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**The South African Building Procurement Strategy
for Public-Sector Delivery in the Civil Engineering
Industry: Investigating Alternatives**



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ABSTRACT

Reports from members of the civil engineering industry in South Africa claim that the industry is struggling and that there is a drain of technical expertise from the country. Some role players blame the cost-based competitive building procurement strategy currently widely used by the public sector, while others believe the Traditional Building Procurement Strategy is to blame. This study investigates circumstances surrounding the current South African building procurement strategy to establish if there are problems with the current system, identify what those problems are and investigates what alternatives can be implemented to positively affect project delivery.

A single Case study is used to interview fifteen respondents in the civil engineering industry. Interviews with municipal officials, consultants and contractors are held and the results of the interviews are analyzed.

The results of the study indicate that a cost-based building procurement strategy is leading to poor project delivery and client dissatisfaction as too much focus is put on pricing and preference criteria instead of quality criteria. Contributing to the dire situation are consultants having to tender at excessive discounts to ensure the procurement of services. This also leads to a drain of technical skills in South Africa and a lack of technical capacity in Local Government to provide the necessary input during project execution. Few of the respondents have been involved in any alternative building procurement strategies. The interpretation of legislation by the municipal officials during the tender evaluation process seems to add to project delays and over-expenditure on projects and many of the respondents believe that the current strategy was developed specifically to curb corruption and therefore change is not imminent.

The study concludes that the industry's representative bodies needs play a bigger role in informing National Government of the current problems associated with public-sector delivery in order to effect policy changes. Only then it can be implemented at Local Government level to ensure an improvement in public-sector delivery.

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LIST OF ABBREVIATIONS

BBBEE	-	Broad Based Black Economic Empowerment
BES	-	Built Environment Services
BPS(s)	-	Building Procurement Strategy/ (Strategies)
CCT	-	Compulsory Competitive Tendering
CESA	-	Consulting Engineers South Africa
CIB	-	Construction Industry Board
CIDB	-	Construction Industry Development Board
CIIs	-	Construction Industry Indicators
D&B	-	Design-and-Build
DBOT	-	Design-Build-Operate-Transfer
ECSA	-	Engineering Council of South Africa
EPCM	-	Engineer Procure Construct Manage
IPD	-	Integrated Project Delivery
KPI(s)	-	Key Performance Indicator(s)
KRA(s)	-	Key Result Area(s)
MFMA	-	Municipal Finance Management Act
NOP(s)	-	Non-Owner Participant(s)
NPC	-	National Planning Commission
PAJA	-	Promotion of Administrative Justice Act
PFMA	-	Public Finance Management Act
PPP(s)	-	Public Private Partnership(s)
PPPFA	-	Preferential Procurement Policy Framework Act
QBS	-	Quality-Based Selection
QCBS	-	Quality and Cost-Based Selection
SAFCEC	-	South African Federation for Civil Engineering Contractors
SAICE	-	South African Institution of Civil Engineering
SCM	-	Supply Chain Management
SIPDM	-	Standard for Infrastructure Procurement and Delivery Management
SPV	-	Special Purpose Vehicle
TBPS	-	Traditional Building Procurement Strategy
UK	-	United Kingdom
USA	-	United States of America

1 INTRODUCTION AND BACKGROUND

1.1 INTRODUCTION

In the past number of years professional organisations within the civil engineering industry in South Africa have published reports claiming that the civil engineering industry has seen a downturn in revenue despite an increase in the volume of work available. This in turn has seen a drain of technical expertise leaving the country. Some role players blame the cost-based competitive Building Procurement Strategy (BPS) currently widely used by the public sector while others believe the Traditional Building Procurement Strategy (TBPS) is to blame.

In the United Kingdom (UK) and the United States of America (USA) prescribed professional fee scales are no longer in use and in the USA and Japan only Quality-Based Selection (QBS) of professional service providers were implemented. On 10 February 2016, the Competitions Commission of South Africa rejected an application from the Engineering Council of South Africa (ECSA) for the association to be exempted from Item 49(a) to (c) of Schedule I of the Competition Act, no 89 of 1998, as amended. This meant that a prescribed guideline for professional fees could not be published by the ECSA as it was deemed to be indirect price-fixing and not in line with International Best Practices (CIDB, 2007a).

To gauge the current BPS in South Africa it is important to consider what international strategies are used in other countries. There are a number of strategies used Internationally to select built environment services (BES) providers, including (CIDB, 2007a):

- Quality and Cost-Based Selection (QCBS) whereby the tenderer who scores the highest number of points for quality and price is awarded the contract;
- QBS whereby a contract is negotiated with the tenderer scoring the highest number of points for quality;
- Selection under a fixed budget whereby tenderers are provided with the available budget and are requested to provide their best technical and financial proposals in separate envelopes and a contract is negotiated with the tenderer submitting the highest ranked technical offer;
- Least-cost selection whereby tenderers submit technical proposals and financial proposals in two envelopes, the financial proposals of only those tenderers who obtain a quality score above a threshold are opened and the contract is awarded to the tenderer with the highest score based on price; and
- Single-source selection whereby a contract is negotiated with a single suitable tenderer.

The method of selection is determined by the scope of the assignment, the quality of the services, the complexity of the assignment and whether assignments are of a routine nature. This is contrary to the current South African BPS where awards are mostly made on financial offer and preference criteria.

1.2 BACKGROUND

The Construction Industry Development Board (CIDB) was established with a mandate (amongst others) to: “...*promote the contribution of the construction industry in meeting National construction demand and in advancing National, social and economic development objectives, industry performance, efficiency and competitiveness; and improved value to clients*” (CIDB, 2011) .

The majority of professional fees earned in South Africa by professional consulting engineering firms is as a result of work for public-sector clients. In 2013, 54% of all fees earned in the first half of the 2013 were from public-sector clients (CESA, 2013)

The procurement of professional consulting engineering services in South Africa by public-sector clients is governed by various procurement legislation, including (CESA, 2014):

- Preferential Procurement Policy Framework Act (PPPFA);
- Public Finance Management Act (PFMA);
- Municipal Finance Management Act (MFMA);
- Broad Based Black Economic Empowerment (BBBEE);
- Various Treasury guidelines; and
- CIDB procurement guidelines

The aforementioned legislation currently focusses mainly on awarding tenders based on pricing criteria with less emphasis placed on quality- and functionality criteria where a minimum acceptable score is required (CESA, 2014). This forced engineering consultants to adopt a ‘market driven’ strategy that is based on price and not on quality or functionality, driving the fees down to an absolute minimum.

1.2.1 Overview

To fulfil their mandate the CIDB has published the results of a study related to the quality of project delivery in construction in South Africa to raise awareness of the problem. Quality of construction is perceived to be a major factor for client’s perception of value and in line with this background the CIDB undertook a study in 2011 to investigate (from the client’s

perspective) what actions can be taken to deliver better quality construction projects (CIDB, 2011). The report investigated factors from the design stage, through procurement to the construction stage that impacted on construction quality. The report used information from the annual CIDB Construction Industry Indicators (CIIs) and a research report on the state of construction quality that was commissioned for the study. The result of the study concludes that approximately 20% of clients are neutral or dissatisfied with the quality of construction on projects and that approximately 12% of projects had defects that were regarded to be inappropriate.

The report also investigates the barriers to quality in construction and concludes that in most cases where clients are dissatisfied with the quality of construction, it could probably be attributed largely to procurement related barriers in the appointment of contractors that were not capable of undertaking the necessary work. The report further assumes that the role of the client's agent also contributes to design and construction related barriers leading to quality concerns in cases where the clients were neutral. It also highlights the use of BPSs in the public sector based on price and preference criteria only and mostly does not allow for quality criteria in the award process. It concluded that approximately 25% of tenders investigated were not awarded based on quality criteria. Furthermore, it highlights International trends aimed at enhancing quality by promoting procurement strategies that allows for a collaborative relationship between the government, clients and its suppliers. The report also states that insufficient information from contractors and professional service providers is available to select professional service providers and contractors based on quality criteria. One of the mandates of the CIDB is to improve value to clients and in the investigative report various clients are neutral or dissatisfied with project delivery in South Africa. The report also concluded that the cause of many of the quality related causes could be attributed to procurement related barriers.

“The identification of differentiators is the corner stone of any competitive selection process. No two professionals have the same intellectual abilities, experience or skills” (CIDB, 2007b). Neither do two professional service providers have the same capabilities and proficiencies. Differentiators form the basis for competition. From the aforementioned the criteria used to select the service provider within the BES needs to be considered very carefully and not be treated as a commodity.

