 2007).

5.5.3 Monitoring and feedback

The respondents indicated that there could be varying levels of feedback on project progress; one stated that there is no proper stakeholder management plan at Umgeni Water, and further recommended a collective gathering of ideas and open dialogue involving all stakeholders including local municipalities and traditional authorities. Complexity theory suggests that the success or failure of an organisation is an outcome of how it interacts with its environment and how it adapts to its unpredictability (Levy, 2000). There is little evidence of how feedback is managed, whilst the findings reveal a rather reactive approach to the challenges that arose.

This is contrary to studies in complexity, where organisations are seen as complex adaptive systems containing agents that respond to each other, creating an environment that is constantly changing and adapting in virtuous cycles of negative and positive feedback loops (Chan, 2001). In such environments there is unpredictability, and as some literature suggests, a need for organisations to constantly adjust and operate far from equilibrium, allowing themselves to be constantly challenged and to change with the system in which they operate (Chan, 2001).

5.6 Conclusion

The discussion of the findings in this chapter is reflective of both the desirable and undesirable effects emanating from the impact of stakeholders in the implementation of infrastructure projects at Umgeni Water. The study results show both significant differences and similarities with existing literature, which range from not being able to clearly identify project boundaries by way of partnership arrangements, to internal and external communication, risk management, and leadership approaches across the organisation and its external environment. The next chapter provides conclusions and recommendations to deal with the impact of stakeholders in the implementation of infrastructure projects at Umgeni Water.

CHAPTER 6: CONCLUSION AND RECOMMENDATIONS

6.1 Introduction

In this chapter, conclusions and recommendations for changes or opportunities that need to be implemented or explored towards ensuring the successful management of stakeholders are made. These are based on the findings presented in Chapter Five and the theory discussed in Chapter Two. The study investigated the impact of stakeholders on Umgeni Water's operations, specifically the implementation of water infrastructure projects. The study also attempted to investigate stakeholder relationship management insofar as the rules of engagement and effective communication approaches applied to ensure cooperative governance. The risks associated with stakeholder engagement are diverse due to the complexity of each stakeholder, which is why a relevant approach needs to be applied to determine proactive strategies to deal with identified risks.

The objectives of the study were to:

- determine how the project team working on the water infrastructure project conducts project stakeholder management;
- determine the impact and influence of the relationship network of stakeholders on the water infrastructure project;
- identify the challenges in the relationship networks and how these are managed; and
- identify opportunities for change and improvement in the management of stakeholder relationships.

The review of literature for this study focused on the stakeholder, systems and partnership theories as far as the management of stakeholders is concerned. Information was gathered from 15 in-depth interviews with respondents who shared their perceptions on the events that unfolded on the project under study. Inductive data analysis was conducted using thematic analysis, resulting in recurring themes that formed the basis for the study and the proposed recommendations.

6.2 Key findings

The study aimed to determine the influence of stakeholders on the implementation of infrastructure projects.

Objective 1: To determine how the project team working on the water infrastructure project conducts project stakeholder management.

The theme on partnership provided input on key stakeholders and their role and how they were engaged. The research conducted for the study indicated that stakeholder identification was influenced by the location and footprint of the project. External stakeholders identified included the respective water service authority, the constituent local municipality and residing communities as customers and beneficiaries of the project. Internal stakeholders identified included project experts in various fields, including engineering, design, environmental science, social development and supply chain. The respondents identified key stakeholders and their role in the project, but agreed that some of the stakeholder needs and concerns were not analysed. The findings also revealed that the approach to the classification of stakeholders was generic and followed the national norms of presenting stakeholders as a fixed group. No analysis of the influence of stakeholders was undertaken.

There was consensus amongst the respondents regarding who the important stakeholders were, but no strategy was put in place in terms of how they were going to be managed. There was a strong view from the participants that a documented approach to dealing with stakeholders would help to streamline the process of managing them.

Objective 2: To determine the impact and influence of the relationship network of stakeholders on the water infrastructure project.

The findings revealed that the stakeholder relationship network experienced challenges, including that the level of detail that was provided at the planning stage was not properly refined to include a budget allocation for environmental and social issues. This affected the level of interaction during the construction stage when the community's needs were not catered for during the initial stages.

In addition, the time that lapses between desktop studies and the actual walk of a route leads to numerous problems, including new developments in the area. Delayed heritage studies and consultation of stakeholders on the ground make it difficult to consult appropriate authorities and procedures, specifically when there are graves discovered during the construction stage. At this late stage owner consent becomes difficult to obtain, as some landowners reside away from their land, which causes delays.

Objective 3: To identify the challenges in the relationship networks and how these are managed.

