

**UNIVERSITY OF KWAZULU-NATAL**

**A suitable Public Private Partnership framework for continuous  
replacement of ageing water pipelines within eThekweni  
Municipality**

**by**

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## DECLARATION

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I Deelin Naidoo declare that:

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- ❖ To my parents thank you for pushing me to register for a postgraduate degree. I had become complacent in my workplace; at the time I did not share your vision for my growth and as a result my mind and knowledge on the world of today has been broadened.
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## ABSTRACT

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The Public-Private Partnership (PPP) agreement is in effect different from the conventional procurement process at national and local government. It requires a shift in the mind-set of project managers mandated to install new infrastructure, maintain existing infrastructure and replace infrastructure which has passed its design life. Currently the municipalities are facing more constrained budgets due to frequent annual budget cuts, and there is little tolerance by the ward councillors, not to mention the voting public, towards inefficient service delivery. Due to the current climate it is imperative to consider Public-Private Partnerships which can achieve superior value for money. They have a reputable track record, which is supported by bodies like National Treasury and are more accessible for use by most local municipalities. This is a qualitative study, in which the data was collected was from structured interviews undertaken as a result of purposive sampling. This research illustrates the most suitable PPP framework for linear projects which take cognisance of the independent variables identified in this study. The study also divulges the most beneficial tariff structure and payment mechanism for a PPP as a result of the literature reviewed and the data collected. This study is recommended for project managers who are tasked with service delivery mandates and who wish to gain a better understanding of the complexities associated with PPP frameworks. The benefits, characteristic and proper application of each PPP framework has been explained.

Key Words: Partnership, Legislation, Public, Politics and Capital

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## LIST OF ACRONYMS AND ABBREVIATIONS

BBBEE	–	Broad Based Black Economic Empowerment
BBE	–	Broad Economic Empowerment
BOO	–	Build Own Operate
BOT	–	Build Operate Transfer
CPIX	–	Consumer Price Index Excluding Mortgage Costs
DFBOT	–	Design Finance Build Operate & Transfer
DFO	–	Design Finance & Operate
DWR	–	Durban Water Recycling
EPP	–	Equity Partnership Projects
EWS	–	eThekweni Water & Sanitation
FM	–	Facilities Management
GTAC	–	Government Technical Advisory Centre
NRW	–	Non-Revenue Water
PFMA	–	Public Finance Management Act
PPA	–	Public Private Authority
PPP	–	Public-Private Partnership
RET	–	Radical Economic Transformation
SCM	–	Supply Chain Management
UKZN	–	University of KwaZulu-Natal
WTW	–	Water Treatment Works
WWTW	–	Waste Water Treatment Works

# CHAPTER 1 – RESEARCH PROPOSAL

---

## **1.1 INTRODUCTION**

The Public-Private Partnership (PPP) agreement is a contract between two sectors with a common goal to deliver infrastructure services over a long period. In combining these two sectors to achieve a common goal the strengths of each sector can be used in a collaborative fashion to achieve project milestones. Furthermore, the weakness of each sector may be reduced by using the complementary strengths to any other sector (Farlam, 2005). For instance, by using efficiencies of the private sector to complement the inefficiencies experienced in the public sector or, by using the vast resources of the public sector to complement those of the private sector. Furthermore, such a partnership promotes the transfer of technical and managerial skills between the sectors which creates empowerment (Ministry of Finance of the Republic of Lithuania, 2017).

The contents of the research proposal have been included in the chapter outline below. This study will review the five PPP frameworks which are namely; design, finance, build, operate and transfer (DFBOT) projects; design, finance and operate (DFO) projects; build, operate and transfer (BOT) projects; equity partnership projects (EPP) and lastly facilities management (FM) projects.

The study will aim to determine the most feasible framework option for linear projects such as pipe replacements. Furthermore, the study will investigate the best funding mechanism such as financing intermediaries, long term loans, grant funding and private investment for this framework. In addition, the study will look at the applicability of using tariff system to remunerate the private partner over the duration of the partnership agreement. Lastly, all relevant stakeholders will be identified for the successful establishment of such a framework and their influence as well as their stance towards the implementation.

## **1.2 BACKGROUND**

eThekwini Municipality's Water and Sanitation (EWS) Unit has identified, through its asset management plan, the need to upgrade and/or renew aging water infrastructure within its water supply system (Scruton, 2012). This will enable the Unit to meet its obligations in terms of its service delivery charter by providing a service that is efficient, effective, affordable and sustainable (Scruton, 2012).

Water is life and is essential for everyday living, sustenance and farming. However, in third world countries the water sector is often greatly underfunded and inefficient (World Bank Group, 2013). The use of PPP can be a means to address the capital shortages and deficiencies in terms of performance, thus adopting the ethos of better value for money (Haarmeyer & Mody, 1998).

The main concern with regards to pipe replacement, refers to the apparent backlog for the implementation of the renewable programme. The maintenance and replacement did not occur on an ongoing basis, which disadvantaged the rate payers in terms of quality of service delivery (Scruton, 2012). However, it must be noted that not all residents of eThekwini are contributing to the municipality coffers for reinvestment (Scruton, 2012). There are approximately 500 000 registered consumers in eThekwini, yet the municipality services the greater part of 3 500 000 consumers (Pieterse, 2018). This is not uncommon as most governments do not have budgetary surplus to fund public infrastructure investments from normal revenue streams (Xhala, Nemecek & Kajimo-Shakantu, 2017). Also, the constant migration that is occurring into the municipality is not sustainable to adequately provide water services. Due to the deficit of paying customers as well as the growing population into eThekwini a private investment component is required to meet the demands (Pieterse, 2018). The local municipalities in general are constrained to four means of budget creation; firstly revenue from customers, secondly grant funding, thirdly government allowances from treasury and lastly 10 year loan agreements (Scruton, 2012). Thus there is an evident need for investment from the private sector to address the challenges experienced in eThekwini. According to Delmon (2014) the correct PPP framework can potentially be an apt solution and will be investigated in detail in this study.

### **1.3 PROBLEM STATEMENT**

According to studies undertaken from Moorman (1997), Othman and El-Genawy (2012), Lombard (2017), World Bank Group (2017) and several other sources the PPP framework is a feasible option for the following reasons; public private partnerships mechanism provides a great opportunity to bring certainty, improved efficiency, affordability, reduced risk perception and thus better delivery cost. However, the problem or business issue is that in the studies mentioned above, a suitable framework had not been developed for asset renewal in the local context for linear projects. Secondly the appropriate tariff structure required for facilitating such a framework for linear projects had not been established in the local context. Lastly the concern or problem with regards to the applicability of the PPPs implemented in other countries or governments to that of eThekweni Municipality locally. These are the problems which have been identified for this study.

### **1.4 SIGNIFICANCE OF THE STUDY**

The significance of conducting applied research with regards to PPP frameworks may assist municipalities like eThekweni to improve their results and provide better service delivery. Furthermore, such a framework may be a mitigation strategy to address the backlog of needed infrastructure replacement. With historical underinvestment with regards to infrastructure replacement and upgrade, governments at all relevant levels will need to boost their spend and improve their return on investments (Ford, 2016).

This research shall take cognisance of relevant stakeholders and influencers in the built environment, legislation and also similar initiatives by other governments. Hence, this research can be a tool in the hands of the project manager tasked with service delivery mandates. Ultimately this research shall test the relevance and suitability of using a PPP framework for assets replacement in eThekweni Municipality.

### **1.5 PURPOSE OF THE STUDY**

The purpose of this action research is to discover the most suitable Public-Private Partnership for assets or infrastructure renewal at eThekweni Municipality. The phenomenon being studied will generally be defined as Public-Private Partnership frameworks, which is defined as being a legal arrangement whereby the private sector performs part of the municipality's service delivery or administrative functions and will receive remuneration based on set performance criteria (Moorman, 1997). Furthermore, the private sector will also inherit all associated risk for the work undertaken.

### **1.6 AIM OF THE STUDY**

The study is about investigating the most appropriate Public Private Partnership framework for replacing ageing municipal water infrastructure, in particular water pipelines. The study only establishes the most suitable framework and does not determine if the framework is supported by the key decision makers at eThekweni Municipality.

### **1.7 RESEARCH OBJECTIVES**

- To investigate a suitable tariff structure to remunerate private sector for service rendered within eThekweni Municipality.
- To compare and critique the implementation of PPPs for a similar scope of work in other countries/governments to assess the applicability to eThekweni Municipality.
- To examine the different frameworks regarding PPPs for the replacement of municipal infrastructure such as water pipelines within eThekweni Municipality.

## **1.8 RESEARCH QUESTIONS**

- 1 What tariff structure would be the most beneficial for all key stakeholders?
2. In terms of what has been done by other countries with regards to using PPP to replace municipal assets, can this be applicable to this municipality bearing in mind the different political environment?
3. What is the most suitable and cost effective PPP framework for this nature of work?

## **1.9 DEFINITION OF KEY TERMS**

- For the purpose of this research, water pipelines are defined as conduits which are designed to be kept pressurised. These conduits convey the fluid from storage reservoirs via gravity head into smaller reticulation conduits which provide access to consumer consumption points.
- According to World Bank (2014), a PPP is a long-term contract between a private entity and government for the purpose of providing an asset or service, where the private entity carries the risk and management responsibility. The remuneration of such a contract is based predominantly on performance. The author Delmon (2014), states that PPP is a form of legal relationship between the public and private sector with the purpose of expanding public infrastructure services or rate payer services. For this study the definition of PPP is aligned with both the World Bank (2014) and Delmon (2014) with the addition that PPP creates a framework for the transfer of knowledge, skills and to redress the deficiencies of each respective sector.
- According to Othman and El-Genawy (2012) a framework is a structure that describes methods, processes, technology and conceptions to complete a design. The framework will provide a means to create and implement the partnership between the public and private sectors.
- In this study local is defined as being within the Republic of South Africa.

- The area selected for the application of this framework shall be eThekwini Municipality. This municipality encompasses Durban and surrounding areas and is broken up into 107 operational wards (Pieterse, 2018).

## **1.10 CHAPTER OUTLINE**

The successive steps of this study followed a systematic and structured approach which is documented and portrayed in the five chapters detailed in the Table 1.1 below:

Table 1.1: Chapter Outline

<b>Chapters</b>	<b>Content</b>
Chapter 1	This chapter illustrates an overview of the research study. This chapter provides an introduction and background to the research study. It takes cognisance of the problem statement, research objectives and research questions. Further included are the significance of the study, definitions of key concepts and limitations of the study.
Chapter 2	The literature review will explore the different frameworks available for PPPs. This chapter will look at the potential of using PPPs for construction in the assets renewable programme of eThekwini Municipality. The research will begin broad with the replacement of ageing municipal infrastructure and then narrow down to the replacement of water pipelines. The successes the Canadian government have had using PPPs to renew ageing municipal infrastructure will be unpacked.
Chapter 3	In this chapter the methodology used to approach the study shall be discussed. The research design and study area will be justified. The sampling techniques, size and research instruments will be detailed. In addition, the reliability and validity of the instruments will be established. The ethical considerations will be discussed, which will include issues around informed consent, data collection and research participants.

Chapter 4	The penultimate chapter represents the results and discussion of the data collected for the study. The different sections of this chapter either correlate or seek to disagree with academic references stated in chapter 2.
Chapter 5	This chapter concludes with recommendations based on the findings and possibilities for further research.

### **1.11 LIMITATIONS**

Currently in the government sector project managers with the knowledge regarding the PPPs have arguments for and against its utilisation. However, project managers in the government sector without inherit knowledge stay clear off PPPs due to the fact that it does not conform to the normal procurement plans. According to Xhala, *et al.* (2017) the main purpose for failed PPP projects is the lack of skills and knowledge in the project management level. Thus for this study only people familiar with PPPs will be consulted. The reason being for consulting those familiar with PPPs is that this group of people have opinions based on past experiences which will add value to this research. The strategies to collect data will be survey via structured interviews for the action research. However, due to various backgrounds of the interviewees the questions will need to be prescriptive similar to a questionnaire in order to facilitate the process for direct comparison. The methodical choice will be mono method qualitative in order to mitigate the risk of time constraints to complete this study.

Many of the studies undertaken previously that are to be used are based on international research done in countries like Canada namely; Opara, *et al.* (2017), (Hellowell, 2013) and Canadian Council for Public-Private Partnerships (2014). Although much can be learned with regards to best practice, the weakness is that what can be effective internationally may not be applicable locally due to the different political hemisphere. The best mechanism to address this would be to include key decision making politician at eThekweni Municipality in the sample to gauge their stance on international practice for linear projects (Lombaard, 2017).

eThekwini Water and Sanitation has thus far implemented only one PPP, being for the production and provision of second class water to industries. This scope of work only addresses one PPP poses some limitations in terms of gaining actual insight into how effective a PPP can be in the current political environment, bearing in mind that this agreement is close to twenty years old.

## **1.12 CONCLUSION**

This chapter foregrounded the study through an introduction, background to the study, problem statement, purpose and significance of the study, research methodology, and an outline of the chapters. An overview of the research study has been presented in this chapter where the motivation for the study has been discussed. The research proposal conclusively provides the parameters for this research. The topic of PPP is a complex legal business arrangement with many implications. The content or rather literature on the topic is vast. Hence, the problem statement, objectives and research questions have been purposefully aligned to ensure the research aim is achieved. This chapter lists the limitations identified at the research proposal stage, this section has been expanded in the following chapters. The next chapter focuses on related and current literature relevant to this study.

## CHAPTER 2 - LITERATURE REVIEW

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### **2.1 INTRODUCTION**

The water sector is the most crucial in terms of creating a quality living environment by providing for the basic human need. Crucial in the sense that from the various service delivery sectors such as roads, structures, electricity, solid waste and storm water the need for potable water is the greatest. This need drives governments globally to find innovative approaches for harnessing the private sector's technical and management skills as well as their investment capabilities (Bertoméu-Sánchez, Camos & Estache, 2018). The Water Services Act 108 of 1997 also states that "to provide for the rights of access to basic water supply and basic sanitation". The Water Services Act 108 of 1997 also acknowledges the fact that although municipalities have authority to administer water supply services and sanitation services, all spheres of Government have a duty, within the limits of physical and financial feasibility, to work towards this objective. The investors' interest is a result of the economic and environmental importance of the water sector. Furthermore, the use of PPP's stimulates the economy as a long term benefit and provides employment as a short term benefit (Bruchez, 2014).