One of the main objectives contained in the Policy Strategy to Guide Uniformity in Procurement Reform Processes in Government issued by National Treasury is to “replace

outdated procurement and provisioning practices in government with a Supply Chain Management (SCM) function and a systematic procedure for the appointment of consultants” (CIDB, 2007a). This document also recognises that “it is necessary that certain minimum requirements of quality and efficiency be achieved when appointing consultants.”

The performance of the professional team plays a vital role in the capital, operational and maintenance costs associated with infrastructure projects and therefore it is crucial that the necessary attention by the professional team is given to options analyses and lifecycle costing of the project (CIDB, 2007a). The professional team have a professional obligation to the public and clients and this requires effective communication and relationship of mutual respect and trust between the client and the service provider to ensure success. Due to this reason the Treasury Policy Document states that “technical quality and independence of advice are key considerations in engaging consultants” and that the client should “benefit from the consultant’s superior knowledge, transfer of skills and upgrading of a knowledge base while executing an assignment.”

Professional associations and councils in South Africa published time-and-percentage-based fee scales in the past to serve as a guideline for certain types of professional services provided in the built environment (CIDB, 2007a). This allowed professional service providers to be appointed on a prescribed fee basis without the client having to prepare a detailed scope of work. Various mechanisms to appoint professional service providers were historically used and included the following:

- Panels/ rosters/ framework tenders – a database of pre-qualified consultants in terms of the prescribed fee scales;
- Alternatively, 2 or 3 consultants on the panel are invited to submit proposals for the required services and appointed in terms of the prescribed fee scales;
- Open tendering – any consultant can submit an offer based on the required scope of work and the price is usually based on the prescribed fee scales with a specified discount; and
- At risk work – some consultants identify projects and after secure funding for the projects are then appointed by the client.

The provisions of the CIDB Standard for Uniformity in Construction Procurement prescribes the following standard tender evaluation methods (CIDB, 2007b):

- Method 1: Financial offer – Rank tenders based on the desirability of their offers and award based on financial offer only;

- Method 2: Financial offer and preference – Score tender evaluation points for the financial offer. Score tenderers based on preferencing. Calculate total tender points based on financial offer and preferencing and rank tenderers based on their total points scored. Award based on total tender points scored;
- Method 3: Financial offer and quality – Score tenderer quality and reject tenderers not scoring a minimum number of points. Score tender evaluation points for the financial offer. Calculate the total tender points scored. Rank tenders based on tender points scored. Award based on the total tender evaluation points scored; and
- Method 4: Financial offer, quality and preference - Score tenderer quality and reject tenderers not scoring a minimum number of points. Score tender evaluation points for the financial offer. Score tender evaluation points for preferencing. Calculate the total tender points scored. Rank tenders based on tender points scored. Award based on the total tender evaluation points scored.

These four methods need to be investigated to establish what their contribution is to the perceived current decline in project delivery in South Africa and consequently to client dissatisfaction.

The general principles in appointing professional service providers are as follows (CIDB, 2007b):

- Professional service providers should be awarded contracts based on their demonstrated competence and qualifications for the specific type of service required at a fair and reasonable price;
- The service should be awarded to service providers that have capacity to provide the service at a reasonable price and not necessarily the least costly. Due to this reason the World Bank recommends that tenders be awarded primarily based on quality; and
- Selection based on quality does not necessarily mean the best quality available should be selected, but that quality appropriate for the assignment should be selected.

The Best Practice Guidelines promulgates the appointment of professional service providers based on their competence and their qualifications (CESA, 2014), but in reality most tenders are awarded based on financial offer and preference criteria. From the aforementioned it appears that the initial intentions of the BPS in South Africa are not having the desired effect on the clients, consultants and the industry as originally intended due to the current implementation and interpretation of the legislation.

1.2.2 Current Building Procurement Strategy practices in South Africa

QCBS methods are currently seldom used by government for the procurement of professional services and therefore cost plays a crucial role in the contract allocation (CESA, 2013). This causes contracts to be awarded to the firm that tendered the lowest price on the project to provide the service (CESA, 2014). Consulting Engineers South Africa (CESA), however, have maintained that consulting engineering is not a commodity and therefore the use of competitive tendering procurement methods based on price is inappropriate (Thela, 2014).

The decline in professional fees in the country over the years can be partly attributed to competitive tendering and the practice of discounting professional fees benchmarked against the professional fee guidelines published by ECSA (CESA, 2007).

To remain competitive in a priced-based environment, professional service providers had to be innovative in their project delivery approach to try and gain a competitive edge to win work. This included (Hoxley, 2000):

- less attention to design alternatives and checking and reviewing of drawings;
- production of simpler designs to lower required input from resources on the design; and
- be more prone to claim on lower fee projects.

The result of this practice is a decrease in the quality of services by the professional services provider leading to a higher risk to the services provider and the client (Okonkwo and Wium, 2018). They go on to state that these risks include project risks and organisational business risks. Project risks are those that could lead to project objectives not being achieved should they realise in terms of time, cost, quality, environmental sustainability and safety. They further state that these risks could lead to more costs to the clients due to late completion, costs to the professional services provider as a result of indemnity claims and costs to the contractor as a result of penalties. Organisation business risks are threats to the operational activities of the business and impacts on the competitiveness of the business. The current market conditions and clients' demand are the main reasons why professional services providers are forced to provide excessive discounts. Engineers in South Africa are struggling "in an industry racked by discounting, tendering, lack of knowledge and skills" (Weideman, 2014). Findings by Okonkwo and Wium (2018) revealed that discounts between 16 and 30% were observed to be the industry standard. Studies have indicated that discounted fees negatively impact on the relationship between the professional services provider and the client (Black *et al.*, 2000). In addition it leads to an increase in the life-cycle costs of projects and to a shortage of professionals (Okonkwo and Wium, 2018).

From the aforementioned some professionals believe that the current BPS in South Africa poses many challenges to professional services industry and might even have a negative effect on the industry. The procurement legislation and regulations were developed and promulgated over the last 20 years to govern the procurement process to the benefit of the client and the professional service provider.

1.2.3 Status Quo of the Engineering Profession in South Africa

Civil engineers are being retrenched, graduates are struggling to find jobs and students at universities are aware they will find it difficult to find jobs, according to chief operations officer at the South African Institution of Civil Engineering (SAICE), Steven Kaplan who told Fin24 in an interview “We hope the situation will turn around, it’s a difficult environment...it’s disheartening” (Niselow, 2018). He went on to tell that government’s spend on infrastructure has been in decline since the 2010 boom for the World Cup stadia and other programmes. First National Bank and the Bureau of Economic Research Civil Confidence Index has been below 20 for more than a year and more than 80% of index respondents in the third quarter of 2018 said they are dissatisfied by the prevailing business conditions (Niselow, 2018).

Niselow (2018) goes on to state that the competitive nature currently experienced in the professional services industry in South Africa is due to a decline in government spending on infrastructure. In addition, the implementation of the current procurement processes in South Africa puts further stress on the professional services industry leading to a further decline in the quality of project delivery and client satisfaction (Niselow, 2018).

The introduction of an alternative BPS could address the ongoing reports of poor project delivery in the public sector and the consequent lack of client satisfaction associated with poor project delivery.

1.3 PROBLEM STATEMENT

The problem to be examined in this study may be stated as:

The implementation of a cost-based BPS for civil engineering projects in the public sector in South Africa leads to a decline in the quality of project delivery and client satisfaction.

1.4 RESEARCH QUESTION

The research question to be examined in this study may be stated as:

Why does the public sector not consider the implementation of an alternative BPS for civil engineering projects in South Africa?

1.5 RESEARCH AIM

The intended aim of this research is to:

Identify the challenges to the implementation of an alternative BPS by the public sector for the civil engineering industry in South Africa.

1.6 RESEARCH PROPOSITION

The research proposition to be tested in this study is:

The implementation of a quality-based BPS for civil engineering projects in the public sector will address the current problems on delivering project objectives.

1.7 RESEARCH OBJECTIVES

The research objectives to be achieved are to:

- a) determine problems experienced by the public sector with the price-based BPS and establish what criteria should be the main focus during the tender evaluation process;
- b) identify whether alternative BPSs are being used by the public sector on civil engineering projects;
- c) identify what are the factors hindering the implementation of alternative BPSs for use by the public sector on civil engineering projects;
- d) determine if clients are adopting the use of Framework Contracts in public-sector delivery;
and
- e) determine what the preferred BPS is in public-sector delivery.