The challenges identified in the project were mainly due to communication or a lack thereof. Verbal communication and written communication was vague and could not fully address the issues regarding local labour employment. The execution of the project was affected by a lack of communication between the various departmental units, which affected cooperative governance and led to a breakdown in coordination with the external stakeholders. The systems and flow of information was not clearly defined, whilst the Project Manager relied greatly on resources provided by other departments. This affected the project's progress as priorities differ from department to department and there were no clear guidelines on how various groups needed to interact.

The project management was found to be lacking in relation to the induction of the contractor on site. A lack of clarity in terms of labour requirements and the recruitment process allowed for inconsistent procedures to be applied by the contractor, which led to community unrest.

A major challenge was the lack of a formal review in-between the various stages of the project, i.e. challenges accumulated through all the phases instead of being resolved at each stage.

Objective 4: To identify opportunities for change and improvement in the management of the stakeholder relationship.

The ongoing challenges in Umgeni Water's infrastructure projects indicates difficulty in planning and executing long term projects with the application of the PLP process. The PLP phases take time to implement, spanning approximately 10 years. Changes in the external environment including stakeholder demands exert pressure on the proper execution of the PLP and budgeting. Umgeni Water exists to serve its customers, however customer priorities and requirements change over time.

In addition to this, as a state-owned entity, Umgeni Water is also subject to external government stakeholder pressures. Umgeni Water thus needs to constantly adjust and improve its strategies in order to meet the changed requirements within the available resources and budgets to satisfy its stakeholders.

The level of rigour, definition of scope, as well as stakeholder analysis at the feasibility study phase could be improved. In Umgeni Water's project implementation, communication and cooperation between the various departments involved in the execution of projects, from prefeasibility study into construction, commissioning and handover, need improvement.

Umgeni Water has many processes in place that work well, including project managers that apply good processes when it comes to stakeholder management, depending on their level of expertise and training. In order to create consistency, Umgeni Water can improve by creating a standardised project best practice document that must be applied across all projects and incorporate reviews after the completion of each project phase. These project processes should include the introduction of gate reviews to raise standards, enforce consistency, and improve the reliability and predictability of project outcomes.

6.3 Recommendations

Early engagement with stakeholders

Route selection should be finalised as early as possible to give sufficient lead time for the servitude registration process. All the relevant stakeholders need to be involved in the prefeasibility and feasibility studies to ensure compliance with Umgeni Water policies and procedures, and to avoid later delays and compliance risks. The maintenance of regular contact with the local community is also crucial.

Improve internal project management processes

The handover of project details and scope from one department to another requires improvement. The systems including processes, people and tools should be defined and documented in order to sustain and continuously improve Umgeni Water's project planning and execution capability. The project manager needs to be given aligned responsibility and authority to execute the project, with full project responsibility for project scope, scheduling and costs, as well as the delegated authority from the functional manager to execute the project using the allocated personnel. In this regard,

consideration needs to be given for the resource that has been allocated to a particular project by the departmental manager to report directly to the project manager, as an initial point of communicating/reporting, during the project on project matters.

Regular risk reviews

Risk reviews on all threats and the cost and schedule impact and likelihood of each risk must be implemented. All stakeholders will not benefit all the time; even with a detailed understanding of concrete stakeholder relationships, most strategies will distribute both benefits and losses between different groups of stakeholders. Indeed, it is just as important for management to develop strategies that distribute losses in a way that ensures the long-term support of all the stakeholders.

Benchmarking with other similar organisations

Umgeni Water should meet with other relevant organisations involved in large capital projects to discuss and share their experiences of project execution and project lifecycle processes, amongst other issues.

Continuous improvement and holistic organisational learning

The appointment of an appropriate consultant to work with an assigned Umgeni Water team to develop and implement an appropriate PLP, including gate reviews for all involved and affected disciplines, is recommended. It is imperative for the success of this process that all the affected personnel be well trained in these processes, whether directly or indirectly involved in projects, and whether they are employed by Umgeni Water, customers, consultants or contractors.

6.4 Recommendations for future research

The study has highlighted the challenges and recommended change opportunities with regards to the relationship network between stakeholders working in infrastructure projects. The study however narrowed the sample to internal stakeholders working in one project. Whilst the experiences of these internal stakeholders provided for a good interpretation of the relationship network, the use of focus groups, and specifically the inclusion of external stakeholders, is recommended for future studies in order to further understand the role of Umgeni Water as perceived by its stakeholders especially in the wake of the developmental agenda and the role of Umgeni Water as a parastatal.

The study was also limited in terms of the broader perspective of water provision in the perspective of rural communities. Much has been debated about the administration of communal or rural land. As much as there are laws governing land ownership and its governance, the stakeholders involved including Ingonyama Trust and the affected traditional authorities do not agree on its governance.