There has been a rapid migration of inhabitants from rural areas into metros like eThekweni, so much so that there has been a drain on the municipalities resources and operational staff, which has led to the undermining of the public services rendered (International Finance Corporation , 2013). eThekweni Municipality is faced with high population growth and rapid urbanisation, some of the basic needs remain unmet and the human right to water and sanitation remains unrealised to many. The high population growth in eThekweni is attributed to migration of people from all over KwaZulu-Natal, which is the second most populated province in the country (Stats SA, 2011). According to Sanni and Hashim (2014) South Africa is faced with citizens demanding services to the extent that protests have become the norm. In this context the word demanding pertains to the citizens insisting on having public services. Hence, it is imperative to review the literature to understand better the

frameworks which can be used to adequately provide services both sustainably and profitably.

The literature was searched according to the relevance in the research objectives and questions defined in the research proposal. The journals that were sourced were peer reviewed papers as well as reputable websites. A concrete effort was made to use literature that was current taking into consideration that there have been many developments with regards to PPPs in South Africa and internationally. The investigation into a particular aspect or concept ceased once data saturation was achieved. The saturation mentioned was a result of no new ideas surfacing and a repetition of concepts already included in this chapter.

Sections 2.2 and 2.6 below describes the theoretical and conceptual frameworks associated with the partnership component of PPP's and the inter-related variables. Section 2.3 critically discussed the five different frameworks supported by National Treasury for infrastructure projects and their distinctive applications. Section 2.4 reviews the various tariff options available for these types of long term partnerships, the literature provides best practice guidelines and lessons learnt which will enrich this study. Section 2.5 compares and critiques the implementation of PPPs for a similar scope of work in other countries / governments and to assess the applicability to eThekweni Municipality. A brief overview of successes of PPPs in Canada is included in this section. Lastly section 2.7 concludes the literature findings and discusses the common denominators in the literature as well as the gaps identified. A multitude of literature and PPP policies have been reviewed to better understand the implications around implementing a suitable PPP framework for infrastructure upgrade.

## **2.2 THEORETICAL FRAMEWORK**

This section pertains to the theory behind partnership agreements, which will form the theoretical framework for the research undertaken. The theory forming the background to support partnerships is referred to as the Aggregate Theory. According to Hoare (2016), the Aggregate Theory implies that a partnership is the sum of the people who encompass the partnership provided that their participation

in the partnership is voluntary. However, US Legal (2016) states that the Aggregate Theory assumes that each respective partner is treated as an owner and is responsible for the partnership assets, liabilities, operations and overall performance. The Aggregate Theory infers that by maximising the aggregate of the individual's preference satisfaction in the group or panel it is possible to raise the satisfaction of all in the partnership (Edmundson, 1998). In general, the Aggregate Theory forms the basis on which partnerships agreements are formed. The Aggregate Theory which supports the partnership component in PPPs opposes the Entity Theory in business practice. According to Investopedia (2013), the Entity Theory pertains to the assumption that economic activity undertaken by the business or entity is separate from the owners. This theory states that the owner in their own capacity is not responsible for the obligations such as liabilities and loans for the business or entity. In the Public-Private Partnerships the contrast is that members or individuals that form the public and private sector that make up the partnership inherit the associated risks per sector, not to mention are obligated to meet the project deliverables.

These theories were developed and refined after the first well known concession was put in place for water distribution in the City of Paris, which in the year 1782 was awarded to the Perier Brothers. This was nearly two and half centuries ago, unfortunately this partnership agreement was cancelled before maturity due to the French Revolution (Tandi, 2018).

While there are many definitions of PPPs, most sources agree that an important part of the concept is the significant transfer or sharing of risks (typically financial, technical and operational project risks) from or between a public and a private entity (Farlam, 2005) and (Delmon, 2014).

## **2.3 THE PUBLIC-PRIVATE PARTNERSHIP FRAMEWORK**

### **2.3.1 THE DIFFERENT FRAMEWORKS AVAILABLE FOR PUBLIC-PRIVATE PARTNERSHIPS**

The different frameworks provide a means to transfer financial, design, construction, operations and other perceived risks to the private sector. However, this depends on the type of framework selected whilst also ensuring cost effectiveness by

leveraging the technical and management skills of the private sector (Delmon, 2014). The perceived risks for the partnership are substantive; initial fixed cost, diverse water users' applications, and unaccounted factors not included in the water tariffs (Ameyaw Effah & Chan, 2013).

The PPP type of partnership was introduced in South Africa in 1998 and thus far thirty-one PPP projects were undertaken and concluded in South Africa with a total value of all projects amounting to R65.3 billion (National Treasury, 2017). There are various different types of frameworks for PPP structures depending upon the contractual arrangements and requirements. The 5 types of frameworks which will be looked at are as follows design, finance, build, operate and transfer (DFBOT) projects; design, finance and operate (DFO) projects; build, operate and transfer (BOT) projects; equity partnership projects (EPP), facilities management projects (FM) within the South African context with the aim of highlighting the benefits of PPPs to both private and public sector in order to make this type of transaction more viable and lucrative to the stakeholders (Delmon, 2014).

The above frameworks will be evaluated based on the context in which they would be most appropriate and how both the public and private sector can obtain remunerations for both long and short term development. The study is essential to highlight that the public gets better, more cost effective services; and the private sector gets new business opportunities when undertaking a PPP relationship. Similarly, the case studies undertaken in Gauteng and Limpopo by Rulters and Matji (2016) revealed well developed PPP frameworks for water infrastructure can be successful provided that the revenue from the project undertaking is lucrative for all parties. Both of the above will be in the interests of the nation (Manuel, 2017). According to Othman and El-Genawy (2012) frameworks address the call to save the environment and efficiently use natural resources which makes projects sustainable. The use of PPPs in South Africa will improve service delivery with a reduced cost and also upskill and educate people whilst developing both big and small businesses in the private sector; thereby creating strong financial markets and a competitive private sector.

The authors Xhala, Nemeć and Kajimo-Shakantu (2017) claim that the most prudent frameworks for PPP are those that allow for private investment, thus ensuring government's interest into long term funding of infrastructure investment by the

private sector. These frameworks mitigate against project delays due to the fiscal instability and budget constraints. The African continent which accounts for ten percent of the global population is estimated to only receive two percent from international investors (Sanni & Hashim, 2014). The water sector will require large initial investment, as studies indicate that the ratio of fixed assets to annual tariff revenue is high, Ameyaw Effah and Chan (2013) estimate the ratio to be 10:1 for the water sector. Hence, the investor(s) will only be able to recover costs and realize profits over a lengthy period of time. Ratios will only increase over time as the cost of water services infrastructure is escalating to a point where third world countries cannot afford such infrastructure (Rulters & Matji, 2016). The five sub-sections below will detail each of the frameworks and their applicability in the built environment.

#### **2.3.1.1 THE BUILD OPERATE AND TRANSFER (BOT) FRAMEWORK**

This framework encompasses the use of municipal capital investment for the procurement of assets. The private sector then constructs and operates the infrastructure for a stipulated period of time, thereafter transferring ownership to the municipality. This type of framework is useful where the municipality has adequate funds, but lack the competent skills and capacity of the private sector for this nature and magnitude of work (Mabuza, 2016). Again according to Shugart and Babak (2012) this framework is beneficial as an independent regulator is not required as the scope is limited over the duration of the agreement and can be clearly defined in the contract. Financially this framework offers a minimum income guarantee for the private sector as repayment is only due for construction and operation overhead costs of the infrastructure (Engel, Fischer & Galetovic, 2013). In addition, due to the nature of the contract there is little need to amend the tariff structure (Shugart & Babak, 2012). This type of framework is suitable for big projects, where the private sector will find difficulties in raising the required capital (Rulters & Matji, 2016). The BOT framework is currently in use in the City of Johannesburg Metropolitan Municipality. In the BOT framework the entity Johannesburg Water is responsible for the operation and maintenance with regards to water and sanitation infrastructure. In terms of water pipelines the entity carries the responsibility of operating 11000 km of reticulation mains (Rulters & Matji, 2016).

### **2.3.1.2 THE DESIGN, FINANCE, BUILD, OPERATE AND TRANSFER (DFBOT) FRAMEWORK**

This framework promotes the private sector to utilise their expertise and design the required infrastructure, thereafter the private sector will raise the necessary funds required for the construction costs (Haldea, 2009). The private sector then operates the infrastructure and similarly transfers ownership to the municipality (Nelson & Marema, 2014) and (Mabuza, 2016). Water PPPs of this nature typically result from the need for private finance by institutions that are otherwise difficult to finance but have projects that are financeable (Ameyaw Effah & Chan, 2013).

This type of framework is useful where smaller municipalities are underfunded. It must be noted that there are numerous factors that constrain service delivery, the most basic being capital and its efficient use (Rulters & Matji, 2016). In addition, it is useful for municipalities which lack the competent skills and capacity of the private sector for this nature and magnitude of work (Engel, *et al.*, 2013). Again this framework can be used to ensure that projects are delivered according to specifications, within budget and timeframe (Xhala, *et al.*, 2017).

### **2.3.1.3 THE DESIGN, FINANCE, AND OPERATE (DFO) FRAMEWORK**

The design finance and operate framework is one of the main agreements in place in South Africa currently. This framework is useful when applied in conjunction with planning for capacity requirements in the short and long term, it provides a practical mechanism to achieve the planning objectives (Fombad, 2013). Although, this framework has a multitude of uses, under these conditions the private sector will aim to retain skills to consistently maintain a competitive advantage over the public sector (Rulters & Matji, 2016). This is not seen as an environment conducive to the transfer of technical and managerial skills (Fombad, 2013). It is suitable for projects where the infrastructure will be optimised or where new technologies need to be retrofitted onto the existing infrastructure, in both of the above cases the infrastructure will need to be operated thereafter for a predetermined period of time (Delmon, 2014).

### **2.3.1.4 THE EQUITY PARTNERSHIPS PROJECTS (EPP) FRAMEWORK**

This framework allows the private sector to enter a partnership with the public sector with the view to obtain private sector investment. The term mentioned in many sources is “debt financing” (National Treasury, 2010). The EPP is a framework that

has been outlined towards increasing the effectiveness and efficiencies of programmes whilst including the local people to bring about change. It is a framework which encourages the involvement of community members thereby using their unique understanding of local issues to ensure a successful project. The community members contribute by making recommendations which is substantiated with evidence (Clark, Mancebo, Mahomed and Cartwright, 2015).

In the context of vertical equity in the field of public finance pertains to the middle and upper class to supplement the low income households for public services and necessities. In the context of water projects, the vertical equity pertains to the subsidy of water user tariffs and the water amnesty frameworks for low income households (Alexander & Shugart, 2009). The horizontal equity for water projects pertains to equal treatment of all users regardless of income class (Mathur, 2017).

A practical means of achieving equity empowerment is to ensure the private sector has a stipulated minimum percentage Broad Economic Empowerment (BEE). In South Africa BEE is a government objective and the PPP framework is seen as an apt mechanism to promote this objective (Farlam, 2005). There is legislative support for this type of framework, in 2004 the use of BEE in PPPs was included in the Public Finance Management Act (PFMA) (National Treasury , 2017). In terms of this framework equity is defined as creating meaningful participation for black people, black women and black owned enterprises.

#### **2.3.1.5 FACILITIES MANAGEMENT (FM) FRAMEWORK**

This type of framework is growing more popular in South Africa due to the current technical environment. The technical environment pertains to the lack of succession planning in the public sector which leaves a core competence gap when key personnel retire (Farlam, 2005). Furthermore, there is a lack of technical skills to find innovative solutions and to correctly operate infrastructure to provide consistent service delivery (Legoabe, 2017). Again the appointment of the private sector brings in competence with regards to the latest operational technologies that the public sector lack (PWC, 2016). The defining feature is that there is no conventional design, finance or build required, the private sector are to inherit all risk of operating the infrastructure over a predetermined period. To elaborate this framework is not merely the outsourcing of functions, rather it is a long term agreement involving considerable risk transfer. These contracts are not done in perpetuity as there must

be knowledge transfer from the private sector to the public sector before hand over (National Treasury , 2017). In the water and sanitation department this type of frameworks is useful for the operation of Water Treatment Works (WTW) and Waste Water Treatment Works (WWTW). However, according to Service Future (2014) statistically one in four outsourcing partnerships fail completely.

## **2.4 THE DIFFERENT TARIFF STRUCTURES AVAILABLE FOR PUBLIC-PRIVATE PARTNERSHIPS**

In the partnership by facilitating the environment to outlay the initial capital investment by the private sector entitles this sector to receive constant revenue streams for services rendered and for capital infrastructure installed (Engel, *et al.*, 2013). Similarly, Nelson and Marema (2014) state the partnership allows the private sector to receive compensation for providing the assets and delivering the prescribed public services over a set period of time. This can be practically achieved by the private sector recovering costs directly from the consumer as per agreed tariff or the municipality can recover the cost on behalf of the private partner and then remunerate (Rulters & Matji, 2016). However, PPPIRC (2015) states that the public entity should collect the tariffs on behalf of the private sector. This will ensure the private sector does not enforce tariff collection or impose sanctions on consumers. The duty of the public sector is providing potable water and sanitation to all consumers as it is a basic human need for survival, where consumers are unable to afford the water tariffs, amnesty can be granted (Alexander & Shugart, 2009). As a result the non-paying consumers will have to be subsidised by the public sector, it is safe to assume that the private sector will expect the projected bottom line as this is the cornerstone of their decision making process (Ovsiannykova, 2012).

It must be noted that the revenue sharing and revenue guarantee agreement differ from those of a normal procurement process facilitated by municipal tendering. This attributed to all the investment and service provision being pooled into one long term partnership which can last for a few decades (Engel, *et al.*, 2013). As discussed in the frameworks sub-section above at the end of the partnership the infrastructure assets are handed over in their entity to municipal ownership, public sector. Thus the private sector must have a contract that allows the party to generate revenue to

cover cost plus profit between the capital outlay and asset handover (World Bank, 2014). In the event the country takes a downward economic turn and costs rise as a result of inflation further than predicted, the partnership agreement must make provisions for renegotiations should this event arise. This ensures that the agreement remains competitive to keep the private sectors' interest (Engel, *et al.*, 2013). However, Sanni and Hashim (2014) and Rulters and Matji (2016) reason that the tariff pricing needs to be capped at an agreed amount with all stakeholders to ensure the rate payers are protected from inflated costs.