1.8 RESEARCH METHODOLOGY

The above objectives will be achieved by adopting the following research method:

- a) A literature review of matters pertinent to this study, including the review of peer reviewed Journal and Academic Papers using keywords such as public procurement, construction quality, discounted fees, construction industry, etc.;

- b) Face-to-face interviews with people currently working within the civil engineering industry;
- c) Analysis of the acquired data; and
- d) Findings based on the analysis of the acquired data.

1.9 LIMITATIONS

This study is subject to the following limitation:

- a) A single Case study within the civil engineering sector

1.10 RESEARCH SCOPE

The scope of the study pertains mainly to the civil engineering industry in the geographical location of the Cape Peninsula located in the Western Cape of South Africa. The sample consists of six interviews with role players of the Case study municipality's technical directorate, four consultants in the civil engineering consultancy industry and five civil engineering contractors. All the respondents are linked to the public procurement process for civil engineering services.

1.11 SIGNIFICANCE OF THE STUDY

It is important for this research to be conducted to establish if the perception of the current BPS is justified in the industry and to explore if role players are aware of viable alternatives to the current BPS that is available for consideration. With an exodus of South African engineers to International countries as a result of a struggling industry and a decline in client satisfaction on project delivery, problems with the current BPS needs to be investigated. The suitability of alternative BPSs also needs to be investigated and the factors hindering the implementation of the alternative strategies needs to be identified in order to establish the possibility of change.

1.12 STRUCTURE OF RESEARCH REPORT

The research report was structured in six chapters as follows:

Chapter 1 – Introduction and Background

- The Introduction and Background introduce the topic and provides background information from the industry why this topic is relevant and being investigated. The research question and research objectives are also stated.

Chapter 2 – Literature Review

- The Literature Review provides a critical appraisal of the arguments and thoughts on related topics by other researchers on the problem statement. It also provides an opportunity for the Author to identify opportunities in the current literature for further research.

Chapter 3 – Research Methodology

- The Research Methodology follows on from the literature review and proposes the methodology used to address the research question.

Chapter 4 – Presentation of Data

- This chapter provides detailed information on the collection and presentation of the data.

Chapter 5 – Analysis of data and discussion of findings

- This section includes the analysis and interpretation of the collected data and a discussion interpreting the findings associated with the collected data, as well as comparing the findings to the literature review.

Chapter 6 – Conclusions and Recommendations

- This chapter revisits the research question, proposition and research objectives and discusses the conclusions made from the collected data and makes recommendations for consideration and further research.

2 LITERATURE REVIEW

2.1 INTRODUCTION

The literature review provides a critical appraisal of the arguments and thoughts on related topics by other researchers. This section gives the historical background to the current problems experienced in South Africa and provides the context of the problem. Criticisms of the current BPS is discussed and evidence of a decline in project delivery as a result of the implementation of the TBPS is given. Various procurement strategies for the delivery of public infrastructure are discussed with the industry focus moving towards the Collaborative and Integrative BPSs. Theoretical factors that could hinder the implementation of alternative BPSs are also discussed.

2.2 BACKGROUND

In recent years various researchers have investigated the dependency of project delivery and client satisfaction on the relationship between the various parties. Over the last few decades various new BPSs were developed to mitigate risks associated with project delivery.

In 1768 John Smeaton developed the “master and servant” model for the completion of civil engineering projects in the UK. The team involved the engineer, a resident engineer, surveyors working under the engineer and contractors (instead of the usual labourers). This model remained in use for more than 200 years and is still used on projects managed in the traditional sense (Watermeyer, 2010). The Author also states that according to Dr Martin Barnes (the originator of the New Engineering and Construction Contract) the relationship between the engineer and the contractor progressed over the last 150 years to a collaborative relationship between two specialists.

Traditionally contractors did not make any decisions related to the scope of work and was only responsible for the decisions on how the construction was to be executed. Currently BPSs exist that, depending on where the project dictates the boundary must lie between design and construction, can accommodate any required relationship.

2.2.1 Traditional approach to the delivery of Public Infrastructure

Historically clients were responsible for the design of a project and the contractor was responsible to construct the design as issued by the client. The design and specifications were normally developed by the design team before the tender process to allow enough detail to

be known for tenderers to price the project. This process ensured that the client's requirements were incorporated into the design and allowed the contract to proceed without any major changes, delays or disruptions. However, if the contractor was to be delayed due to the fault of the design team, it resulted in financial claims from the contractor against the client. During 2010 most of the projects executed by public-sector clients were delivered using this traditional approach (Watermeyer, 2010). He also states that the traditional approach allowed tenderers to price the tender as a lump sum or as a re-measurable contract before the tender closed and consultants were normally remunerated based on a percentage-based fee based on the construction value. The traditional approach works best when sufficient time is available to complete the designs and sufficient in-house capacity from the client is available to oversee the design and tender process. Also with clients being under constant pressure to deliver projects on time, within budget and faster many projects have been fast tracked by not fully developing the scope of work and the designs before tenders are awarded. He concludes that on many projects this led to substantial cost overruns, projects delivered late and great client dissatisfaction.

The BPS most widely implemented by the public sector focusses on the TBPS and awards are intended to be based on quality, cost and preference criteria. However, in March 2010 the KwaZulu Natal High Court case *Sisonke Civils t/a Pilcon Projects v Zululand District Municipality & Others* (Case No. 10878/2009) judgement declared that regulation 8 of the Preferential Procurement Regulations, 2001 published in Government Notice R725 of 10 August 2001 ("the Regulations") is inconsistent with section 2 (1) (b) of the PPPFA, No. 5 of 2000 and therefore quality criteria points could not be awarded in the scoring of a tender (SAFLII, 2010). This meant that 90% of the scoring points should depend on price whereas 10% of the scoring points should be awarded for preference in the case where the tender value was more than R 1000 000. For tenders less than R1000 000, 80% of the scoring points should be allocated for price and 20% should be allocated for preference. Since the judgement municipalities have used quality as part of the eligibility criteria to create a quality gate for tenderers. Tenderers that achieve the minimum quality score under eligibility criteria, are deemed to be eligible to tender on the project and the progress to be scored based on their preference criteria and their price.

The 2011 Preferential Procurement Regulations threshold of R 1 000 000 was superseded by the 2017 Preferential Procurement Regulations and this threshold was increased to R 50 000 000.

2.2.2 Public Sector realities

Currently public-sector clients do not have in-house design capacity and therefore are required to make use of external consultants to provide these services (Watermeyer, 2010). He states that normally the projects are broken down into smaller projects due to annual budget constraints and to provide access to local contractors and encourage labour intensive construction methods to be utilised. Also this results in consultants having to prepare tender documents on an annual basis resulting in a start-stop delivery model that often is associated with disappointing outcomes.

A study concluded the following (Lawless, 2005):

- 34% of South African Local Municipalities and 9% of District Municipalities do not employ any civil engineers, technologists and/ or technicians;
- 18% of Local Municipalities and 9% of District Municipalities only employ 1 civil technician and 19% of Local Municipalities and 53% of District Municipalities only employ 1 civil engineer; and
- 16% of Local Municipalities and 13% of District Municipalities only employed technologists and technicians under the age of 35.

The following table compares the distribution of engineers and technologists in South Africa in 1965 and 2005 (Watermeyer, 2010):

Employer	Percentage Distribution (%)	
	1967	2005
State-owned enterprises	12	6
National and Provincial Government	12	4
Local Government	15	10
Consultants	31	51
Industry of business	28	23
Academia	2	6

Table 1: Change in distribution of technologists and engineers in South Africa over time (Watermeyer, 2010)

Table 1 indicates that there has been a major drain of technical people from the public sector to the private sector resulting in a technical skills shortage at most of the public institutions in South Africa. In turn this resulted in infrastructure delivery capacity problems within government that can mainly be contributed to (Watermeyer, 2010):

- a project approach where for each project a different consultant is overseen by gradually diminishing technically skilled staff; and
- unbundling of projects to accommodate local contractors resulting in high demands on the client's resources to manage these projects.

He also argues that capacity constraints might be due to continued use of a delivery approach that does not align with the skills available in the public sector to secure project delivery. In order to improve the delivery of infrastructure by the public sector, a culture change is required and clients need to be the drivers of this change.

2.2.3 The evolution of the South African Building Procurement Strategy

Since 1968 all National and Provincial Government tenders were governed by State Tender Board Act whereas Local Government was governed by various Provincial Ordinances. The result was two different tender systems due to different requirements for goods and services procured for National Government and Local Government. In 1996 the Constitution of the Republic of South Africa no 108 of 1996 was promulgated and Section 217 relates to procurement and states that the procurement strategy must be fair, equitable, transparent, competitive and cost-effective (Bolton, 2008).