The study highlighted that the traditional authorities do not support the notion of the financial administration by Ingonyama Trust. More studies need to be undertaken on the current relationship network between the two stakeholders in terms of its impact in infrastructure development.

Corporate Social Investment or giving back to communities has been one of the strategies used by organisations to influence stakeholder support during infrastructure development. Are these strategies working? Studies on how these impacts on the successful implementation of infrastructure development projects can be useful to influence future decision making for organisation such as Umgeni Water.

6.5 Conclusion

Umgeni Water's provision of critical services involves the provision of bulk potable water to municipalities and the treatment of wastewater in an environment that is not only highly politicised, but is troubled by developing world problems and subject to unpredictable changes in the weather. In this kind of environment, the effective management of stakeholders is important for the maintenance of cordial relations and public confidence, and to assist with the delivery of these services. Stakeholder management dictates that an organisation should relate with many constituent groups and should engender and maintain the support of these groups by considering and balancing their relevant interests (Goodpaster, 1991; Freeman, 1994; Logsdon and Wood, 2005). Lessons learnt from the discussions and literature in this study provided an understanding that in dealing with complex adaptive systems, organisations like Umgeni Water need to be aware of the changes and impact of their internal and external environment so that agents inside the organisation can interpret and create new ways of thinking.

Further understanding was also gained in terms of partnerships, which are understood to be fragile and unsustainable mechanisms, created under various strategies and leading to a confusing mix of interlinking and over-lapping strategic alliances, which may be dominated by powerful interests that create conflict and hinder the development of a common approach. All firms are assumed to be rational in their thinking, which makes it difficult for them to predict what can happen to the organisation in the long term. Organisations like Umgeni Water are thus advised to depart from thinking that external environments are static (Brown, 2004). The implications of this are that stakeholder relationships are affected by the evolving path of the country's development and landscape. The landscape of water service provision in the province is set to change and UW's role will change too, which calls for a new way of thinking that allows emergence and learning to occur.

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APPENDIX 1
Informed Consent Letter

UNIVERSITY OF KWAZULU-NATAL
GRADUATE SCHOOL OF BUSINESS AND LEADERSHIP

Master of Commerce in Leadership Studies Research Project
Researcher: Lungi Makhaye (0726867333)
Supervisor: Cecile Gerwel Proches (0312608318)
Research Office: Ms P Ximba (0312603587)

Dear Respondent,

I, **LUNGILE MAKHAYE** am a Master of Commerce in Leadership Studies student, at the Graduate School of Business and Leadership, of the University of KwaZulu-Natal. You are invited to participate in a research project entitled **IMPACT OF STAKEHOLDER MANAGEMENT ON THE IMPLEMENTATION OF WATER INFRASTRUCTURE PROJECTS AT UMGENI WATER**. The aim of this study is to investigate how stakeholder engagement can impact on the successful implementation of Water infrastructure projects at Umgeni Water. Studies reveal that *stakeholder management has become an important tool to transfer ethics to management practice and strategy. An* organisation wouldn't reach its ultimate goal and achieve success without the effective management of its stakeholders.

Through your participation I hope to understand Umgeni Water's approach specifically drawing upon the outcomes of stakeholder engagement processes used by the organization in its ongoing activities, and as required by the legal and institutional framework in which it operates. The results of the interview are intended to contribute to the development of an effective framework or approach that will assist the organisation in identifying relevant and appropriate approaches that will accommodate the dynamic nature of stakeholders thus assisting the organization to achieve successful results in implementing its water infrastructure projects.

Your participation in this project is voluntary. 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 interview. Confidentiality and anonymity of records identifying you as a participant will be maintained by the Graduate School of Business and Leadership, UKZN.

If you have any questions or concerns about completing the questionnaire or participating in the interview or focus group or about participating in this study, you may contact me or my supervisor at the numbers listed above.

It should take about 45 minutes to an hour to complete the interview. I hope you will take the time to participate in the interview.

Sincerely

Investigator's signature_____ Date_____

This page is to be retained by the participant

UNIVERSITY OF KWAZULU-NATAL
GRADUATE SCHOOL OF BUSINESS AND LEADERSHIP

Master of Commerce in Leadership Studies Research Project
Researcher: Lungi Makhaye (0726867333)
Supervisor: Cecile Gerwel Proches (0312608318)
Research Office: Ms. P Ximba (0312603587)
Research Office: Ms. P Ximba (0312603587)

CONSENT

I…… (Full names of participant) 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.