An option for the tariff structure required for a private sector investor, would be a combination of a percentage of the consumer user fees and government subsidies (Engel, *et al.*, 2013). However, in the framework if the municipality outlays the initial capital investment for the project, the private sectors tariff structure will be composed of only a share of the consumer user fees (Sanni & Hashim, 2014). In the case where the framework establishes an upfront capital investment by the private sector, for this to be sustainable the capital cost for the asset does not depreciate in value. However, in reality the asset will depreciate in value as usage occurs over a number of years. The reason is that this capital is an investment on the private sectors part and must be viewed as such (Engel, *et al.*, 2013).

A sustainable tariff is one which takes into consideration for price adjustments on capital construction cost, inflation and the initial capital costs (World Bank Group , 2016). Also with the operation of any asset there is a high probability of unforeseen cost or unplanned breakages and even required upgrades, the tariff in question must make some allowances to be used by the partnership. Similarly, Shugart and Babak (2012) states that for a tariff structure to be sustainable it needs to be reviewed at periodic intervals, best practices suggest that a five-year period interval to be ample.

It is essential that in the water and electricity sector there be block tariffs introduced into the system. It must be noted that consumption varies per consumer, hence different blocks will be applicable according to the consumption and usage type (Alexander & Shugart, 2009). The usage type pertains to whether consumer is institutional, commercial, industrial or domestic. In this application a block tariff is the incremental increase of the unit price per kilolitre of water as consumption per customer increases. This is another sustainable way to facilitate cost recovery and to ensure there is a rational use of the precious resource. On a social aspect the

block tariff would protect the low income households by providing a low tariff for low usage (Shugart & Babak, 2012).

## **2.5 A STUDY OF FRAMEWORKS USED INTERNATIONALLY FOR REPLACEMENT OF MUNICIPAL ASSETS**

The concept of the Public-Private Partnership for the replacement of municipal assets was piloted in the United Kingdom in the early 1990s. However, Canada has fast become the leader in implementing PPP frameworks and models around the world (Hellowell, 2013). The developed countries such as USA, Australia, UK etc. all look to Canada for the best practice guidelines for PPP's (Hellowell, 2013). Hence, for this study the successes the Canadian government and other countries have had using PPPs to renew ageing municipal infrastructure will be unpacked.

### **2.5.1 CORE REQUIREMENTS FOR THE SUCCESS OF PPP's:**

Having an established and stable PPP market has ensured that the Canadian market receives competitive contract prices with high quality submissions. This stable market has created a sustainable environment for the supply and demand of long term projects which have flowed in the municipal sector (Hellowell, 2013).

The survey conducted nationally by the Canadian Government, estimates that more than 62 % of Canadians are in support of PPP's for the use in building infrastructure and delivering public services. Canadians in general were in support of PPP's as an effective means of government using their tax paying Canadian dollars. This majority public support is attributed to gaining political support with the appointed political officials (Canadian Council for Public-Private Partnerships, 2014). The extent of political support for PPP's in Canada is globally renowned (Hellowell, 2013), which is crucial as excessive regulations in government departments can be a drawback and cause of frustration to project managers (Othman & El-Genawy, 2012).

The familiarity and political support can also be achieved in South Africa, as national government has already put in place the structures to support PPP's, a Public-Private Partnership Unit has been set up in National Treasury to provide technical and financial advice (National Treasury , 2017). Hence, these changes at national

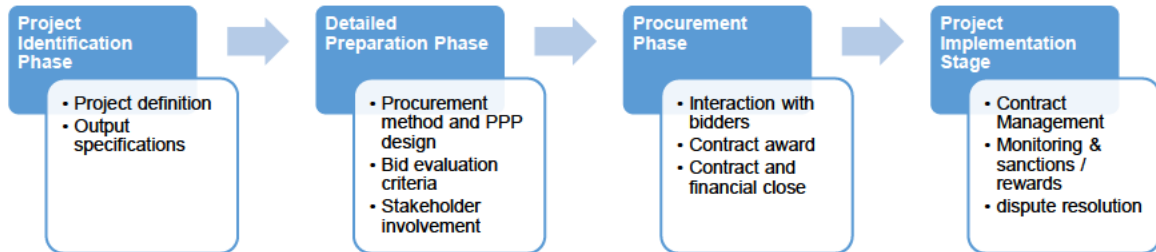
level have provided a more enabling environment to support PPP implementation (Moorman, 1997). Especially in South Africa, Rulters and Matji (2016) stated that if concerns such as political and public acceptance are not in place upfront, there is a high probability that the private sector will not invest. This can contribute to poor investment rating as the political component has not been addressed (Fombad, 2013). Similarly, Mathur (2017), details that in India the failure of PPP's can be attributed to poor design, being financially unsound and strong public and political opposition. The politicians viewed the partnership as being purely privatisation and the public feared an increase in water tariffs. These concerns were not addressed which resulted in an overall project failure, the concerns mentioned form the independent variables for this research in the Conceptual Framework below. The same sentiment was shared where the PPP failed due to them becoming too expensive. The excessive cost was attributed to complex structuring and de-risking measures, poor value for money determinations in a context of limited competition to finance water supply (Tandi, 2018).

The efficient procurement protocols have also contributed in many ways namely; by standardising the partnership agreement in the provinces within Canada thus reducing the information requirements. There are stringent controls in place to avoid scope changes after award, placing more emphasis on forward planning (Hellowell, 2013). Again Mathur (2017) and Fombad (2013) refer to scope creep after contract inception as a source of confusion which results in newly formed competing objectives. Similarly, Liu, Wang and Wilkinson (2016) state that in China by standardising the contract ensures that all stakeholders can clearly interpret and understand the specifications in terms of risk allocation, capacity requirements and scope of work. Another benefit for producing technically sound partnership agreements is that it reduces the burden on the Independent Regulators (Bertoméu-Sánchez, *et al.*, 2018). In terms of the procurement process by having a stronger focus on the quality aspects of the contract rather than the price will promote sustainability by ensuring there is more completion regarding the quality of bids received than the price (Hueskes, Verhoest & Block, 2017).

The use of well-designed PPP frameworks has allowed the private sector to identify and reduce the risks which may affect the financial viability of the long term contract. Similarly, Rulter and Matji (2016) and Xhala, *et al.* (2017) deduce that for effective

use of PPP's especially in developing countries like South Africa, the project managers must be prepared to undertake comprehensive technical feasibility studies. This practically achieved by conducting a value for money analysis or return on capital investment analysis in order to promote a sound business strategy (PWC, 2016). In addition, by putting in place frameworks that ask the private sector for upfront capital investment ensures their utmost commitment to the project (Hellowell, 2013). This motivates the investors to be part and parcel of the planning stage, thus ensuring a successful project. The successes of a PPP used to construct a treatment plant in Plymouth was attributed to having the subcontractors involved early in the design process and drawing on their expertise throughout the project (Othman & El-Genawy, 2012). In addition, Hueskes, *et al.* (2017) stated by transferring the risks to the private sector within the long term agreement motivated the private sector to consider the concept of life-cycle costs. This concept puts into perspective energy-reducing and waste-minimising designs which will reduce the operation and running cost of the infrastructure (Othman & El-Genawy, 2012).

The conventional design and build partnership for construction work has been enhanced by introducing an incentive scheme into the framework (Haldea, 2009). This is practically achieved by requiring the private sector to pay contractual damages up to a maximum of 50% of the construction works value, if the work is delayed by factors under the private sector's control (Hellowell, 2013). This can be further supplemented by having practical performance measures for the construction work such as; non-revenue water reduction, stability of the network and customer satisfaction (Mathur, 2017). Similarly, Hueskes, *et al.* (2017) states that the use of specific incentives such as bonuses will ensure the sustainability of the partnership. The sustainability in the partnership refers to addressing the social, ecological and economic perspective of the long term agreement. Figure 2.1 below showcases the detailed processes in order to achieve amicably a sustainable partnership agreement (Hueskes, *et al.*, 2017).



**Figure 2.1: Phases of PPP life cycle in which governance instruments may be deployed to stimulate sustainability.**

Adapted from (Hueskes, *et al.*, 2017) Hueskes, M., Verhoest, K. & Block, T., 2017. Governing Public–Private Partnerships for Sustainability an Analysis of Procurement and Governance Practices of PPP Infrastructure Projects. *International Journal of Project Management*, 1(35), pp. 1184-1195.

It is imperative that the partnership must include that the private partner is to provide surety from an approved surety underwriter. The underwriter will ensure that the private partner is capable of performing the required work envisioned (Nelson & Marema, 2014).

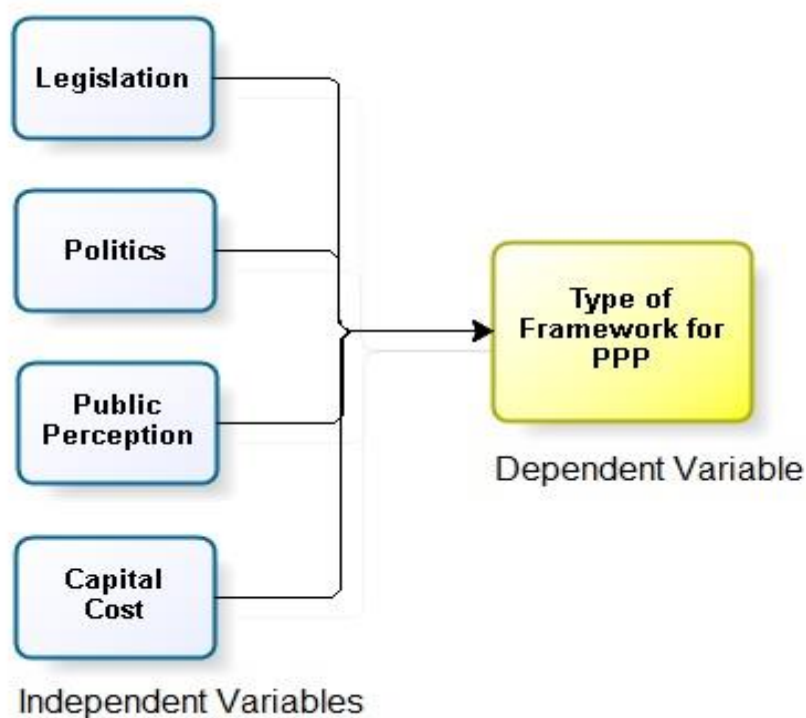
Sanni and Hashim (2014) and Rulters and Matji (2016) state that South African municipalities should upskill their employees to be technically competent with regards to PPP frameworks and models. The shortcomings in terms of legal, technical and management capacity has made it difficult to successfully implement PPP's. Also Liu, *et al.* (2016) states that establishing a knowledge sharing mechanisms that facilitates PPP practitioners being able share their experience across units. This can be an effective means of bridging the gap in knowledge.

In summary of the core requirements from the research undertaken, according to Liu, *et al.* (2016) there needs to be a supportive microenvironment with stable political and social acceptance. The responsibility needs to be shared amongst the public and private sector according to the agreed terms and there needs to be

transparency in all processes undertaken in the partnership. Furthermore, the appointed private partner needs to be competent and be able to carry out the responsibility with diligence throughout the duration of the agreement.

## **2.6 CONCEPTUAL FRAMEWORK**

Figure 2.2 below graphically illustrates the dependent and independent variables; this Figure is not sourced as it was drawn up based on an overview of the various literature reviewed. Figure 2.2 shows the conceptual framework and how the variables are inter-related.



**Figure 2.2: Relationship between independent variables and dependent variable**

The framework involving the independent variables of legislation, politics and public perceptions will have to be evaluated first, in order to allow for the independent variables to aid the decision making process of the most suited PPP framework which is both economical and sustainable (Delmon, 2014). To elaborate the

legislation pertains to the National Treasury Act as any changes or revisions to this act will directly influence the roll-out of PPPs (Manuel, 2017). The politics pertains to the political support or opposition to outsourcing via PPP at the municipal level. The public perception pertains to the peoples' opinion of PPP and their creation of potential employment or conversely the increase in cost for service delivery due to privatisation (Mathur, 2017). However, it must be noted that the independent variables identified will differ from each municipality, thus project managers are to take cognisance of this before opting for Public-Private Partnerships. The independent variables identified are emphasised by many scholarly articles and cited by many as being the leading factors for Public-Private Partnership failure if not properly addressed namely; (Ameyaw Effah & Chan, 2013), (Sanni & Hashim, 2014), (Rulters & Matji, 2016) and (Liu, *et al.*, 2016).

## **2.7 CONCLUSION**

Potable water being an essential finite resource, in terms of the water security it is imperative that the best management framework of this life giving resource be researched taking into consideration all factors such as politics, availability, current infrastructure, funding, demand etc. Thus PPPs are of value to municipalities who are providing the most important levels of service delivery such as solid waste disposal and producing blue drop quality drinking water (National Treasury , 2017). Surprisingly, the use of PPPs in municipalities to assist in service delivery is not common practice amongst all municipalities.

The research conducted reveals that the most crucial factors for success of a PPP framework is the political and social support. It must be noted though that the City of Johannesburg Metropolitan Municipality has a 7 year PPP framework in place for the nature of work under investigation. However, the City of Johannesburg Metropolitan Municipality and eThekweni Municipality are run by different political parties which may be a contributing factor.

According to Rulters and Matji (2016), the frameworks in South Africa need to be supported by a strong independent regulator, not excluding the competition commission to ensure that the consumers are protected as they are bonafide rate

payers. The regulators are required to perform functions such as addressing grievances between stakeholders, enforcing contract deliverables and inviting private concessionaires to the water sector (Mathur, 2017). Similarly, Bertoméu-Sánchez, *et al.* (2018) states that the ultimate goal of the regulator will be to ensure the oversight is technical rather than a political process. The regulator where required will also be empowered to independently appoint impartial auditors to oversee the PPP framework and ensure there is firm compliance and that all bottlenecks are identified (Mabuza, 2016). In the case of developing economies like South Africa an Independent Regulator is needed to address the institutional weaknesses as a result of the conflicts of interest pertaining to the public sector (Bertoméu-Sánchez, *et al.*, 2018).