In 2000 the PPPFA was promulgated. The regulations of the State Tender Board Act were amended in 2003 to allow government officials to either procure goods and services through the State Tender Board Act or through the PPPFA that allows for the establishment of SCM policies and units within government departments. This was done to hold accounting officers responsible and accountable for the procurement of goods and services. For a duration both Acts were used by governmental officials for the procurement process, but the State Tender Board Act was eventually repealed and currently only the PPPFA is in use (Bolton, 2008).

National Treasury is currently overall responsible for all procurement related issues at National, Provincial and Local Government level. In South Africa the principles of contract law and administrative law is governed by the Promotion of Administrative Justice Act (PAJA) that also gives effect to Section 33 of the constitution which provides that (Bolton, 2008):

- everyone has the right to administrative action that is lawful, reasonable and procedurally fair;
- everyone whose rights have been adversely affected by administrative action has the right to be given written reasons; and
- National legislation must be enacted to give effect to these rights and must:

- provide for the review of administrative action by a court or, where appropriate, an independent and impartial tribunal;
- impose a duty on the State to give effect to the right in subsections (1) and (2); and
- promote an efficient administration.

This allows anyone the right to challenge any procurement decisions based on grounds of lawfulness, reasonableness and procedural fairness (Bolton, 2008).

In October 2015 National Treasury published the Standard for Infrastructure Procurement and Delivery Management (SIPDM) which was effective from 1 July 2016 (Treasury, 2015). This is in line with the South African Planning Commission's National Development Plan 2030: Our Future – make it work, that focussed on the following five areas:

- differentiate between the different types of procurement which poses different challenges and requires different skills sets;
- adopt a strategic approach to procurement above the project level to balance competing objectives and priorities rather than viewing each project in isolation;
- build relationships of trust and understanding with the private sector;
- develop professional supply chain management capacity through training and accreditation; and
- incorporate oversight functions to assess value for money.

National Treasury's 2015 Public Sector SCM Review implied that the current SCM was "traditionally misunderstood and undervalued" (Treasury, 2015). The review suggested that the current SCM needed reform in order to affect the following benefits:

- good-quality service delivery will be increasingly possible, with significant improvements in the welfare of South Africa's citizens, and especially the poor who rely heavily on government for support;
- the economy will grow as economic infrastructure is expanded and efficiently maintained;
- goods, services and infrastructure will be bought at lower costs;
- innovation will result in different approaches to the commodities used in some sectors; and
- for suppliers, the cost of doing business with the state should decrease substantially.

The current BPS in the public sector in South Africa treats the procurement of professional services in the built environment the same as the procurement of goods. A study have found

that the procurement of BES are more difficult than the procurement of goods and therefore should be executed differently (Wynstra et al., 2018). They go on to state that BES have different characteristics that separate them from goods of which inseparability, heterogeneity, intangibility and perishability are most commonly used to motivate why the procurement of services is more challenging than the procurement of goods. They define a service as an object of exchange and the intangibility of services refers to the fact that no physical object is exchanged, or rather that they are not the core of the transaction. In addition, the heterogeneity of services refers to variability, particularly within one and the same service. Inseparability refers to the interaction or 'co-production' that takes place between provider and customer (Bettencourt et al., 2002). Perishability of services implies that services cannot be stored and that demand-forecasting and information exchange between customer and supplier need to be a more frequent, iterative and adaptive process (Wynstra *et al.*, 2018).

SIPDM also recognises the difference between public procurement related to infrastructure delivery in comparison to the procurement of goods and services that are standard. SIPDM covers the SCM system for infrastructure delivery and was issued as an instruction in terms of the PFMA of 1999. The purpose of SIPDM was to effect value-for-money through infrastructure projects by aligning projects with the strategic objectives, priorities and budgets by defining objectives and outcomes in terms of timing and costs.

The intention of the amendments to the procurement strategy was to establish a fair and cost-effective BPS that would benefit project delivery in terms of quality, cost and programme.

2.3 BUILDING PROCUREMENT STRATEGIES APPLIED IN THE BUILT ENVIRONMENT

2.3.1 Problems experienced with the current Building Procurement Strategy

2.3.1.1 The South African context

The National Planning Commission (NPC) completed a report that investigated the obstacles South Africa needs to overcome to address poverty, address inequality and to achieve constitutional objectives (Commission, 2011). The report concluded that various changes are required if South Africa was to achieve the planned objectives. The National Development Plan 2030 published in 2012, aims to eliminate poverty and reduce inequality by 2030 by

growing an inclusive economy, improving the capacity of the state, and promoting leadership and partnership throughout society (Commission, 2012).

Economic infrastructure (construction works, roads, railways, harbours, dams, power stations and infrastructure networks) is visible all around us and is created to improve service delivery. Therefore economic infrastructure is the foundation to a better life for all (Watermeyer et al., 2013). He states that investment in economic infrastructure leads to more job creation and a demand for materials, job creation during the maintenance period of the asset and better productivity in the overall economy. This link relates well to the fact that five of the nine priorities as identified in the NPC's diagnostic report of 2011 is related to infrastructure development. Addressing poverty and underdevelopment however, is being hindered by shortfalls in the delivery and maintenance of infrastructure projects as per a report commissioned by the World Bank (Foster, 2008). The report found that in some country's infrastructure development is not focussed enough, many countries spend only 60-70% of their annual infrastructure budgets and approximately 30% of the infrastructure requires rehabilitation. It is also no secret that National Treasury is unhappy with the number of South African municipalities and Provincial Government departments that regularly cannot fully spent their annual capital budgets (Wall et al., 2012).

Procurement is "the process that creates, manages and fulfils contracts" according to ISO 10845-1:2010 Construction procurement - part 1: Processes methods and procedures by the International Organisation for standardisation, Geneva. Procurement deals with all processes pertaining to a contract from planning to procuring to the administration of a contract. SCM is defined as "the design, planning, execution, control and monitoring of supply chain activities in the delivery of goods, services or works, with the objective of creating net value and providing oversight and coordination of information and finances within the supply chain" as per the Western Cape Provincial Treasury Instruction: SCM dated 2012. Most governmental procurement not related to infrastructure delivery normally relates to standard goods and services. Purchased goods are stored prior to being issued to employees and services are mostly routine and repetitive that do not require strategic inputs (Watermeyer et al., 2013). In contrast, the delivery and maintenance of infrastructure requires detailed planning of the procurement process and planning of the contractual process. For this reason, a separate supply chain process for the delivery and maintenance of infrastructure is required to be developed.

The following practises used by Local Municipalities and Provincial Governments has a negative effect on the construction procurement (Watermeyer et al., 2013):

- tender awards based on the lowest price;
- using generic conditions of contract;
- negotiating the terms of the contract after the evaluation of the tender; and
- lack of a standard structure for procurement documents.

The procurement of standard goods and services are currently treated the same by governmental institutions as the procurement of infrastructure related goods and services. Due to the aforementioned differences in these goods and services a separate supply chain for the delivery and maintenance of infrastructure goods and services is justified.

The main contributors to poor project performance can be attributed to the selection of an inappropriate BPS (Skitmore and Marsden, 1988). Some research has been completed in an attempt to devise a selection strategy to choose the most appropriate BPS for a specific project (Nahapiet and Nahapiet, 1985), but the practical application of these strategies are untested (Bowen et al., 1997). From the research, it is clear that different clients have different criteria for project success and therefore it is necessary to be aware of the different criteria available to base the selection of an appropriate BPS on.

A nationwide questionnaire survey was conducted in 1999 to investigate the impact of the briefing and procurement process on the resultant level of client satisfaction with the project (Bowen et al., 1999). The results of the survey revealed that apart from contractors, the TBPS was the preferred choice. Contractor's preferred choice was the negotiated form of procurement, followed by the TBPS and cost-plus methods. The results also indicated that clients and the rest of the team (architects, quantity surveyors, engineers, project managers and contractors) had different opinions whether clients require any assistance from the rest of the team when it comes to selecting an appropriate BPS. Clients did not believe that they needed any input from the rest of the team when deciding what BPS to select. The study also found that when professional advice regarding the selection of a BPS is provided to clients, not all the available BPSs are discussed in depth with the clients. Client also confirmed that the decision on what BPS to implement is largely influenced by previous experience and in-house experts and not by external consultants. Another finding was that clients had extensive knowledge about the TBPS but had limited knowledge about the other available strategies.

The ability of South African consulting engineers to provide sound technical advice to clients are becoming more of a challenge as a result of declining fees paid to them (Okonkwo and

Wium, 2018). The cost-based BPS in South Africa requires that the award be made primarily on the lowest price offered, driving construction cost down and also the associated professional fees. This phenomenon in combination with the trend of offering higher discounts on professional services to procure projects, is causing pressure on the industry and resulting in a lack of knowledge and skills (Weideman, 2014).