SIGNATURE OF PARTICIPANT **DATE**

……

APPENDIX 2: INTERVIEW SCHEDULE

UNIVERSITY OF KWAZULU-NATAL
GRADUATE SCHOOL OF BUSINESS AND LEADERSHIP

Master of Commerce in Leadership Studies

Researcher: Lungi Makhaye (033-3411015/0726867333)

Supervisor: Cecile Gerwel Proches (031 2608318)

Research Office: Ms P Ximba (0312603587)

Impact of Stakeholders on the implementation of water infrastructure projects at Umgeni Water

Interview schedule

1. Are you aware of a stakeholder engagement policy or procedure in the organisation? What are your thoughts on the procedure?
2. What is Umgeni Water's approach in identifying stakeholders? At which level or stage of the project do stakeholders get involved?
3. Who do you regard as key stakeholders in the implementation of water infrastructure project and what is their significance/influence in the project? How does Umgeni Water benefit from having these stakeholders?
4. What measures have Umgeni Water put in place to deal with the risk of stakeholder influence?
5. How do you see your role as stakeholder in the project? How else do you think you can enhance your role in the project?
6. What has been the major challenge in the implementation of the ILembe dam construction project and what measures mentioned in no 4 above have been put in place to deal with the challenges?
7. In your view what improvements/changes does Umgeni Water need to implement in order to ensure successful management of stakeholders?
8. In view of the recent disruptions in the Dam construction project, what role did the stakeholders play in resolving conflict? What is your opinion on the effectiveness of their interventions?
9. What could have been done differently to avoid conflict?
10. What is your overall comment on Umgeni Water's Stakeholder management in the implementation of Water Infrastructure projects?

UNIVERSITY OF KWAZULU-NATAL
INYUVESI YAKWAZULU-NATALI

27 May 2014

Mrs Lungile Brilliance Makhaye 209511501
Graduate School of Business and Leadership
Westville Campus

Protocol reference number: HSS/0447/014M
Project title: Impact of stakeholders on the implementation of water infrastuture projects at Umgeni water

Dear Mrs Makhaye

Expedited Approval

In response to your application dated 26 May 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)

/px

cc Supervisor: Cecil Gerwel Proches
cc Academic Leader Research: Dr E Munapo
cc School Administrator: Elieen Mahomed

Humanities & Social Sciences Research Ethics Committee
Dr Shenuka Singh (Chair)
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Website: www.ukzn.ac.za

1910 - 2010
100 YEARS OF ACADEMIC EXCELLENCE
Founding Campuses: Edgewood Howard College Medical School Pietermaritzburg Westville

Figure 2: Rich picture showing the partnership arrangement in the ILembe dam project

Rich picture of ILembe Dam project

Department of Water and Sanitation

Department of Agriculture and Environmental Affairs

UMGENI WATER - AMANZI

Umgeni water Team working on the ILembe Dam Project

- **Design Engineer:** "I have completed the design, now work with it"
- **Project Manager:** "I am managing this project, we need to stick to the time frame people Project delay s will impact on my performance"
- **Environmental Scientist:** "My role is to advise on environmental impact and we still need to obtain permission for river crossing from the Department of Environmental Affairs. this can set us back by a month"
- **Social Facilitator:** "I am still negotiating with INkosi to sign the PTO, thus you can't access the site. We also cannot remove the graves as families do not agree
- **Supply Chain practitioner:** "Oops! You did not communicate the time frame. The tender is only going out next week"

Umgeni Water has given us five years to complete the project. How can we maximise our profits?

We can take our skilled staff towork in the ILembe Dam project Training new people will impact on time and money. We can com promise and employ locals for unskilled labour.

Stockwell Construction

I have a responsibility to my community. What do we stand to gain from giving access to land? Don't tell me about Ingonyama Trust.

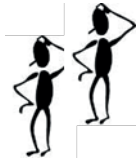
Why is the contractor bringing skilled labour when we are unemployed and also have skills?? Umgeni Water must answer.

We are business people and we need opportunities in this project.

We promised to deliver water to our communities. Umgeni Water must ensure that they deliver on our expectations

Local INkosi

Masibambisane Community



ILEMBE DISTRICT MUNICIPALITY
ILEMBE UMASIPALA WESIFUNDA
KING SHAKA

ILembe District

***Source:** Constructed by the Researcher*

APPENDIX 5: TURNITIN REPORT

Impact of stakeholders on project implementation

by lungi Makhaye

FILE	DRAFT_DISSERTATION_21_NOVEMBER_2016.DOC (1.74M)		
TIME SUBMITTED	21-NOV-2016 11:23PM	WORD COUNT	29997
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Impact of stakeholders on project implementation

ORIGINALITY REPORT

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SIMILARITY INDEX	INTERNET SOURCES	PUBLICATIONS	STUDENT PAPERS

PRIMARY SOURCES

1	www.participation.org.za Internet Source	%2
2	Submitted to University of KwaZulu-Natal Student Paper	%1
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