The literature revealed that the build operate and transfer (BOT) framework has been used previously for the replacement of water pipelines. This framework is desired as it adds the technical skills and capacity required to facilitate this type of work over a long period of time. Effectively, the private sector is paired to the project over the period at the established tariff and payment scheme. For this type of framework, the literature researched suggested that a suitable tariff structure would be one that specifies that the public sector collect the revenue from the consumers' serviced by the project and then remunerate the private sector according to the tendered rates. This system is known as revenue sharing amongst all parties in the partnership agreement. The design life for the water reticulation pipes installed is 50 years, provided the correct installation procedure is followed (Scruton, 2012). Hence, the infrastructure will require replacement or upgrade after 40 – 50 years, this allows the private sector ample years to recover costs plus profits for the build and operating expenses. Lastly the tariff structure must be sustainable by making allowance for price adjustments on capital construction cost, inflation and the initial capital costs. In addition, due to the changes in country's economy it makes good business practice to allow for renegotiations of prices in five-year intervals.

In review of the publications by the World Bank and the International Finance Corporation, in general the literature is in favour for the use of PPPs and their many applications in the public sector. However, articles released by the Alternative Water Forum (FAMA) are cautious for the use or rather misuse of PPPs in the public sector, targeting issues such as regulation deficiencies, compliance issues and corruption.

This sentiment or viewpoint is also shared by authors such as (Fombad, 2013), (Mathur, 2017) and (Ameyaw Effah & Chan, 2013).

The gaps identified in the literature are around the lessons learnt from completed contracts. This is attributed to the fact that PPPs are lengthy in period, most often 20 – 30 year partnerships. Hence, there are not many completed studies that can be sourced in relevance to this study's scope. In addition, reviewing the literature revealed that there is no established equity requirement for long term PPP agreements. Rather, the equity is implemented on a merit basis as per project scope and political interest.

In this chapter the literature around the research questions were reviewed and portrayed. In the following chapters a comparison will be drawn between the literature findings and information received via the structured interviews from the current practitioners for PPP projects.

## CHAPTER 3 – RESEARCH METHODOLOGY

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### **3.1 INTRODUCTION**

This chapter gives an overview as to how the research was conducted in order to most accurately deduce the outcome. The data collection techniques used for the duration of the study will be detailed in the subsequent sections. This study predominantly uses qualitative research methods. It is based on two main sources of information namely; a comprehensive literature review and own direct research via an interview schedule. The main research objective is to determine the most suited and cost effective Public-Private Partnership (PPP) framework for the replacement of municipal infrastructure such as water pipelines. After the evaluation, one would also be able to deduce the most suited type framework to be used in a specific transaction scenario. This chapter outlines and elaborates on the research methodology undertaken to address the research objectives and questions established in the research proposal. This chapter examines and explains the research design, purposive sampling, research instruments, ethical considerations, pre-testing, validity and reliability.

### **3.2 RESEARCH PHILOSOPHIES**

The term philosophy refers to a system of belief and assumptions about the development of knowledge (Saunders, Lewis & Thornhill., 2016; 124). The research philosophy leads the research process and can be used to determine the type of questions and research design in the study (Saunders, *et al.*, 2016).

Epistemological assumptions relate to the human knowledge, in terms of validity and what is accepted (Saunders, *et al.*, 2016). The epistemological assumptions in this study pertain to the stakeholders interviewed having expert knowledge surrounding PPPs.

Ontology is a branch of philosophy concerned about the nature of reality (Creswell, 2014). The ontological assumptions in this study relate to the current political

environment and the municipalities' appetite for PPPs based on the country's financial position.

Axiological is where researchers make their values known in the study (Carnaghan, 2013). The axiological assumptions in this study are as a result of the researcher's technical background which influences the study.

The overall research philosophy adopted for this study is pragmatism, which is conducive to obtaining the different viewpoints of stakeholders to depict the entire picture (Saunders & Tosey, 2013). To elaborate one perspective can never provide a conclusive picture on complex matters such as PPPs, pragmatism accepts that there may be multiple realities (Saunders, *et al.*, 2016). The pragmatism approach was adopted as it aims to solve the problem by offering practical solutions which inform the future practice (Saunders, *et al.*, 2016). In this study the future practice pertains to the implementation of the most suitable PPP frameworks. Pragmatism is the most suitable philosophy as it accepts that research occurs in the social, historical and political spheres (Creswell, 2014). Pragmatism is about being problem centred where the importance of the research findings is its practical consequence (Sobh & Perry, 2006). The methodology employed in this study for pragmatism is mono method qualitative.

### **3.3 RESEARCH DESIGN**

A deductive research approach was used since it is more linear and sequential. This was deemed to be the best suited as implementation and success of PPP frameworks are dependent upon various stages of the PPP transaction occurring sequentially. Each stage of a PPP transaction must be completed in order for the next stage to happen (National Treasury , 2017). Each step of the PPP transaction will determine the next focus area and would also be dependent upon the previous action. During the PPP process, the favourable attributes of the transaction will be highlighted for both the public and private sector (World Bank, 2014).

In this study only people who were knowledgeable with regards to PPPs were consulted. The reason for this recruitment strategy is that this group of people will be able to provide a thorough and sophisticated understanding based on past

experiences which will add value to this research. Within eThekweni Water and Sanitation, the group was divided into people with technical, managerial and political experience with regards to the implementation of Public-Private Partnerships. The qualitative approach was preferred over the quantitative as the sample have extensive knowledge on PPP and can provide an accurate understanding of the research objectives. According to Polonsky and Waller (2011) the qualitative approach uses a small number of interviewees to provide the in-depth responses as well as attitudes, thoughts and motivations of the sample in question.

To ensure that different views were obtained which depicts the entire picture as stated in section 3.2 above. Heterogeneous sampling was adopted which uses the researcher's judgement to select participants with diverse characteristics to provide maximum variation in the data collected (Saunders, *et al.*, 2016). This will be detailed further in section 3.6 below.

### **3.4 STUDY AREA**

The study will be undertaken in South Africa and will focus on the larger Metropolitan areas such as eThekweni. The area selected for the application of this framework shall be eThekweni Municipality. This municipality encompasses Durban and surrounding areas and is broken up into 107 operational wards (Pieterse, 2018). The reason for focusing on the eThekweni Municipality is that each region or rather metropolitan has its own political environment. In the conceptual framework established in chapter 2 the main independent variable identified was politics. This variable is crucial in the decision making process to determine the most suited PPP framework taking into consideration economics and sustainability. Thus the study was contained to eThekweni Municipality to avoid conflicting political views regarding the PPP.

### **3.5 DATA COLLECTION METHOD**

The data collection is an imperative step to successfully meeting the research objectives, the type of method selected will have an impact on how the research is

portrayed. Each of the data collection methods or techniques have unique attributes with their respective strengths and weakness (Polonsky & Waller, 2011).

The study undertaken will be a qualitative study. The form of data collection which were implemented are structured interviews, used to gain an in depth knowledge regarding PPPs. Interviews were used as people may have different and conflicting perspectives. Also, interviews offered an effective means of performing an in-depth investigation. The method for this research is a one on one individual interview. Furthermore, the interview provides a means to gather information on the interviewee's past and present experience with regards to PPPs.

### **3.6 SAMPLING TECHNIQUES AND SIZE**

An advantage of qualitative methods is that the collection of a relatively small sample of the population is sufficient (Saunders, *et al.*, 2016). That said, sampling has to be made according to clearly defined criteria and the sample size must be adapted to the resources and the time available (Creswell, 2014). This study makes use of non-probability sampling, the guidelines for the size range from a minimum of 5-25 participants (Saunders, *et al.*, 2016, p. 297). The study began with a minimum of five participants and continued until data saturation was reached, the final number of participants interviewed was nine.

Purposive sampling is conducive to a qualitative study, where the researchers select interviewees who are in possession of particular characteristics that will enable the researcher to answer the research questions (Saunders, *et al.*, 2016). Similarly, Creswell (2014) explains that the idea for qualitative research is to purposefully select interviewees that will help the researcher understand the research problem. Hence, in this study only people who are familiar with PPPs have been consulted. The reason being for consulting only those who are familiar with PPPs is that this group of people had perspectives based on past experiences in terms implementation and not just theoretical views, which will add value to this research. Within eThekweni Water and Sanitation, the group shall be divided into people with technical, managerial and political experience with regards to the implementation of Private Public Partnerships. This strategic choice of group will ensure the credibility

of the research. The grouping or strata is important as it supports heterogeneous sampling to obtain the maximum variation of data collected (Saunders, *et al.*, 2016).

### **3.7 RESEARCH INSTRUMENT**

The data collection method was recorded interviews with informed consent. The use of a recorder is a means to ensure the integrity of the information is correct. The tape recording allowed the re-listening of the interview and provided a means to directly quote the interviewees in chapters 4 and 5. Furthermore, it allowed the researcher to transcribe all interview data into text which has been included in the data Tables in the research finding section in chapter 4.

By definition interviews are a data collection technique that involves the oral questioning of respondents (Creswell, 2014). The questions used in the interview were fixed and followed a specific order. The nine interviewees were asked identical questions in the same order.

Interviewing was the preferred instrument as it facilitated the extraction of expert knowledge from the interviewees and enabled a deeper understanding of the subject matter. The interview schedule used was divided into three themes to ensure an easier analysis of the responses. This also allows the data to be more focused and aligned to the topic of research. The number of interviewees that were interviewed according to their roles are shown in Table 3.1 below. The appointment to have a one on one interview was scheduled through emails, these interviews were conducted over a period of three weeks. The confirmations and declinations were used to determine whether or not candidates were available to be interviewed. Thereafter, the appointments were confirmed with the available candidates.

Table 3.1: Profiles of the Interviewees

<b>Role in the Organisation</b>	<b>Total Number of Interviewees</b>
Practitioners	3
Technical	3
Political	3
<b>Total</b>	<b>9</b>

### **3.8 PRE-TESTING**

Pre-testing was undertaken to ensure that the tools used and the interviews conducted were beneficial and aligned to the selected topic. The interview questions could adequately cover the objective of the research by validating the most suitable PPP framework for eThekweni Municipality. A practical data reduction strategy was to use prescriptive questions to keep answers of interviewees confined within the themes. Thus, reducing the out of context information.

The interview questions were tested on a few students from UKZN to ensure the questions are understandable and coherent. The pre-testing ensured the interview questions were clear and unambiguous. The supervisor was provided with the interview questions to ensure that the research objectives and questions were being addressed.

The benefit of conducting the pre-testing is that all unnecessary jargon was removed from the questions. In addition, the negative words were removed to ensure the question conveyed an even tone. It must be noted that all participants in the pre-testing were not included in the sample interviewed for the main study. Furthermore, the pre-testing created an environment of rehearsal before the actual interviews. The rehearsals increased my self-confidence and allowed the data collection procedure to be polished. According to Creswell (2014) the actual interview is not a platform for the interviewer's theoretical knowledge and opinions. It is essential that the interviewer be focused more on recording all the interviewees' thoughts rather than be speaking or leading the participant. In essence the interviewer must be completely impartial. It is imperative the participant's expert opinion comes through unvarnished to ensure the study is authentic and unbiased.

### **3.9 VALIDITY AND RELIABILITY**

The structured interviews are designed so that each interviewee is asked a set of the same questions. This is imperative as the goal will be to make comparisons across the different practitioners and stakeholders of PPPs. The use of experts and

practitioners regarding PPPs increases the credibility and face validity of the data retrieved.

The use of standardised interviews, structured, included a set of predetermined questions asked in sequential order to all nine interviewees thus providing a degree of uniformity and improving the reliability of the study. The inclusion of prescriptive questions allowed for the mitigation of any inappropriate answers. It must be noted that only the predetermined questions were asked and nothing more across all nine interviews.

Storing the audio record of the interview and referencing the context ensures that unreliable conclusions cannot be disseminated. In addition, this tool mitigated against missing information when the interviewees spoke too fast or inaudibly.

The questions were all structured to answer in detail the research questions established in the research proposal, in order to ensure the validity of the research. Lastly for each interview undertaken the objectives of the study were explained. In addition, with the interview invite a copy of the interview schedule was sent to each interviewee thus enabling the sample to prepare adequately which improved the data collected. Allowing the interviewees to have a copy of interview schedule ensured there were no surprises for the sample, the interviewees were accommodating and well prepared in their responses. It must be noted that there were no major difficulties encountered in the interview process. To elaborate there were no difficulties encountered which would constitute the halting or stopping the interview process.

In order to avoid bias and unfairness in this study, it is important that the researcher bracket their personal experiences. A practical method adopted in this to mitigate against bias is triangulating the findings with other independent sources (Saunders, *et al.*, 2016). This practical method was adopted in the study.

### **3.10 ETHICAL CONSIDERATIONS**

Informed consent was requested with all data obtained as some departments within eThekweni Municipality may consider the data confidential. Ethical considerations

were ensured by having a section requesting consent from the participant to use their answers, financial figures, ideas and perspectives. Permission was requested to use data from the organisation and a written consent form is kept on record. In the consent form the permission to be recorded was included, this facilitated that each interviewee was comfortable with the use of a recorder. Ethical considerations are taken very seriously as it forms the ground for a strong research topic in terms of data collection and the usage of relevant information and facts.

All data collected will be securely stored at the Graduate School of Business and Leadership for a period of 5 years, it will then be disposed of in accordance to instructions from the Ethical Clearance Committee. The information will be shared with my supervisor at our scheduled meetings throughout the year. At the meeting a copy of the latest information will be provided.

Upon completion of the study, an email shall be sent to each of the participants individually. The email will provide the abstract of the completed study. Furthermore, the participants will be thanked for their input in the study and the completed dissertation will be attached to the email in a PDF version for their record.

### **3.11 DATA ANALYSIS**

The entire interview will be recorded to ensure that no information or reference is lost. Most of the questions had prescriptive answers such as; “I agree” or “I disagree”. The prescriptive answers pertaining the most suitable framework will be graphed on a 3D bar chart for question nine from all the interviewees. Thus, enabling a direct comparison to be drawn between the answers provided from the practitioners of Public-Private Partnerships in the built environment. The substantiation for each response will be documented on the data Tables which will be included in chapter 4 of the dissertation. Furthermore, the narrative provided will be interpreted and divulged in the following chapter. The study analysed the collected data through content analysis which adopted thematic analysis and was deductive in nature. This type of analysis is useful and adaptable when developing themes. The data analysis was a manual process as there was no use of software packages to analyse the data. Although the task of producing the interview

transcripts is laborious it promotes familiarity with the data collected for better analysis (Saunders, *et al.*, 2016).

### **3.12 LIMITATIONS OF STUDY**

In the sample there is only one female interviewee from the entire group. There were no other females with the pertinent knowledge required in eThekweni Municipality. However, there are many female candidates in Veolia Water, Umgeni Water, Rand Water and the World Research Commission, but this study is confined to eThekweni Municipality.