The decline in fees for professional services can largely be contributed to the benchmarking of fees against the professional fee guidelines published by ECSA (CESA, 2007). The effect of lower fees has resulted in less design alternatives being considered and simpler designs are produced to minimise input (Hoxley, 2000). Ultimately this leads to a decrease in the quality of the professional services provided, increases the risks for the consulting engineer and client dissatisfaction due to poor project delivery (Okonkwo and Wium, 2018).

Various organisational business risks were identified in a study entitled Risk Assessment modelling for the South African Construction Industry (Visser and Joubert, 2008). A shortage of key skills (human capital) might result in delays on projects as insufficient capable staff is available to ensure timeous delivery. Tendering and contract exposure is a result of consulting engineers committing to the tender scope of work at the lowest possible price, whereafter they try to deliver the project with minimal input from the staff. The identification, reporting and actioning of project non-conformance remains a sensitive subject as the responsible person normally does not want to take responsibility for project delivery failure. Poor business risk management is a result of companies trying to stay competitive by bidding as low as possible to secure work, but then trying to mitigate losses by limiting input into the project delivery. Project management issues arise as insufficient funding allowances are normally included for projects management. Financial fluctuations and cost overruns on long-term projects remain a risk to consultants as they are bounded by contractual agreements that are unpredictable and not under their control. Government and legislative changes might cause additional requirements on projects not initially budgeted for by the client, leading to possible confrontation and a degradation of the consultant/ client relationship. A lack of sufficient budget on any project leads to the dearth of innovation as consultants try and reuse as much previous information on projects as possible to limit resourcing inputs into project delivery.

Consulting engineering firms need to adapt to remain competitive by developing and implementing successful strategies to ensure sufficient number of profitable projects in order to remain profitable (Jaafar *et al.*, 2008).

Over the last decade there has been a noticeable decline in the state of the civil engineering industry in South Africa after the conclusion of the 2010 Football World Cup. This is clearly reflected in the employment figures, civil tender activity and the annual turnover of the civil engineering industry. The employment figures indicate a decline of 35% of the total work force since 2014 - refer Figure 1 (SAFCEC, 2019).



Figure 1: Employment Trend in the Civil Engineering Industry (SAFCEC, 2019)

The civil tender activity figures peaked in 2007 and this coincided with construction activities associated with the 2010 Football World Cup. From 2007 to late in 2018 the civil tender activities have declined steadily to figures similar to those experienced in late 2000 – refer Figure 2 (SAFCEC, 2019).

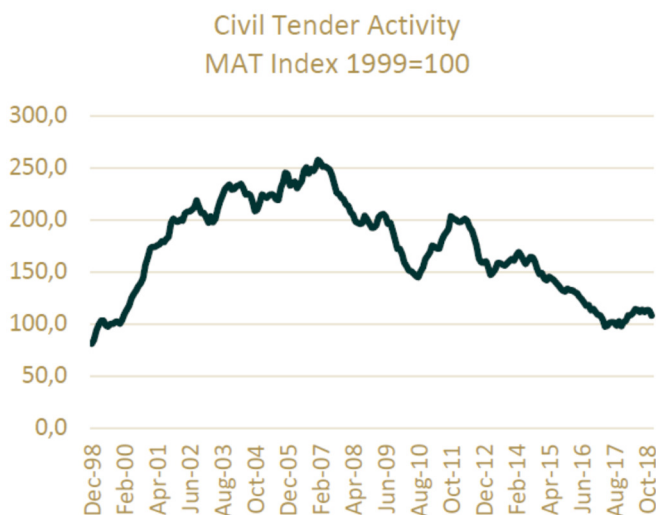


Figure 2: Tender activity in the Civil Engineering Industry (SAFCEC, 2019)

The civil industry turnover figures showed steady growth eventually peaking in 2008 when the construction work associated with the 2010 Football World Cup were at a peak. From 2008 to late in 2016 the civil industry turnover figures have declined gradually to figures similar than those experienced in the middle 90's – refer Figure 3 (SAFCEC, 2019).

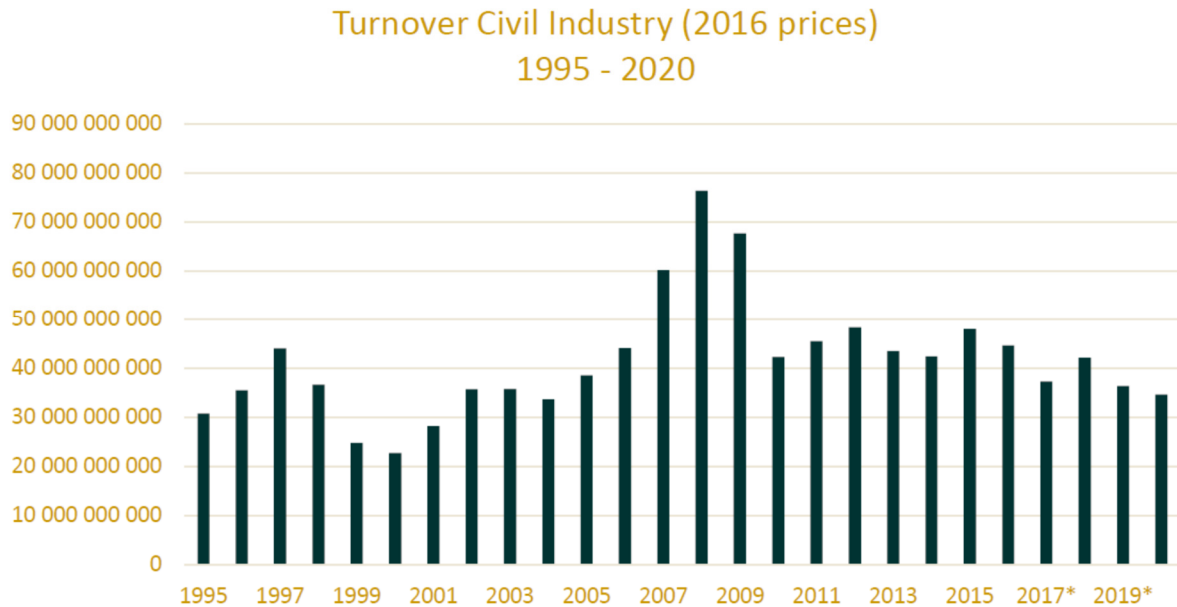


Figure 3: Turnover in the Civil Engineering Industry (SAFCEC, 2019)

These three indicators clearly indicate how the state of the civil engineering industry varies over time and the gradual decrease in the state of the civil engineering industry in South Africa.

2.3.1.2 The International context (United Kingdom)

2.3.1.2.1 Background

In 1984 the prescribed fee scales for the Royal Institute of British Architects were abolished by the UK Government to promote competitiveness, quality and value for money on projects and the prediction was that fee levels would decline as a result (Hoxley, 1998). This proved to be true as some service providers submitted rates during the recession of less than half of the prescribed rates after the abolishment of the prescribed fee scales. It was expected that the general level of fees would recover at the end of the economic recession. The abolishment of prescribed fees scales in the UK was implemented after the Monopolies Commission found that not competing on price places a restraint on competition (Hoxley, 1998).

In 1996 Compulsory Competitive Tendering (CCT) was announced in the UK. To prevent quality from deteriorating as a result of CCT, the government implemented an initial quality

threshold requirement whereafter the choice would be made on price. There were many critics of the CCT system in the private sector and some firms had a policy of not bidding if the tender was subject to CCT (Hoxley, 1998). In 1997 the Labour Government announced that they will abandon CCT and instead implement the Best Value Commission on each project. The duty of Best Value is owed by the Local authority to the local people supported by performance plans to ensure accountability. Best Value was concerned with economy, efficiency, effectiveness and quality of local services and not based on CCT. Where Local authorities proved to have a nature of failure as a result of Best Value implementation, intervention would be made forcing them to use CCT as an alternative. CCT was only imposed on Authorities as a penalty that were not providing Best Value and not imposed on all Authorities.

The Construction Industry Board (CIB) released a report (CIB, 1996) in which the following quality/ price ratios were proposed:

Type of Project	Indicative quality/ price ratio
Feasibility Studies and Investigations	85/15
Innovative projects	80/20
Complex projects	70/30
Straightforward projects	50/50
Repeat projects	20/80

Table 2: Indicative quality/ price ratios as proposed by the CIB (CIB, 1996)

A large emphasis was placed on the importance of quality except for repeat projects where the emphasis was placed on price.