Practically it was not possible to interview every candidate at the same time of the day due to their work commitments and conflicts in their diary. Some interviews were undertaken late in the day and the others before lunch. Working around the interviewees schedules was necessary to extract the data in the prescribed time.

On average the interviews lasted 35 minutes and were always in the place of work thus increasing their comfort. In some cases, the interviewees were disturbed by the landline or cell phone ringing, also knocks on the door. These disturbances to the transfer of data was unavoidable.

There was insufficient time to utilise data analysis software packages like “NVIVO” to assist in the interpreting of the qualitative data. Thus the analysis was done by conventional first principles which must factor the human error for direct analysis.

### **3.13 CONCLUSION**

The research was conducted as follows; the first two months was spent reviewing legislation relating to the topic and ensuring that all ethical considerations and permissions are in place for the study to be undertaken.

Thereafter the next two months was focused on conducting continuous, thorough literature review to identify the gaps in knowledge and understanding of the subject matter. Specific aims of the project were identified based on the research plan, vision and the literature review results.

A period of one month was used to focus on sampling in the research target population and undertaking data collection in eThekweni Municipality.

A full two weeks was spent analysing the data and putting it into a format which could be easily used and also ensuring that the relevant data is extracted to be used for compilation and analysis.

Thereafter, one month was used to draft a comprehensive proposed thesis document to ensure that project goals are met. During this period extensive advice and guidance from the supervisor was sought.

The last week was spent finalising the research paper and ensuring that all objectives were successfully met in accordance to the subject title and research outcomes. Referencing was finalised and included in the report. Once the final report was completed, the abstract / summary were written in 3 days and the final proposal was submitted to the UKZN Graduate School of Business.

## CHAPTER 4 – RESEARCH FINDINGS & DISCUSSION

### 4.1 INTRODUCTION

In this chapter the main findings and discussions of the research are illustrated, with a focus on presenting the viewpoints of the eThekwini experts. Simply these experts represent the practitioners, technical personal and politicians associated with Public-Private Partnerships. These experts form the stakeholders associated with PPPs. The data retrieved from the interviews has been assessed using thematic analysis, this is a well renowned method for identifying, analysing, shortlisting and describing themes found within a data set (Saunders, *et al.*, 2016). The previous chapter detailed the methodology used to answer the research questions and objectives set out in the research proposal.

### 4.2 BIO-DATA OF INTERVIEWEES

The Table 4.1 below illustrates the Bio-Data of the interviewees interviewed. The letters “A to I” have been used to denote the names of the interviewees.

**Table 4.1: Interviewees’ Bio-Data**

<b>Name</b>	<b>Current Position</b>	<b>Stakeholder of PPP</b>	<b>Gender</b>	<b>Age</b>	<b>Years of Service eThekwini</b>
<b>A</b>	Manager	Practitioner	Male	60-65	Over 40 years
<b>B</b>	Manager	Practitioner	Male	40-45	15-20 years
<b>C</b>	Academic	Practitioner	Male	65-70	Over 40 years
<b>D</b>	Strategic Executive	Technical	Male	60-65	Over 40 years
<b>E</b>	Chief Engineer	Technical	Male	35-40	Over 10 years
<b>F</b>	Area Manager	Technical	Female	30-35	5-10 years
<b>G</b>	Project Executive	Political	Male	50-55	10-15 years
<b>H</b>	DCM	Political	Male	55-60	1-5 years
<b>I</b>	Academic	Political	Male	65-70	35-40 years

### **4.3 RESEARCH FINDING RESULTS**

This section will accurately portray the responses to the nine questions administered in this study. The questions will be presented in the same sequential order they were carried out in the field. The substantiation and narrative to the questions will be illustrated with Tables using the denotations for names provided in Table 4.1 above.

The authors Saunders, *et al.* (2016) state that “A theme is a broad category incorporating several important codes that appear to be related to one another and which indicates an idea that is important to your research question.” In this study three themes were developed from the three research objectives using the deductive approach. The three distinctive research objectives have brought forward three themes, which are inter-related like the research objectives. Theme 1 is presented in sub-sections 4.3.1 – 4.3.4, which pertains to data regarding a beneficial tariff structure for all stakeholders. Theme 2 is presented in sub-sections 4.3.5 – 4.3.7, which pertains to the cases of PPP undertaken in other countries and their application in eThekweni Municipality. Theme 3 is presented in sub-sections 4.3.8 – 4.3.9, which pertains to data regarding the most suited framework for PPP in relation to the scope of work. Tables 4.2 – 4.10 contain the exact transcripts of the interviews undertaken for the nine participants. The use of thematic analysis have enabled the researcher to examine a large quantity of qualitative data in the form of interview transcripts.

In questions 1,2,5,6 and 8 “I agree” and “I disagree” responses were used and are illustrated in the Tables 4.2, 4.3, 4.6, 4.7 and 4.9 below. The interviewees had to substantiate each of their responses and explain the basis for their choice as this is characteristic of a qualitative study. Questions 3, 4, 7 and 9 ask the interviewees for their respective opinion, the data collected here has multiple variables and are illustrated in the Tables 4.4, 4.5, 4.8 and 4.10 below.

#### **4.3.1 QUESTION ONE**

*“In terms of the tariff structure to compensate the private partner under the umbrella of the PPP. Do you agree or disagree that the private sector should collect the tariffs directly from the consumers for services rendered?”*

Table 4.2 below details the responses received for question one from each of the nine interviewees. The data portrayed in the Table details responses received whilst conducting the interviews in the field. The prescriptive answer was accompanied with a substantiation which is reflected in the “Interviewees’ Response” column.

**Table 4.2: A Collation of Responses for Question One**

Name	Agree/Disagree	Interviewees’ Responses
A	Agree	In the present contract with DWR, the tariff system is based on a take or pay agreement. eThekwini sells Veolia Water, the effluent and in turn Veolia treats it and supplies water to the consumers Mondi and SAPREF. These end users, consumers, pay Veolia directly.
B	Agree	A private partner collecting tariffs can work, because it is an extension of the municipality. There is a commercial arrangement for Durban Water Recycling (DWR), which ensures continuity and prevents downtime. The sustainability of the project was protected through the penalty clause. The tariffs were collected by the private party and it worked well. In this system the private partner gets direct revenue streams from the end users, it worked well as it was for industrial reuse. If you have the tariff properly communicated with the relevant stakeholders it can work. It has worked with the cell phone networks I don’t see how it won’t work on the water side.
C	Agree	I qualify this by stating it depends on the circumstances entirely and if there are no issues then the tariff can be collected directly. In such cases where in a specific project is it relatively easy to collect from the customer, again it depends on who the customer is and how they are restricted. For example, the toll road system, where multiple users being throttled in a system where

		they cannot pass unless they pay, it easier here to collect directly from customer.
D	Disagree	The private sector will work on a full cost recovery system; little consideration will be given to the poor being a profit driven entity. This will have a negative impact on the poor consumers of eThekweni. The public sector should set the tariff having a better understanding of the local conditions.
E	Agree	This will increase the revenue collection by making it the responsibility of the private sector. Revenue collection is important to make the whole model work taking into consideration cash flows.
F	Disagree	The consumer will not realise if value for money has been received for services rendered, if the revenue is collected directly from consumers. Some consumers would want a say in which private partner is involved as they are now paying them directly. From a control aspect it would be difficult for the municipality to control payments for work achieved. There could be potential fraud if the private partner deals directly with the consumers.
G	Agree	It eliminates the burden on the public partner and enables the private partner to obtain return on investment.
H	Disagree	We want to have direct monitoring on the services provided and the tariffs charges. In addition, the prices must not be inflated there needs to be control as per the norms and standards.
I	Disagree	We talking about municipal services which are typically collected in terms of Municipal Finance Management Act (MFMA), this allows municipalities to charge for services on one account. Now if the private sector delivers its own bill which will be costlier as we shared

the cost with other sectors such as electricity and rates. For municipal services like water the sanction to withdraw the service are non-existent, thus it is better for municipalities to collect the revenue. In terms of risk to the PPP it far better for a responsible municipality to pay over the revenue to the private sector which gives rise to take or pay agreements. In the end it is all about balancing risk for the public and private sector to take on respectively.

#### 4.3.2 QUESTION TWO

*“In terms of the tariff structure the literature indicates that should the cost of inflation rise further than predicted for the PPP term; a provision should be included at inception for renegotiations of rates for such cases. Do you agree or disagree with the renegotiations of tariffs in the structure for PPP?”*

Table 4.3 below details the responses received for question two from each of the nine interviewees. The data portrayed in the Table details responses received whilst conducting the interviews in the field. The prescriptive answer was accompanied with a substantiation which is reflected in the “Interviewees’ Response” column.

**Table 4.3: A Collation of Responses for Question Two**

<b>Name</b>	<b>Agree/Disagree</b>	<b>Interviewees’ Responses</b>
<b>A</b>	Disagree	At in inception tariffs are fixed, although it is flexible in terms of the CPIX, inflation rate, which can fluctuate. The formula which was derived in the agreement caters for these fluctuations.
<b>B</b>	Disagree	In order for a PPP to be successful all parties need to stick to the agreement. The private partner will see it as buffer clause and use it as a safety net. In the DWR, the financing model was done upfront, all escalation was calculated upfront. The private partner must understand the agreement based on the associated risk, the whole idea of a PPP is to transfer risk. The

		renegotiations' clause is open to abuse and can change the model from being sustainable to unsustainable.
<b>C</b>	Agree	It depends of whose risk it is in the partnership, three quarters of a PPP revolves around the correct dispersion of risk and reward. So depending on who is taking on the risk, generally speaking this will give rise to the renegotiations.
<b>D</b>	Agree	Including renegotiations allows for the conditions which cannot be planned or expected such as the drought. In addition, the crashing of financial systems as the effect on the foreign exchange and the variance in the cost of materials. There should be a clause to cater for renegotiations as there are conditions which cannot be planned for. Thus we need to look at means to compensate the private sector in such conditions.
<b>E</b>	Agree	Regardless of the environment the inclusion of renegotiations will allow the tariff to always be market related. An in the event that the country's inflation drops the tariff can be negotiated down to the benefit of the public sector.
<b>F</b>	Agree	The SA economy is down and there are lots of fluctuations in the market. Rather allow for renegotiations otherwise, in the event inflation rises past expectations the contractor will probably use inferior quality materials to maintain profit margin.
<b>G</b>	Agree	Renegotiations must be included at inception to cater for different scenarios that may arise. It ensures that no party is aggrieved should there be a need for renegotiations.
<b>H</b>	Agree	Renegotiations brings in fairness and predictability into the tariff structure. Provides a mechanism to manage

		new risks. Avoids against unnecessary disputes which become a problem.
I	Agree	In favour there are many reasons to renegotiate, where there are situations beyond the control of the contracting party, again balancing the risk. For example, in the case of Zimbabwe where there is hyperinflation, there must be renegotiations especially when they result from the action beyond the control of the contracting party. PPP agreements often fail as they are not written with enough flexibility to handle shocks. These shocks can be war, natural disasters and changes in the area of operation. In the DWR PPP we had a five-year rebasing, if the situation changed and the profitability got so large, we had a right claw back some of the profits to the benefit of the city.

#### 4.3.3 QUESTION THREE

*“What is your view on having an independent regulator presiding over the partnership agreements with specific control over the tariff system?”*

Table 4.4 below details the responses received for question three from each of the nine interviewees. The data portrayed in the Table details responses received whilst conducting the interviews in the field. The respondents’ view on an independent regulator is presented in the “Interviewees’ Response” column.

**Table 4.4: A Collation of Responses for Question Three**

Name	Interviewees’ Responses
A	In favour of independent regulator, at present the independent regulator for the PPP is National Treasury. They are responsible to ensure the agreement between the municipality and the private partner shows value for money. Also to ensure the contract is binding and legal with all associated risks transferred to the private partner.
B	In favour, however it depends on who is the regulator. For example, having a regulator like NERSA can be a stumbling block. That is why there

	is not enough Public Private Authorities (PPA) in the country. If the regulator is too stringent with requirements, this can reduce the turnover of PPP generation under that framework. A good regulator assists in ensuring a smooth transition and mediates over any conflicts or disagreements.
C	A good PPP agreement should be structured, in which it self corrects in which case a regulator is not needed. In the absence of a good structure a third party is required which can be a regulator. Generally speaking, the regulator comes from the government, National Treasury, in most situations, it not conventional to have the government overseeing a partnership.
D	In favour of independent regulator as the benefit will be an unbiased mediator which has control over the tariff system.
E	Not in favour, this can be fully stated in the contract. Any grievance or conflicts can be resolved in the dispute resolution process.
F	In favour. In having an independent regulator ensures compliance, transparency as well as uniformity is achieved in the partnership. It also make facilitation of audits on the PPP easier.
G	In favour, the independent regulator ensures there is compliance and fairness with no party superimposing on the other in the partnership. The prime objective of the independent regulator is governance and integrity during the processes.
H	In favour, brings in objectivity and drives efficiencies to ensure value for money services.
I	In favour, can you be the player and referee and the same time, can you be objective where you stand to lose. It is a contributing factor to fairness, independence and reasonableness and the achievement of regulation becomes realistic.

#### 4.3.4 QUESTION FOUR

*“How can we at eThekweni Municipality make the PPPs more attractive for private interest and investment, specifically focusing on the tariff system?”*

Table 4.5 below details the responses received for question four from each of the nine interviewees. The data portrayed in the Table details responses received whilst conducting the interviews in the field. The respondents' perspective on attracting private interest and investment is presented in the "Interviewees' Response" column.

**Table 4.5: A Collation of Responses for Question Four**

Name	Interviewees' Responses
A	<p>Additions to the agreement can be made to include incentives in the tariff structure. For example, if the private partner is able to produce more water at the same tariff, then that tariff can be negotiated. The basis of the negotiations must take into consideration the capital cost, like if tariff is R3.50 per kl for 20 years producing 30 mega litres per day, bearing in mind that the private partner's cost is included in the tariff of R3.50. If the private partner produces say 40 megs per day from the same plant it will be at a lower rate, because it does not include the capital cost. We can provide a rate for this additional water produced. In effect there is no capital cost for the structure in the tariff, only operations and maintenance cost thus making it more profitable for the private partner. In effect incentivising the private partner to increasing efficiencies with raw materials provided.</p>
B	<p>The new mind set in the PPP tariffs regards effluent as source of raw material for processing. The municipality can guarantee the supply of waste water effluent to produce second class water that can be sold to industry. The guaranteed supply will attract investors who want to turn this raw material into profit.</p>
C	<p>These types of partnerships are generally not profitable, thus cross subsidisation by government will be required to increase the interest. However, this is difficult because by outsourcing the functions of the municipality it reduces the revenue streams, leaving less funds to cross subsidise.</p>
D	<p>eThekwini can create a regulatory framework which is based on return on investment and limits the risk for the private sector. Can implement incentive system by means of setting clear and realistic targets.</p>

E	Allow for savings from the Non-Revenue Water (NRW) achieved in network to be passed on to the private partner as an incentive.
F	Include bonuses in the tariff system as a means of an incentive scheme.
G	By allowing for a bigger margin for the private partner at the initial stages. The investor will be assured they will be able to recoup their cost and capital outlay; bigger percentage margin will be more lucrative for the investor. If the margins are reduced, the investor will look elsewhere such as other municipalities.
H	The tariff system must be clear and exhaustive in terms of cost drivers and parameters, so that private partners can recoup costs and make a return. Municipality can provide a baseline guarantee, which ensure willingness to pay or capabilities to pay. Increase the investor confidence by creating an accountable government.
I	Set targets that maximise the profits for the contractor to achieve, that in essence promotes the reduction of costs and increases efficiencies. Write the contracts on an outcomes based approach, so do not tell the contractor how to do the job, rather what results he must produce. Always maintain a differential on the cap, so that if the municipality increased the tariff by 20%, the contractor's price would increase the same differential. If the volumes go up the unit costs will go down, thus increasing the overall profits. The tariff needs to be structured to achieve an outcomes basis with a cap that allows for discounts with rebases every 5 years.

#### 4.3.5 QUESTION FIVE

*“The City of Johannesburg Metropolitan Municipality has a 7-year BOT framework in place with Johannesburg Water, this entity is mandated to operate and maintain 11000 km of reticulation mains. Do you agree or disagree that this can be applicable to this municipality?”*

Table 4.6 below details the responses received for question five from each of the nine interviewees. The data portrayed in the Table details responses received whilst conducting the interviews in the field. The prescriptive answer was accompanied with a substantiation which is reflected in the “Interviewees’ Response” column.

**Table 4.6: A Collation of Responses for Question Five**

<b>Name</b>	<b>Agree/Disagree</b>	<b>Interviewees' Responses</b>
<b>A</b>	Agree	It avoids the interactions with politicians who are officials, rather there is a board for the entity who is responsible for the approval for project finances and other processes.
<b>B</b>	Agree	However, it would have to be for a longer period, a minimum of ten years to work in eThekweni to get better economies.
<b>C</b>	Disagree	Johannesburg Water is not a private entity; it is a parastatal which is regulated by parastatal issues. They are not profit making organisation and are held back by profit thresholds because they are monopoly. Its profit is regulated which does not make it a private entity.
<b>D</b>	Disagree	Currently the new radical economic agenda has created challenges with working with the private sector who tends to manage these contracts.
<b>E</b>	Agree	These type of frameworks can contribute to NRW reduction by replacing the old water pipes.
<b>F</b>	Agree	There is a need to have such PPP frameworks in place, as we are struggling to meet service delivery demands as a result of bottlenecks in the conventional SCM process.
<b>G</b>	Agree	Ultimately after the infrastructure has been constructed and the period expires; at transfer the infrastructure will become the sole asset of the city. During this time the human capital will be developed and competencies will be built by engaging with private partner as a result of the transfer of skills.
<b>H</b>	Agree	In terms of Section 78 of the municipal system act, after undertaking due diligence you might find an

		external like the Johannesburg partner is appropriate. For governance independency, political risk management and faster decision making. Also ring fenced financials with traceable tariff developments.
I	Agree	I was one of three people who set up the Johannesburg Water PPP in 1999, it had a 5-year life. As a management model it is a solution to South Africa. It must be an outcomes based agreement. The concept of a management contract is fantastic, it brings in resources from the international bodies; asset managers, customer managers and revenue managing people and all the tools you need to succeed.

#### 4.3.6 QUESTION SIX

*“In terms of what has been done abroad in countries like Canada, United Kingdom, Nigeria and Ghana with regards to using PPP to replace municipal assets. Do you agree or disagree that this can be applicable to this municipality?”*

Table 4.7 below details the responses received for question six from each of the nine interviewees. The data portrayed in the Table details responses received whilst conducting the interviews in the field. The prescriptive answer was accompanied with a substantiation which is reflected in the “Interviewees’ Response” column.

**Table 4.7: A Collation of Responses for Question Six**

Name	Agree/Disagree	Interviewees’ Responses
A	Agree	The municipality has a skill shortage and finance deficit to build operate and maintain the municipal assets.
B	Agree	It can be implemented to improve on the current business process. The weakest chain in the municipalities currently is asset management, there is no life cycle costing with request to cut budgets which deteriorates the components of the infrastructure. In

		contrast a PPP will addresses all these issues, guaranteeing pricing upfront with all risk transfer. All strategic components which have been replaced are then transferred in a workable condition.
C	Disagree	Trying to fix a consequence for a failed government system. There still needs to be governance over it. The private sector will not be interested in taking up work in a failed system.
D	Disagree	Only projects that are out of the public space are feasible. There is currently too much political opposition to such frameworks in the public space.
E	Agree	It is a means to obtain investment, resolving procurement issues and gaining the technical expertise required.
F	Agree	We can use PPP to replace municipal assets and provide services. However, the contract must include the use of local materials as well as local business to build the economy and create empowerment.
G	Agree	Surely by bring in external expertise there are bound to transfer skills and training. On overall eThekweni Municipality will be benefiting by gaining on intellectual property which can carry the organisation for the years to come.
H	Agree	It drives efficiencies, faster decision making and ensures value for money services. The constitution does not say the municipality must provide services, it says the municipality must ensure services are provided. From the constitution this is very possible for the intention to use third party.
I	Disagree	In the United Kingdom model is not applicable as the assets were sold to a private company. Any PPP involves the sale of asset does not make sense as it enriches the private sector. However, the Canadian,

Nigerian and Ghana are fine as there is a transfer of assets. If you are going to build assets you will need at least 20 years to recover costs, the Johannesburg Water contract was a management contract where the capital is provided by the city. If there is no capital investment needed by the private sector 5 years is adequate, but you require investment from the private sector 20 years would be sustainable.

#### 4.3.7 QUESTION SEVEN

*“In your opinion as a stakeholder or potential stakeholder in PPPs, has National Government provided the necessary support in terms of legislation, technical assistance and training to facilitate PPP frameworks with a view of being globally competitive?”*

Table 4.8 below details the responses received for question seven from each of the nine interviewees. The data portrayed in the Table details responses received whilst conducting the interviews in the field. The respondents’ opinion on National Government’s global competitiveness with regards to PPP support is presented in the “Interviewees’ Response” column.

**Table 4.8: A Collation of Responses for Question Seven**

Name	Interviewees’ Responses
A	Yes, National Treasury have been good. They are part our steering committee for the technical and financial aspects, in which they have been helpful.
B	Yes, the national treasury has a specified unit which provides support called Government Technical Advisory Centre, GTAC. They provide much needed support for municipal PPPs, and they provide their views and recommendations. Furthermore, GTAC provides project development funding for smaller municipalities. They are on the eThekweni steering committees for PPPs. The stumbling block is the municipalities’ appetite for PPPs, many are ignorant to the benefits for the city. If they did there would be much more PPPs in place.

C	<p>No, the way National Treasury has set up PPPs are not partnerships. It is still based on a client – contractor relationship which is not a partnership. Until this is rectified there are going be problems getting sensible partnerships, a classic example is the Bombela project for the Gautrain. Where the contractor saw a loop hole in the client agreement and exploited the loop hole, if this was partnership this would have not occurred as the whole partnership would have collapsed.</p>
D	<p>National Treasury has done a good job. A world first for the PPP guideline. The guideline provides a risk assessment standard for institutions to evaluate prior to implementation. Furthermore, the guideline allows for the BBBEE component to be integrated into the partnership.</p>
E	<p>In terms of legislation everything is in order. However, in terms of implementation the support is lacking. There are capacity issues with GTAC to support the whole country. Insufficient to be globally competitive.</p>
F	<p>In my opinion I do not think government has done enough to promote PPP in SA. There is an overall lack of knowledge at eThekweni regarding PPPs and their implementation, especially amongst the young engineers.</p>
G	<p>No, it has remained at the level of a talk shop. There should be more groundwork to say legislatively that PPPs must thrive. This legislation needs to be marketed more vigorously within the media and through the structures that exist. Very few people have been adequately exposed to PPPs, it seems to be just a new idea in the government context. The various applications of PPP have not been enforced by government, rather the current PPPs are result of willing partners. We are far from competing globally; we still need to do a lot to reach that level.</p>
H	<p>The legislation is provided, but have not done enough on training. The legislation is complicated. The process of implementing a PPP is cumbersome.</p>
I	<p>No, the way the law is structured prevents the implementation of PPPs. When Mandela left and Mbeki came in, the municipal systems act section 78 came into effect, there are too many hurdles to overcome to implement PPPs. There has never been good training in this regard. Many times we tried to implement PPPs and they failed, using the Section 78 there are</p>

large costs and time that is lost. In addition, there still needs to be compliance with all the SCM requirements.

#### 4.3.8 QUESTION EIGHT

*“In the literature reviewed many PPP frameworks have been cited as failing due to the strong public and political opposition. Do you agree or disagree with the above statement?”*

Table 4.9 below details the responses received for question eight from each of the nine interviewees. The data portrayed in the Table details responses received whilst conducting the interviews in the field. The prescriptive answer was accompanied with a substantiation which is reflected in the “Interviewees’ Response” column.

**Table 4.9: A Collation of Responses for Question Eight**

<b>Name</b>	<b>Agree/Disagree</b>	<b>Interviewees’ Responses</b>
<b>A</b>	Agree	There is a lack of knowledge by the public and politicians on how the PPP process works. In this regards there is very little experience in South Africa in relation to the water and sanitation sphere for PPPs.
<b>B</b>	Agree	I have experienced it first-hand where there is a misconception that PPPs are privatisation. In the PPPs there is the transfer of assets back to the municipalities therefore cannot be privatisation.
<b>C</b>	Agree	The literature is correct. The public regard the government as being there as they voted them into power. The government must do what they say and they do not have pay for services because they were voted in.
<b>D</b>	Agree	The politicians are concerned they will lose control to the private sector on how the work is managed. The public are concerned that the private sector will take away jobs by retrenching.
<b>E</b>	Agree	Public view it as disempowering tool. Politician have concerns over creating a mechanism for corruption.

		Public do not understand what the frameworks are in terms of how it will assist with capacity building and resources.
F	Agree	Due to the conflicting political opinions the process is brought to a halt.
G	Agree	There is a tendency by people who wish implement a framework, but do not consult the relevant structures within the system. The opposition comes about as people feel ignored as they were not involved. This is a key reason why PPPs have not worked always in the South African context successfully. Those who wish to implement a PPP, assumes that people must just accept what is being proposed. Political leaders need to be consulted to determine what the needs are on the ground, therefore any investment injected will directly aid the people. Only once people have been consulted and involved do they take ownership!
H	Agree	In the sense, in most frameworks the political government departments will still want to have total control of the partnership. In terms of governance systems which are not good enough to liberate the partnership. The fear of privatisation has been a major issue by selling of our assets and loss of control.
I	Agree	On the political side it is about vest interest and gain of influence. There is a feeling that with PPP, the officials will lose influence and levers of power. Another important factor is poor communication by the public sector to customers on what will transpire and the intended effects. It is often perceived that people will lose jobs, when in most cases people actually gain employment from such agreements. Furthermore, people will be trained and developed as an insurance scheme in case the private partner walks away. Most

time these projects are run by engineers who are not very good with dealing with the social issues and communicating to the public and addressing their concerns.

#### 4.3.9 QUESTION NINE

*“The five types of frameworks under investigation are DFBOT, DFO, BOT, EPP and Facilities Management. In your opinion which is the most adaptable PPP framework for linear projects such as replacement and maintenance of water pipelines in eThekweni Municipality?”*

Table 4.10 below details the responses received for question nine from each of the nine interviewees. The data portrayed in the Table details responses received whilst conducting the interviews in the field. The prescriptive answer was accompanied with a substantiation which is reflected in the “Interviewees’ Response” column.

**Table 4.10: A Collation of Responses for Question Nine**

<b>Name</b>	<b>Framework</b>	<b>Interviewees’ Responses</b>
<b>A</b>	DFBOT	Due to the lack of funding, resources and experience required for large projects. It is important to understand the cost of operations, efficiency and processes (SCM) that become an issue for implementation of projects in the municipality. In the PPP structure we have a set of deliverable, targets and penalties for the PPP.
<b>B</b>	BOT	It is a framework that can be used to fast track development, this can be useful where there are developments waiting for services such as Tongaat Hulets. They got the expertise and can build it and are much better and faster at procurement. There are better incentives, the faster it is built the more money is earned. The benefit is getting it all at today’s cost with the upfront agreement.
<b>C</b>	DFBOT	Provided the circumstances are correct such as being a toll road or a tunnel which can be operated. The design,

		building and operating of the project need to be ring fenced and contained to the entity, because they get all the incentives right for that grouping. Then there is a mechanism to build the partnership relation around.
D	BOT	This framework provides the expertise of the private sector and builds internal capacity to manage after the transfer. In general, this framework is easier accepted by the politicians and is far more successful.
E	DFBOT	The private partner provides their own finance for capital which reduces the strain on the municipality and they design to technical specification. The municipality does have to worry about upfront capital investment, only the fee due to the private partner. They are building it to their technical specification which reduces the disputes. Also builds internal capacity to manage after the transfer.
F	DFBOT	As we progress and improve skills and infrastructure, we can move to BOT. The direct financing by the private partner would aid municipality. Also builds internal capacity to manage after the transfer. Eliminates the problems of sourcing capital investment and training the staff.
G	BOT	Surely with the external support the capacities are being developed internally. Over a period of time once the project is handed over to the city, it is up to city to continue to maintaining the project on its own. In the end the city will take over the entire infrastructure.
H	DFBOT	The risk is transferred to the person who can best manage it. In local government there so many risks that are design nature, finance nature, operate and maintenance nature.
I	EPP	This is a standard process. City to finance for linear projects. It must be noted the city financing are lower than most contractors, thus cost to capital is very competitive. City to finance and private sector to simply implement for example for 5 years. A pure construction only has a 1-year

warranty, which reduces the quality and increases costs to council for remedial work thereafter.