2.3.1.2.2 Evidence of a decline in service quality in the United Kingdom

In 1994 the Association of Consulting Engineers presented the following results of a questionnaire regarding fee tendered services (Latham Sir, 1994):

- 73% gave less consideration to design alternatives;
- 31% gave less consideration to checking and reviewing;
- 40% consider that the risk of design errors occurring are higher;
- 74% admitted that they produce simpler designs to minimise resourcing commitment;
- 84% assessed the number of claims for additional fees to be higher;
- 69% saw less trust between client and consulting engineer;
- 94% bid low to maintain the cash flow;

- 35% bid low with the intention of doing less than the enquiry; and
- 61% bid low with the intention of making up fees with claims and variations.

Little evidence was available from clients that they experienced a fall in standards since the abolishment of prescribed professional fees, but 75% agreed that “competitive fee tendering” is the BPS that presented the most problems in relation to design. This was in contradiction to the professionals that claimed there was a significant fall in standards since the implementation of CCT.

2.3.2 Available Building Procurement Strategies for the delivery of Public Infrastructure

The client selected BPS can significantly affect project delivery as it drives costs, quality and the programme (Chism and Armstrong, 2010). The involvement of clients varies on projects from being intricately involved in project delivery to the client depending on the appointed Turnkey contractor to manage project delivery from inception to maintenance and operation.

Various decision factors influence the selection of the appropriate BPS (Chism and Armstrong, 2010). Cost, schedule and quality remains a driving force on any project and the project scope, size and complexity also influences the selected BPS. The stability of the owner’s requirements is vital during the execution of the project as changes during project execution can greatly affect delivery resulting in additional costs. Allocation of risk is important to ensure that the party best suited to mitigate the risks are allocated the risks. Project management resources to drive the project varies according the client competencies and requirements and the number of contracts/ interface risk also contributes to the BPS selection by the client. The client’s internal ability to do checks and balances, the project owner’s culture and his understanding of the project are also key factors to consider during the selection of a BPS.

Current available project delivery methodologies can be categorised into one of the four BPSs as follows (Chism and Armstrong, 2010):

- Traditional;
- Collaborative;
- Integrative; and
- Partnership.

It is important to note that any of these strategies could involve a fixed price, guaranteed maximum price, target price or cost-plus type of contract.

The BPSs can be represented by a two-dimensional graphic where the vertical axis represents the degree of information sharing and trust between the client and the project delivery team. The horizontal axis represents the degree of information sharing and trust within the project delivery team – refer Figure 4 (Chism and Armstrong, 2010).

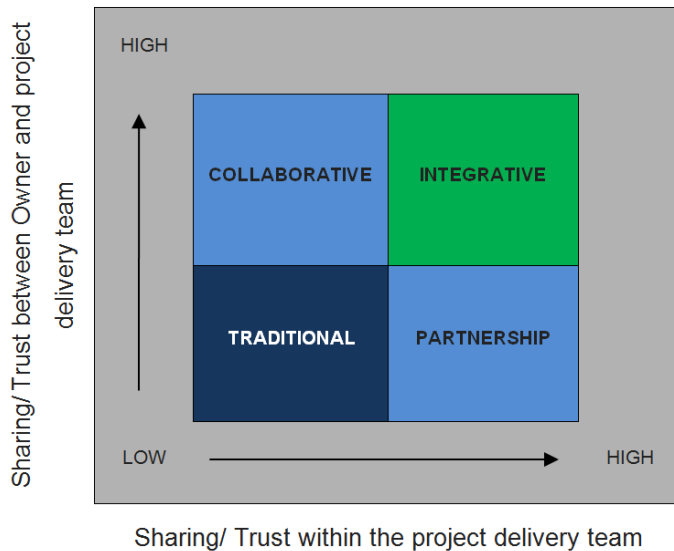


Figure 4: Two-Dimensional graphic of Project Delivery Models (Chism and Armstrong, 2010)

According to the graphic the TBPS indicates low information sharing and trust between the parties with the Integrative BPS indicating high information sharing and trust between the parties. The Collaborative BPS indicates high information sharing and trust between the owner and the project delivery team with low information sharing and trust within the project delivery team. The Partnership BPS indicates low information sharing and trust between the owner and the project delivery team with high information sharing and trust within the project delivery team.

2.3.2.1 Traditional Building Procurement Strategy

The TBPS allows for a client to appoint a design consultant to define the scope of work whereafter a contractor is appointed for the construction. The design consultant is responsible to produce the project requirements, drawings and specifications the contractor requires to enable him to construct the project. Normally a main contractor is appointed that is ultimately responsible for the construction with various sub-contractors appointed by the main contractor. The TBPS works well if scope of work remains unchanged but results in poor project delivery when the client is indecisive and makes substantial changes during construction. This normally

results in additional costs, additional time required to complete the construction and sometimes to litigation (Chism and Armstrong, 2010).

The theory of competitive tendering allows for suppliers to compete based on price and therefore creating better value-for-money, but in reality this rarely occurs as it negatively influences the relationship between the client and the supplier. Competitive tendering erode trust and therefore the parties are likely to collaborate less on continually improving a product or service to reduce costs (Stanley, 2011). The Author states that the advantages of competitive tendering are to promote competition, provide transparency and provide the opportunity to all service providers to win the project. Unfortunately suppliers will meet the lower price at a cost of cutting corners which will inevitable result in more losses. He goes on to state that there are various disadvantages associated with competitive tendering. Leading suppliers may choose not to tender as a tender can only be awarded to a supplier that submits a tender. If the lead supplier selects not to submit a tender due to the fierce financial competition, the client might end up buying an inferior product or service. Barriers to communicate between supplier and customer might develop. It is crucial that an open communication channel between the client and the supplier exists when large purchases are being made. For example, a bidder might decide not to ask certain questions that might compromise his competitive advantage as all queries are made public to all tenderers. The cost-plus phenomenon relates to suppliers bidding very low to secure the appointment, but then charges the client excessively for any changes required. The use of cheaper, poor quality materials and/ or labour can occur as the lowest bidder will try and keep production cost down in order to maintain a profit margin by using cheaper labour and materials. This can result in an inferior deliverable that might result in additional overall costs. Safety shortcuts can occur as suppliers might compromise safety standards in order to maintain a profit margin. This might require the client to implement additional checks-and-balances to ensure compliance resulting in additional expenditure for the client. Competitive tendering can be extremely slow and can result in long durations before a successful bidder is appointed. Insufficient profit margin to allow for investment in research and development, new technology or equipment can occur as low profit margins might result in suppliers not spending money on research and development resulting in short term gains, but long-term losses as no new innovative products are developed.

A study conducted in Colorado concluded that public entities that used QBS to procure engineering services are producing better result with regards to project satisfaction and cost overruns than when using other BPSs (Chinowsky and Kingsley, 2009). The study also

concluded that QBS should continue to be the procurement method of choice for public entities to procure engineering services. The key findings of their report highlighted:

- QBS ensures cost-effectiveness: appointing the best qualified service provider at a reasonable price is the best practice to ensure that the project is completed on time and on budget;
- QBS results in better projects and highly satisfied clients: 93% of owners surveyed on QBS projects rated the success of their projects as high or very high;
- QBS lowers risk for complex projects: QBS enabled clients to work with the design team at an early stage of the project that lowers risk during later stages of the project;
- QBS encourages innovation, protects intellectual property: QBS promotes better innovation and allows for better protection of intellectual property as sufficient consideration is given to design alternatives;
- QBS takes account of emerging societal issues: QBS is more likely to address emerging societal needs e.g. sustainability than cost-based procurement; and
- QBS supports owner capacity building: the sharing of staff and project experience allows the client to gain specialized quality services from design staff.

2.3.2.2 Collaborative Building Procurement Strategy

The Collaborative BPS emerged in the 1960s and 1970s as projects became more complex (Chism and Armstrong, 2010). As litigation is a costly exercise and more and more projects were prone to litigation due to poor project delivery as a result of using the TBPS, a collaborative BPS was developed to bridge the gap between the project owner and the delivery team. This BPS allows the main contractor to become involved with the project at an early planning and design stage leading to improved communication between the client and the main contractor.

Design-and-Build (D&B) is one of the alternatives to the TBPS available for implementation where the design is completed by the contractor and the cost of construction is priced with his tender submission usually as a lump sum (Watermeyer, 2010). In the D&B methodology the design consultant and the main contractor joins forces under one contract with the client to provide the required services (Chism and Armstrong, 2010). This results in the contractor taking sole responsibility for the delivery and allows for construction to commence before the detailed design is completed. Another alternative is the Develop-and-Construct BPS where the client provides a concept design and the detail design is completed by the contractor (Watermeyer, 2010). **Turnkey/ Engineer Construct Procure** is a derivative of D&B where

the clients entering a Turnkey agreement must issue a precise definition of requirements at an early stage and avoid changes once design and construction has begun (Merna and Smith, 1990). It involves the use of the contractor's in-house resources to plan, design, implement and deliver works to a full functional/ operational state upon agreement with the client and its related contractor's financier. The financing agreement allows the client to fully own the public infrastructure upon final completion and commissioning (FIDIC-EPC-Turnkey, 1999).

The **management-contractor BPS** allows for a management contractor to provide input during the design stage, but is responsible to manage and provide all construction related services from design through to construction close-out. The management-contractor reaches agreement with the various trade contractors where they are paid for actual costs plus an agreed fee (Watermeyer, 2010).

Project owners of large infrastructure projects are often desperate to consider alternatives to the TBPS due to poor project delivery experienced in the past. In an attempt to avoid an adversarial relationship with the main contractor, they are often ill advised that the collaborative approach is the only alternative to the TBPS to ensure successful project delivery (Chism and Armstrong, 2010). However, the Author warns that the Collaborative BPS is not the best-suited solution to ensure successful project delivery on all projects and for every owner.

2.3.2.3 Integrative Building Procurement Strategy

The Integrative BPS is a relatively new approach and allows for risk to be shared between the client, the design consultant and the contractor. The three parties joins forces as one team to develop, define and deliver the project (Chism and Armstrong, 2010). The Integrative BPS works well on projects where the deliverables (cost, time and quality) are equally important and not fully defined during the early stages of the project. The objective of the parties in this BPS is to collaborate and avoid a dispute. This BPS utilises each party's best skills and the focus is on collectively achieving shared goals rather than meeting individual expectations. Success is measured by the degree to which common goals are achieved (Chism and Armstrong, 2010).

A cost-reimbursable contract allows for the contractor to be paid for actual expenditure plus a set fee. Actual costs for wages, salaries, materials, plant and equipment is reimbursed at market related rates and additional fees for profit, overheads, finance charges, insurances, supervision, bonds, etc. are then added (Watermeyer, 2010).

A target-cost contract is “a cost reimbursement contract in which a preliminary target cost is estimated to control productivity and on completion of the work, the difference between the target cost and the actual cost is apportioned between the client and the contractor on an agreed basis” (Watermeyer, 2010). According to him this allows for the financial risk to be shared between the client and the contractor in an agreed proportion and the following needs to be agreed in order for a target-cost contract to be established:

- the target;
- how to pay the contractor for work done;
- how to adjust the target to compensate the contractor for changes in the scope;
- timing of the works, the failure by the employer to act timeously in accordance with the provisions of the contract, encountering physical conditions which are considered unlikely to have been foreseen, price inflation, etc.;
- how to incentivise the contractor to propose changes to the scope that result in financial savings; and
- how to share any savings or overruns.

Traditionally in building procurement services, risk was allocated to the party best suited to manage the risk and predict possible outcomes and assign liability when changes and alterations occur (Jefferies *et al.*, 2014). As a result, this often led to disputes.

Alliancing, Partnering and Integrated project delivery are the three main methodologies part of the Integrative BPS. These three methodologies are further discussed in the next sections.

2.3.2.3.1 Alliancing

The need to improve quality, productivity and performance on projects were identified in Australia in the early 90's and in particular the industry realised that an integrated and seamless supply chain was required to ensure that value-for-money was delivered on projects and to encourage innovation (Cox and Ireland, 2002). The industry agreed that the way to achieve this was through the development of a collaborative relationships e.g. alliancing (Black *et al.*, 2000).

In order to achieve the intentions of the alliance agreement it is important that parties adopt a new approach and break away from the traditional “adversarial’ approach in order to promote a cooperative environment, to enhance communication and to create value throughout the supply chain (Holt *et al.*, 2000).

Alliancing is defined as “an agreement between two or more parties who undertake to work cooperatively, on shared risk and reward basis, for the purpose of achieving agreed outcomes based on principles of good faith and trust and an open book approach (Kwok and Hampson, 1996). Alliancing was first encountered in the USA in the Portland Division of the US Army Corps of Engineers and soon gained popularity in other countries such as the UK where it became part of the building guidelines and legislation (Jefferies *et al.*, 2014). Alliancing makes use of the principles of risk sharing to improve relationships and reduce the risk of litigation and over expenditure due to better control. Each party to the agreement provides their services on a nett-cost basis and at the end of the project the parties share in the profits or losses on an agreed basis (Jefferies *et al.*, 2014). Since 2012 the use of Alliancing as a BPS in Australia has increased in popularity.

Relationship-based procurement is defined as “Relationship contracting embraces and underpins various approaches, such as partnering, alliancing, joint ventures and other collaborative working arrangements and better risk sharing mechanisms. Relationship-based contracts are usually long-term, develop and change over time and involve substantial relations between the parties” (Walker and Rowlinson, 2007).

The relationship development process and the maintenance of this process can be categorised into three phases namely: Assessment phase, Commitment phase and the Enduring phase (Davis and Love, 2011). The Author claims that the Assessment phase is as important as the selection of an appropriate partner and strategically positioning an organisation in an alliance is a very challenging exercise (Donaldson and O’Toole, 2007). Often it is a request from clients that an alliance be formed between parties and organisations. Parties often agree to be part of an alliance without considering the implications of the decision. Organisations need to be aware of the following three factors when considering an integrative/ collaborative relationship: the intra-organisational context and its effect on initiating behaviour in the relationship; the development of intra-organizational frameworks that encourage cooperative behaviour with the firms involved in the relationship and the development of a formal institution providing support to further cooperation (Boddy *et al.*, 2000).

It is necessary for a party to recognise a specific need and to realise that they have the ability to address that need and this leads to potential partners considering their organisational alignment and the strategic fit between them (Johnson and Scholes, 1999). Organisations should consider determining goals and objectives at an organisational level to tie into the

Alliance BPS and they must be able to analyse themselves to establish if they relate well to each other (Håkansson and Johansson, 1986). At this stage of the relationship the partners may limit exchanges to minimise commitment (Ford, 2012). This can only be solved by improving communication and increased trust between the parties. Organisations can consider various alternative partners as a risk reduction strategy and trust starts to develop as they get to know each other's cultures better (Wong *et al.*, 2008). As trust with certain organisations develops quicker, organisations might decide to exclude some parties in the agreement due to failure to believe that sustainability is the intention of the relationship (Boddy *et al.*, 2000). During this phase the parties are partially committed and trust is still in the development phase. As both parties invest more in the relationship trust will build between the parties (Davis and Love, 2011).

Davis and Love (2011) also states that the Commitment phase follows on from the Assessment phase and is very intensive. Parties exchange information, establish common goals and negotiate needs, inputs and priorities (Dwyer *et al.*, 1987). Davis and Love (2011) also defines mutuality as a measure of how much a party is willing to sacrifice its own goal to the benefit and success of another party's objectives. During this phase trust is not the primary concern as the focus is on commitment between the two parties. For this, serious interest is required from both parties and common obligations need to be considered by both parties. If trust and social bonding is not in place in the relationship then this could lead to failure of the business relationship (Wong *et al.*, 2008). Sound technical knowledge and social bond might overcome the challenges of organisational differences between parties. Negotiations between parties become more intense as the relationship progresses (Boddy *et al.*, 2000) and risks are reconsidered as the need to work together is realised by all parties (Davis and Love, 2011). The Authors also believe that as the relationship develops, unintentional behaviours might become evident as a result of parties getting to know each other and becoming more comfortable with each other. Parties will still make comparisons to established benchmarks to what their input and performance should be, but this will become less evident if parties perform as per the requirement (Wilson, 1995). This phase is earmarked by parties focussing more on the long-term objectives of the alliance or partnership, agreements related to resources to be established, reduced duplication and process improvements and open and honest risk sharing between parties (Thompson and Sanders, 1998).

According to Davis and Love (2011) the Commitment phase is followed by the Enduring phase. This phase includes more clarity on the scope of work and results in parties becoming more aware of exactly what their required roles and responsibilities are as a more emergent

culture develops between parties (Håkansson and Johansson, 1986). The teams from various parties become one and individual organisational lines disappear (Thompson and Sanders, 1998). Informal rules guide governance within the team adaptations with regards to cost, assets and resources to ensure common goals bind the team together (Davis and Love, 2011). A successful Enduring phase will include a performance measuring system, cooperative relationships and cultures that fit the project and processes (Thompson and Sanders, 1998). He goes on to state that the relationship is one of implicit trust and shared risk.