## **4.4 DISCUSSION**

This section will explain and compare the results provided in the previous section by analysing the nine data Tables and Figure 4.1. The discussion will be broken into three themes which will be represented by sub-section 4.4.1-4.4.3. Theme 1 is presented in sub-section 4.4.1, which pertains to the tariff structure. Theme 2 is presented in sub-section 4.4.2, which pertains to the cases of PPP undertaken outside eThekweni Municipality. Theme 3 is presented in sub-section 4.4.3, which pertains to determining the most suitable framework for PPP with regards to the scope of work. These three themes were developed around the three research objectives established in the research proposal. In this research, triangulation in terms of theory, data sourcing and investigation was employed to answer the research questions.

### **4.4.1 DISCUSSION OF THEME 1 (TARIFF STRUCTURE) QUESTIONS AND RESPONSES**

Those who favoured the collection of tariffs by the private sector substantiated this by referring to the agreements that are currently in place at eThekweni with regards to DWR. Furthermore, other examples were provided of frameworks where this has worked such as cell phone networks and toll roads on the national routes. Secondly the direct revenue collection eliminates the burden on the public sector and ensures the partner recoups the total costs with increased efficiency (Malakoana, 2018).

Those who were not in favour of the collection of tariffs by the private sector substantiated with reasons such as the private sector works on full cost recovery and will not provide amnesty to poor consumers like the tariffs for toll roads and cell phone networks. Secondly there must be control to ensure there is no unwarranted increases in tariffs to the consumer. Lastly the public sector is able to bill the consumers at a cheaper cost due to the combination of other services such as rates and electricity. According to Ovsianynkova (2012) and PPPIRC (2015), the public sector not collecting tariffs is a more sustainable option for the reasons stated above and for the provision of subsidisation. Furthermore, to mitigate against the private

partner enforcing tariff collection by sanctions or high penalties as potable water is a basic human need as per the Water Services Act 108 of 1997.

The majority of the stakeholders interviewed were in agreement that renegotiations of tariffs are needed to address cases which cannot be planned for like the drought, natural disasters and war. In essence renegotiations of tariffs provides a mechanism to manage any new risks and brings flexibility into the agreement (Mashoko, 2018) and (Macleod, 2018). Furthermore, a 5-year rebasing is good practice as it will take into effect the national elections and assess the profitability or net loss of the agreement. The authors Engel, *et al.* (2013) state that renegotiations ensure the agreement remains fair which will keep the private sectors interest. This is supported by the Aggregate Theory which infers that by maximising the aggregate of the partner's preference it is possible to raise the satisfaction of all in the partnership

Some of the stakeholders were in disagreement that renegotiations of tariffs are needed, specifically looking at inflation. At inception the CPIX in the agreement, going forward will cater for any fluctuations. Furthermore, the purpose of a PPP is to transfer all associated risk to the private sector which includes unplanned circumstances (Delmon, 2014). Similarly, Sanni and Hashim (2014) and Rulters and Matji (2016) outline that the cost should be stated upfront to protect the consumers against inflated costs. In the literature reviewed and interviews conducted there are mixed views regarding the use of renegotiations strategy in the PPP, each case will have to be based on merit. Decision makers and project managers alike need to weight their options carefully with regards to allowing renegotiations in the tariff as there are many cases for and against this phenomenon.

The majority of the stakeholders interviewed were in favour of having an independent regulator which supports governance on the tariff structure. This will bring in objectivity, compliance, transparency, independence and uniformity to all partners in the agreement. This is supported by (Mathur, 2017) who states that an independent regulator will bring in objectivity in achieving contract deliverables. In contrast some stakeholders felt that the deliverables of an independent regulator with regards to the tariff structure can be included in a structured agreement which can self-correct for different scenarios. In the literature reviewed, Bertoméu-Sánchez, *et al.* (2018) state in developing economies like South Africa an

Independent Regulator is needed to address the institutional weaknesses as a result of the conflicts of interest pertaining to the public sector.

The stakeholder's perspective on tariff changes to attract private interest and investment, all focused on some form project specific incentive scheme which needed to be incorporated in the tariff structure. Additionally, cross subsidisation of the tariff system and support by National Government would attract the private interest (Harrison , 2018). The nature of the scope of works is to ultimately reduce the NRW in eThekwini, thus passing on the savings generated from NRW reduction would also attract private interest (Naidoo, 2018). Also Mathur (2017), supports this by stating that sustainable performance measures can be included in the incentive scheme which are NRW reduction, stability of the network and customer satisfaction. Lastly the tariff needs to be structured to achieve an outcomes basis with a cap that allows for discounts with rebases every five years (Macleod, 2018). Similarly, Shugart and Babak (2012) state that for a tariff structure to be sustainable it needs to be reviewed at periodic intervals, best practices suggest that a five-year period interval to be ample.

#### **4.4.2 DISCUSSION OF THEME 2 (CASES OF PPP) QUESTIONS AND RESPONSES**

Majority of the interviewees agreed that the BOT framework currently in place at the City of Johannesburg Metropolitan Municipality could be applicable here in eThekwini. In essence the benefits experienced in Johannesburg can be applied here such as enhancing capacity to meet the service delivery standards (Rulters & Matji, 2016). This enhancement of capacity brings in skills and technical expertise with the local human capital being developed and guided by the private sector (Moorman, 1997). The PPP provides a mechanism to increase efficiencies such as quicker procurement processes and faster decision making whilst adhering to value for money principle (Mashoko, 2018). The BOT framework in Johannesburg has the transfer component at the expiry of the agreement, which means that all infrastructure will be handed over to municipality in working order (Rulters & Matji, 2016). Furthermore, all institutional knowledge as well as systems and processes employed in terms of the intellectual property associated with the PPP project will also be transferred to the municipality (Malakoana, 2018). However, there were concerns that this type of framework will not work currently at eThekwini Municipality

due to the new Radical Economic Transformation (RET) framework that has been introduced in 2018 (Gounden, 2018). The new RET framework promotes ward based empowerment with the development of local business forums, these forums are providing challenges to the public and private sector on implementing projects. Similarly, where the PPPs abroad were used to replace the municipal assets these will experience challenges due to the framework being in the public space (Gounden, 2018). In terms of what has been done abroad; the United Kingdom is not suitable as it incorporates a build operate own (BOO) framework which would never be accepted by the local political officials (Macleod, 2018). However, the Canadian, Nigerian and Ghana frameworks are fine as there is a transfer of assets upon reaching expiry of the agreement (Macleod, 2018).

The interviews revealed that National Government has provided legislation and technical assistance via GTAC as well as some training. However, the majority of the stakeholder's interviewed feel that the support provided is not globally competitive and that there is room for improvement. The improvements relate to structuring the PPP agreements to be more like equal partnership rather than an extended client-contractor contract (Harrison , 2018). In addition, there are capacity issues at GTAC to provide personal support to all municipalities in the country (Macleod, 2018). In order to be globally competitive with countries like Canada who are currently the world leaders in PPP implementation (Hellowell, 2013). There must be aggressive campaigning of PPPs in terms of their benefits and applications, public servants need to be properly trained and provided with the best practice guidelines. Also Sanni and Hashim (2014) and Rulters and Matji (2016) find that the local municipalities should upskill their employees to be knowledgeable on PPP implementation of frameworks. Lastly, the Section 78 municipal systems act needs to be unpacked and amended to be less complicated and more practical in terms of implementation (Macleod, 2018). The correct legislation is an important independent variable identified in the conceptual framework, should the legislation be too time consuming and inflexible it will hinder the implementation of PPPs.

#### **4.4.3 DISCUSSION OF THEME 3 (SUITABLE PPP FRAMEWORKS) QUESTIONS AND RESPONSES**

It must be noted that there was a unanimous agreement across all stakeholders being practitioners, politicians and technical experts that PPP frameworks fail due to the strong public and political objections. A contributing factor was the lack of communication to the public outlining the project's intent; the benefit to the people and city, the creation of jobs and education around PPPs. The most sustainable way to rally the support of the people is to show them how they stand to gain from such PPP agreements (Malakoana, 2018). Consequently, the Canadian Government feels their PPP implementation success is a result of gaining support with the appointed political officials. (Canadian Council for Public-Private Partnerships, 2014).

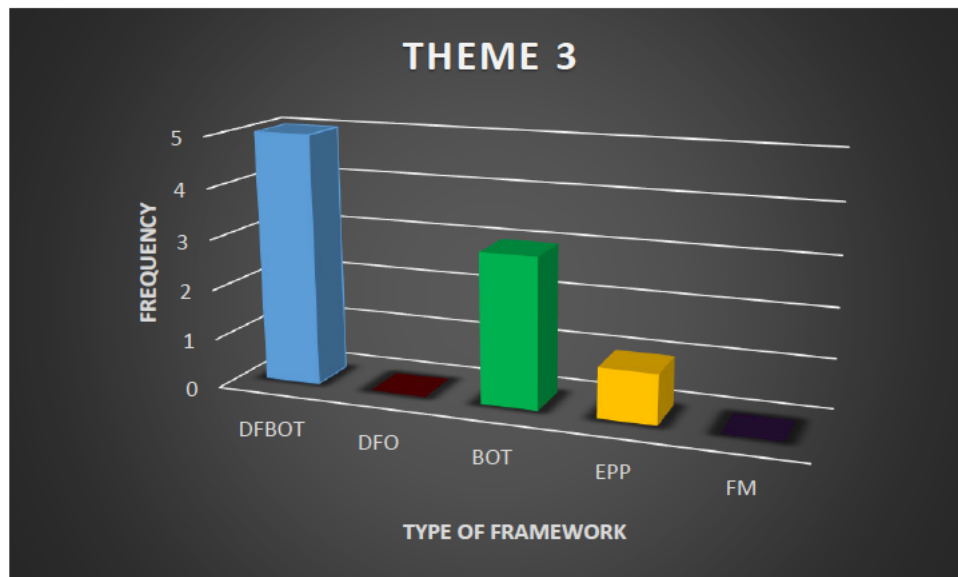
In the case of DWR agreement in eThekweni the people were informed that should we not be able to provide second class water to Mondi Paper and SAPREF at an affordable the rate, there was a motion to relocate to Richards Bay. The implications here would be loss of 16000 jobs at eThekweni (Macleod, 2018). In this case the danger of job loss rallied the support of the public as the potential consequence would be unemployment for many families.

Secondly there is a misconception that PPP is not a partnership, but rather seen as privatisation which would only enrich the private sector. This stems from there being a poor understanding with regards to PPPs by politicians in terms of their nature, applications and benefit to the customers and society at large (Moodliar, 2018). In reality the public sector receives all assets, project infrastructure and institutional knowledge at termination of the agreement. The common mistake is that politicians assume that the PPP is for build operate and own, but actually it is for build operate and transfer which are two very different concepts (Govender, 2018).

The general public and political figures see the PPP as a disempowering tool where the inclusion of the private sector will result in privatisation where retrenchments may take place with the loss of jobs due to technologies and industrialisation (Naidoo, 2018). Again Mathur (2017) finds that in India the politicians viewed the PPP framework as being purely privatisation and the public feared an increase in water tariffs, these concerns were not addressed which resulted in the PPP failure. The strong political opposition or fear towards PPP is attributed to the loss of

influence and leverage to the private sector with key decision making being moved and the balance of power tipping (Naidoo, 2018).

Figure 4.1 below is a visual illustration of the framework selected and the frequencies, with the use of a 3D Bar graph. The sum total of the frequencies will equate to nine to correspond with the total number of interviewees.



**Figure 4.1: Frequency of Framework Selected**

In terms of the most suitable frameworks DFBOT was the most responsive, followed closely by BOT and lastly EPP. There was no selection of DFO and Facilities Management (FM) as they were deemed to be inappropriate for linear projects. Similarly, there was no mention of DFO and FM being used for linear projects in the literature reviewed. However, according to Shugart and Babak (2012) and Mabuza (2016) a suitable framework would be BOT which featured second in terms of frequency from the interviewees. The discrepancy can be attributed to the recent budget cutting or curtailing experienced at the eThekweni Municipality with regards to capital budgets for infrastructure investment (Gounden, 2018). Furthermore, South Africa is currently sliding into a new recession, the last one being in 2009 (Niselow, 2018). Thus making the DFBOT a much more lucrative option as it utilises the capital from the private sector, which is needed currently. According to Hellowell (2013) frameworks like DFBOT require the private partner to initially outlay the capital which ensures the commitment to making the project successful. Specifically focusing on the water sector the cases in Gauteng and Limpopo show that PPP

frameworks can be successful provided the agreement is lucrative for all parties (Rulters & Matji, 2016). Furthermore, the Aggregate Theory infers that by maximising the aggregate of the partner's preference it is possible to raise the satisfaction of all in the partnership. Again Xhala, *et al.* (2017) claim that the most prudent frameworks for PPP are those that allow for private investment, thus ensuring government's interest into long term funding of infrastructure investment by the private sector.

#### **4.5 CONCLUSION**

This chapter has represented the interviews undertaken with nine interviewees from eThekweni Water and Sanitation (two Public Officials, two Academic, one Executive, three Managers and one Engineer). This represents the key stakeholders regarding the PPPs which encompasses theory triangulation. In this chapter the focus was on the nine questions in the interview schedule which were addressed to answer the research questions defined in research proposal. The data collected aims to establish the perspectives of the stakeholders regarding PPP in eThekweni Municipality based on the qualitative research. The inclusion of the interviewees' responses has enriched this study due to the different perspectives offered. Furthermore, the inclusion of new phrases and terms has enhanced this chapter. Although the interview questions were prescriptive, there was some out of context information provided in the responses from the interviewees. This data was excluded in the discussion section, Creswell (2014) states that "researchers need to winnow the data." It must be noted that all the data retrieved from the interviews was periodically included in the research finding results section with no exclusion. This chapter qualifies its findings by incorporating the themes, referring to the theory, sourcing the literature and the interviews conducted in 2018. The resolution of the study objectives and research questions have been detailed in section 5.3 of the following chapter.

## **CHAPTER 5 – RECOMMENDATIONS AND CONCLUSION**

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### **5.1 INTRODUCTION**

A PPP is a long-term contract between a private entity and government for the purpose of providing an asset or service, whereby the private entity carries the risk and management responsibility. The remuneration of such a contract is based predominantly on performance, this study supports this statement and adds that the agreement should be outcomes based.

In the sections to follow the findings are summarised in relation to the research objectives and questions. Thereafter, the implications and limitations of this study are divulged. Recommendations are then provided and concluding remarks are presented.

### **5.2 RESEARCH BACKGROUND AND OBJECTIVES**

eThekwini Municipality's Water and Sanitation Unit has identified, through its asset management plan, the need to upgrade and/or renew aging water infrastructure within its water supply system (Scruton, 2012). This will enable the Unit to meet its obligations in terms of its service delivery charter by providing a service that is efficient, effective, affordable and sustainable (Scruton, 2012). Water is life and is essential for everyday living, sustenance and farming. However, in third world countries the water sector is often greatly underfunded and inefficient (World Bank Group, 2013). The use of PPP can be a means to address the capital shortages and deficiencies in terms of efficiencies and performance, thus adopting the ethos of better value for money. PPP frameworks can also be used to better manage the funding obtained by government so that service delivery needs are met

There were three research objectives in this study; firstly, to investigate a suitable tariff structure to remunerate private sector for services rendered. Secondly to compare and critique the implementation of PPPs for a similar scope of work in other

countries/governments and to assess the applicability to eThekweni Municipality. Lastly to examine the different frameworks regarding PPPs for the replacement of municipal infrastructure such as water pipelines.

### **5.3 SUMMARY OF MAIN RESULTS**

The summary will be broken into the three research questions which will be represented by sub-sections 5.3.1-5.3.3. These sub-sections below summarises the research findings from the literature reviewed and the interviews conducted in relation to the research questions established in the research proposal. Research question one is presented in sub-section 5.3.1, which pertains to the tariff structure. Research question two is presented in sub-section 5.3.2, which pertains to the cases of PPP undertaken outside eThekweni Municipality. Research question three is presented in sub-section 5.3.3, which pertains to determining the most suitable framework for PPP with regards to the scope of work.

#### **5.3.1 RESEARCH QUESTION ONE**

“What tariff structure would be the most beneficial for all key stakeholders?”

This study shows that there is a greater support for the public sector to collect tariffs for services rendered under the umbrella of a PPP. In the literature reviewed and interviews conducted there are mixed views regarding the use of renegotiations strategy in the PPP, each case will have to be based on merit. Although the best practice guidelines, literature and practitioners advise that a 5-year interval for renegotiations takes into consideration unplanned circumstances as well as the current financial environment. Project managers who are tasked with the mandate of providing service delivery must take cognisance of the mixed views surrounding the renegotiations strategy in the PPP agreement. A tariff structure which has an independent regulator presiding is preferred as it drives efficiency, ensures corporate governance, brings in accountability and addresses the institutional weaknesses that are common in third world countries. Some of the institutional weaknesses are SCM, procurement, skills deficit, and lengthy compliance protocols. Lastly the stakeholder’s perspective on tariff changes to attract private interest and

investment, all focused on some form of project specific incentive scheme which needed to be incorporated in the tariff structure of the PPP agreement

### **5.3.2 RESEARCH QUESTION TWO**

*“In terms of what has been done abroad with regards to using PPP to replace municipal assets, can this be applicable to this municipality bearing in mind the different political environment?”*

In terms of what has been done abroad; the United Kingdom is not suitable as it incorporates a build operate own (BOO) framework which would never be accepted by the local political officials. This type of framework is not suitable as it is privatisation with the sale of assets which enriches the private partner while the public partner does not build capacity. However, the Canadian, Nigerian and Ghana PPP frameworks are suitable as there is a transfer of assets upon reaching expiry of the agreement (Macleod, 2018). In order to be globally competitive with countries like Canada who are currently the world leaders in PPP implementation (Hellowell, 2013). There must be aggressive campaigning of PPPs in terms of their benefits and applications, public servants need to be properly trained and provided with the best practice guidelines.

### **5.3.3 RESEARCH QUESTION THREE**

*“What is the most suitable and cost effective PPP framework for this nature of work?”*

In terms of the most suitable frameworks design finance build operate and transfer (DFBOT) was the most responsive, followed closely by build operate transfer (BOT) in the interviews conducted. In the literature reviewed the BOT was the most used framework for this nature of work, which also featured second in terms of frequency from the interviewees. The DFBOT is an extension of the BOT framework with the private partner’s capital investment being the defining difference (Delmon, 2014). The discrepancy can be attributed to the recent budget cutting or curtailing experienced at the eThekweni Municipality with regards to capital budgets for infrastructure investment. Furthermore, South Africa is currently sliding into a new recession, the last one being in 2009 (Niselow, 2018). Thus making the DFBOT a much more lucrative option for stakeholders in the current environment as it utilises the capital from the private sector, which is needed. In essence depending on the financial standing of eThekweni Municipality and investment interest; both these

contracts would be adaptable and suitable to implement PPPs for linear projects such as replacement of water pipelines.

#### **5.4 IMPLICATIONS OF THE STUDY**

This study has discovered that amongst the technical personnel, practitioners and politicians alike at eThekweni there is a unanimous perspective that the Section 78 of the municipal system act needs to be amended to be more practical for the implementation of PPPs in the country.

The stakeholders identified in the ethical clearance will benefit from this study as many do not know with certainty the perspectives of the other stakeholders. In this study the perspectives of politicians, technical personnel and practitioners in eThekweni Municipality with regards to PPP have been included for the stakeholder's perusal and understanding to help their decision making in the near future.

Project managers seeking to implement the most beneficial tariff structure and payment mechanism for a PPP may consult this study. This study looked at the best practice guidelines from previous and current projects. In addition, the literature around the tariff structure for PPPs was consulted which was supplemented with the expert opinion of the interviewees.

Academics and researchers from different municipalities in this country may consult this research on what is the most suitable PPP framework for linear projects provided that their independent variables are similar to those stated in the literature review. The benefits and characteristic of each PPP framework has been explained as well as their proper applications.

#### **5.5 LIMITATIONS OF THE STUDY**

In identifying and targeting participants it was not practical to obtain an even number of men and women participants in this study, due to there being a lack of knowledge regarding the subject matter and willingness to participate at eThekweni Municipality.

In administering the interview schedule, it must be noted that most interviewees were only comfortable after the first question was completed and then fully applied themselves for the remaining eight questions. A better way would be to have a general question first to make the participants comfortable and to build their confidence, thereafter follow up with core research questions.

## **5.6 RECOMMENDATIONS FOR FURTHER STUDIES**

All PPP agreements in South Africa are required to get approval from National Treasury in compliance with Section 78 of the municipal system act. Hence, in order to gain a better understanding of PPPs in the South Africa, key stakeholders from GTAC should be interviewed as this will enrich the study further. Legislation and government is key independent variable and is pertinent to this research. Moreover, a sample from National Treasury should be interviewed since they provide a large portion of the budget which the municipality utilises and is also responsible for monitoring the budget spend and reporting to government. Again capital is another important independent variable in this study.

In order to obtain the holistic view with regards to implementing PPPs for linear projects like water pipelines a mixed methods study is recommended. The reason being is that it provides a better understanding of a research problem than either qualitative or quantitative alone (Creswell, 2014). The better understanding can be achieved by using the qualitative research to explain the quantitative findings (Saunders, *et al.*, 2016). This can be practically achieved by conducting in-depth interviews and surveying a sample of the general public. A survey of a sample of the rate payers in eThekweni Municipality would reveal the people's view and whether PPPs are warranted. This type of survey was conducted in Canada regarding PPPs which informed the government and decision makers that actually 62% of Canadians are in support of the use of PPPs to deliver public services (Canadian Council for Public-Private Partnerships, 2014). A mixed method approach is recommended as it would encompass all independent variables established in this study and provides more evidence to back findings (Saunders & Tosey, 2013).

## **5.7 CONCLUSION**

The intention of this study was to determine the most feasible framework option for linear projects such as pipe replacements. The data collected from the interviews and literature reviewed conclusively answers the research problem established in the research proposal. The suitable framework for linear projects such as pipe replacement is DFBOT in the current environment. Furthermore, the best funding mechanism for the framework from the data collected points to private investment. The most beneficial tariff system for all stakeholders with regards to remuneration for the private partner is explained in section 5.3.1 above. In terms of what has been done abroad the United Kingdom is not suitable. However, the Canadian, Nigerian and Ghana PPP frameworks are suitable. The stakeholders required to establish the DFBOT framework in eThekweni Municipality would be National Treasury (GTAC), ward councillors, local politicians, technical experts, project managers, investors, practitioners, public representatives and the independent regulator.

Being a pragmatist the research findings are important as they have practical consequences for young project managers who have a mandate to provide service delivery in a sustainable fashion. The overall response to a study of this nature which incorporates providing government structures with a means to undertake their essential duties by undertaking PPP contracts will become more valuable with time as the need to understand PPP contracts grow, the need to develop skills in the public sector increases and weak budget management or constraints pose a challenge which inhibits service delivery.

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## APPENDIX 1 – ETHICAL CLEARANCE



30 May 2018

**Mr Deelin Naidoo (206505874)**  
Graduate School of Business & Leadership  
Westville Campus

Dear Mr Naidoo,

**Protocol reference number: HSS/0320/018M**

**Project Title: A suitable Public Private Partnership framework for continuous replacement of ageing water pipelines within eThekweni Municipality**

### **Approval Notification – Expedited Application**

In response to your application received 19 April 2018, the Humanities & Social Sciences Research Ethics Committee has considered the abovementioned application and the protocol has been granted **FULL APPROVAL**.

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

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

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

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

Yours faithfully

PP

.....  
Prof. Praveen Singh (Chair)

/ms

Cc Supervisor: Professor Theuns Pelser  
Cc Academic Leader Research: Professor Muhammad Hoque  
Cc School Administrator: Ms Zarina Bullyraj

## APPENDIX 2 – INFORMED CONSENT

Informed Consent Letter 3C
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UNIVERSITY OF KWAZULU-NATAL  
GRADUATE SCHOOL OF BUSINESS AND LEADERSHIP

Dear Respondent,

**MBA Research Project**

**Researcher: Mr Deelin Naidoo (031 311 8151)**

**Supervisor: Prof Theuns G Pelsar (031 260 7172)**

**Research Office: Ms P Kimba (031 260 3587)**

I, Deelin Naidoo an MBA student, at the Graduate School of Business and Leadership, of the University of KwaZulu Natal. Hereby, invite you to participate in a research project entitled: *"A suitable Private-Public Partnership (PPP) framework for continuous replacement of ageing water pipelines within eThekweni Municipality"*. The aim of this study is to: determine the most suited PPP framework for linear projects such as replacement of water pipelines. Furthermore, this study aims to determine the best tariff structure for the selected framework whilst also looking at PPP frameworks used internationally and determining their suitability to eThekweni Municipality.

Through your valued participation, I hope to gain a better understanding on the complexities around practically implementing such a PPP framework in the work place. The results of this interview group is intended to contribute to the existing body of knowledge concerning PPP frameworks. Secondly to provide insight in implementing such a framework for linear projects in eThekweni Municipality.

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 survey. 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 participating in this study, you may contact me or my supervisor at the numbers listed above.

The interview should take you about 45 minutes to complete. I hope you will take the time to complete this survey. The input of your knowledge and contributions to the subject matter would greatly enhance this study.

Sincerely

Deelin Naidoo Pr Eng.

Investigator's signature \_\_\_\_\_ Date \_\_\_\_\_

**This page is to be retained by participant**

**UNIVERSITY OF KWAZULU-NATAL  
GRADUATE SCHOOL OF BUSINESS AND LEADERSHIP**

**MBA Research Project**  
**Researcher: Mr Deslin Naidoo (031 311 8151)**  
**Supervisor: Prof Theuns G Palseer (031 260 7172)**  
**Research Office: Ms P Ximba (031 260 3587)**

**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.**

Additional Consent, where applicable

I hereby provide consent to:

Audio record the interview	Yes	No
Does the participant want a copy of this audio record?	Yes	No

**SIGNATURE OF PARTICIPANT**

**DATE**

.....

**This page is to be retained by researcher**

## APPENDIX 3 - QUESTIONNAIRE

### Interview Questions

#### Theme 1: Tariff Structure

1. In terms of the tariff structure to compensate the private partner under the umbrella of the PPP. Do you agree or disagree that the private sector should collect the tariffs directly from the consumers for services rendered?  
  
I agree / I disagree  
  
Please provide a reason for your answer.
2. In terms of the tariff structure the literature indicates that should the cost of inflation rise further than predicted for the PPP term; a provision should be included at inception for renegotiations of rates for such cases. Do you agree or disagree with the renegotiations of tariffs in the structure for PPP?  
  
I agree / I disagree  
  
Please provide a reason for your answer.
3. What is your view on having an independent regulator presiding over the partnership agreements with specific control over the tariff system?
4. How can we at eThekweni Municipality make the PPPs more attractive for private interest and investment, specifically focusing on the tariff system?

#### Theme 2: Cases of PPP outside eThekweni

5. The City of Johannesburg Metropolitan Municipality has a 7-year BOT framework in place with Johannesburg Water, this entity is mandated to operate and maintain 11000 km of reticulation mains. Do you agree or disagree that this can be applicable to this municipality?  
  
I agree / I disagree  
  
Please provide a reason for your answer.
6. In terms of what has been done abroad in countries like Canada, United Kingdom, Nigeria and Ghana with regards to using PPP to replace municipal assets. Do you agree or disagree that this can be applicable to this municipality?  
  
I agree / I disagree  
  
Please provide a reason for your answer.
7. In your opinion as a stakeholder or potential stakeholder in PPPs, has National Government provided the necessary support in terms of legislation, technical assistance and training to facilitate PPP frameworks with a view of being globally competitive?

**Theme 3: Suitable PPP framework**

8. In the literature reviewed many PPP frameworks have been cited as falling due to the strong public and political opposition. Do you agree or disagree with the above statement?

I agree / I disagree

Please provide a reason for your answer.

9. The five types of frameworks under investigation are DFBOT, DFO, BOT, EPP and Facilities Management. In your opinion which is the most adaptable PPP framework for linear projects such as replacement and maintenance of water pipelines in eThekweni Municipality?

Please provide a reason for your answer.

**List of Abbreviations:**

PPP – Public-Private Partnerships

DFBOT – Design Finance Build Operate & Transfer

DFO – Design Finance & Operate

BOT – Build Operate Transfer

EPP – Equity Partnership Projects