2.3.2.3.2 Partnering

Partnering was first implemented by the US Army Corps of Engineers in 1988 when they arranged voluntary workshops to minimize construction disputes (Børve *et al.*, 2017). Project partnering is also a relationship-based procurement method based on collaboration and coordination (Lloyd-Walker and Walker, 2015). Project partnering is defined by the participant, objectives, knowledge, skills, tools and techniques applied to achieve the objectives (Børve *et al.*, 2017). They defined Project Partnering as “a relationship strategy whereby a project owner integrates contractors and other major contributors into the project. Through commitment to mutual project objectives, collaborative problem solving and a joint governance structure, partners pursue collaborative relationships, trust and improved performance.”

Project partnering establishes a long-term, mutually beneficial relationship between buyer and seller that is based not only on pricing, but on reciprocal commitment and loyalty (Dunn and Thomas, 1994). The Authors also state that for a successful partnering relationship, it is important that both parties provide input into the partnering arrangement to the benefit of all parties. Should one of the parties not have the required skills, resources or expertise the element could be provided by a third party.

Partnering allows for a partnering agreement in conjunction with a traditional contract agreement to encourage the project team to identify and mitigate risks before they affect the project. One problem with partnering is the client see their role as “gatekeepers” and contractors still focusses heavily on the contract and possible penalties (Walker and Rowlinson, 2007).

Successful partnering can enhance the probability of a successful project delivery within budget, time and the required quality parameters leading to better value-for-money (Morledge and Smith, 2013). Partnering also significantly reduces the chances of contractual disputes as problems are addressed jointly as they arise. In order for partnering to be successful it is a

requirement that a trusting relationship is formed between parties and that the relationships keeps on developing as requirements become more apparent. For relationships to be maintained there must be a cultural fit between the parties to align cultural values and objectives to ensure project success. There must be mutual trust between the parties and team building from both parties is required to promote collaboration between the parties. Project objectives should be mutually agreed in conjunction with the required input by each party. Ongoing communication between the parties to reinforce the contract during the execution of the project is required to ensure that the relationships develop along with the requirements of the project.

Partnering can be categorised into “project partnering” and “strategic partnering” (Rowlinson and McDermott, 2005). The Authors define project partnering as “a partnering that is undertaken on a single project and the relationship end after the conclusion of the project.” Strategic partnering allows for two or more firms to partner on a long-term basis to complete more than one project. The scale of the benefits keeps on increasing with each new project as lessons learnt are used to improve benefits and allows for continuous improvement.

The parties normally associated with partnering includes: the owner/ client; design team; main contractor; specialist contractors; sub contractors and suppliers. The benefits of partnering for the client include reduced chance of litigation due to open communication and dispute resolution strategies, lower chance of exceeding budgets due to better time and cost control and more efficient resolution of problems due to open communication. The benefits to main contractors are normally: reduced chance of litigation due to open communication and dispute resolution strategies; better time and cost control on the project and better opportunity for profitability due to win-win attitude. The professional team also benefits from the lower risk of litigation and by having a more important role in the decision-making as a team member during the design stage (Rowlinson and McDermott, 2005).

2.3.2.3.3 Integrated Project Delivery

The aim of Integrated Project Delivery (IPD) methodology is to involve the owner, the design team and the contractor through the project life cycle by integrating the activities of all parties to collaboratively arrive at a value-delivery outcome (Walker, 2018). This arrangement allows for combining all parties’ knowledge, experience and decision-making capabilities to the benefit of the project. IPD was recently used very successfully on various major project in the UK e.g. the British Airports Heathrow Terminal Five, London Olympic Games, London’s Crossrail and the Thames Tideway (Davies *et al.*, 2016) and is getting traction in the USA.

IPD considers “the project” to be a vessel to achieve an end goal by creating value (Walker, 2018). Clients sometimes get the project deliverables what they requested, but this might not necessarily be what they need. In the IPD methodology the client is assisted by the project delivery team to explore additional options they may have thought to be not applicable. IPD ensures that the purpose of the project is made clear, the required outputs are known to all, the applicable standards are used and the appropriate tools and techniques are used to achieve those outcomes in a way that minimises waste, optimise value and deliver on the requirements. For IPD to be successful open social human interaction is required to direct all parties towards a common goal.

One of the tools and techniques available that links to IPD is Lean Construction approaches. Lean Construction approaches addresses the “human energy waste” aspect of efficiency (Walker, 2018). IPD also links to the Building Information Modelling methodology by allowing for visualisation of simulations at an early stage in the project to assist with decision making processes.

2.3.2.4 Partnership Building Procurement Strategy

The Partnership BPS allows for the design, construction and operation of the asset to be completed by one of the contracting parties for the benefit and use by another party. Financing is normally arranged by the delivering party who remains responsible for the quality of the infrastructure over the life-cycle of the project. Normally the risk of financing, project delivery, operation and maintenance is transferred to the delivering party that could be a private sector entity and they are responsible for the integration of all provided services (Chism and Armstrong, 2010). The contracting period normally varies between 20 and 100 years and the delivering party is incentivised based on agreed rates and penalised for poor performance.

One of the best-known forms for Partnerships is Public Private Partnerships (PPPs). The main purpose of a PPP is to involve parties that has the necessary expertise and competencies and are involved in the public and private sector to work together in a partnership arrangement to provide public services (Broadbent and Laughlin, 2003). The Authors also state that the theory of a PPP is to allow for more control between the public sector and the private sector for the delivery of public services than a traditionally procured project.

The aim of a PPP is to benefit the public sector due to risk being transferred to the private sector (Demirag *et al.*, 2012). The Authors also state that risks and rewards are also shared

on some projects financed by the private sector. They argue that the private sector should be better equipped to mitigate the risks as they will perform better due diligence as it is their capital that is at risk and therefore only the most viable projects will proceed. Risk is often transferred to subcontractors by means of a Special Purpose Vehicle (SPV) for financiers to avoid risk. A SPV is normally a shell company that enters into a “design-build” agreement with the constructing contractor and also enters into agreement with the facilities management providers to operate the facility. Subcontractors mitigate these risks by hedging or insurance as they normally do not have the expertise to successfully manage these risks. Additional risk borne by the private sector will translate to additional costs, however little research is available that investigated the PPP from an economic perspective compared other procurement strategies.

Passing risk to subcontractors results in careful consideration of the choice of consortium members to ensure that the members of the consortium are capable of delivering the project (Demirag *et al.*, 2012). Financiers are more likely to fund a project managed by a capable consortium with reliable members and a proven track record on similar projects. Another method of mitigating these risks is for financiers to rely on expert third party risk advisors to peruse the technical, insurance, professional indemnity, financial and legal risks of the PPP. Lastly, financiers implement monitoring procedures during the construction and operational phase to ensure that the risks allocated to the contractors are retained and not transferred back to the financiers.

Risks associated with a PPP include financing risks, demand/ usage risks and project risks (Demirag *et al.*, 2012). Financing risks include investing equity into the SPV by various financiers/ equity providers on a loan basis and a return-on-investment basis, including interest rate and inflation risks. Demand/ usage risks relate to market conditions and the actual demand of the project by the public users. Projects risks include overspending of available budgets, the value of the guarantees provided by the construction contractors, cashflows, unacceptable quality and late completion of projects.

Due to the financial climate and the collapse of capital markets the viability of PPPs in Australia have increasingly fall out of favour (Regan *et al.*, 2010). According to them the funding mechanisms used previously are not suitable for use in the current economic climate and therefore alternative procurement and finance arrangements are required e.g. alliancing.

2.3.3 Alternative Appointment Mechanisms

2.3.3.1 Framework Contracts

A Framework Contract is defined as “an agreement between an organisation and one or more contractors, the purpose of which is to establish the terms governing contracts to be awarded during a given period, in particular with regard to price and, where appropriate, the quantity envisaged” (Watermeyer, 2010). This BPS allows client to procure work on an as-and-when-required basis without committing to any specific quantum of work.

According to Watermeyer (2010) Framework Contracts follows a competitive selection process and the following must be included:

- the basic terms of the contract;
- the term of the contract (typically three to four years);
- the broad scope of the work, which may form the basis of a package order;
- the basis by which contractors are to be remunerated for instructed work; and
- the way competition between framework contractors may be reopened, where more than one contractor is admitted to a Framework Contract.

Typically, at the start of many programmes only the available budget, a few short-term priorities and a breakdown of priority projects for the first year of the programme is known. The scoping stage, design stage and construction stage of all these projects are repeated over the life cycle of the programme to allow construction on a continuous basis. For this reason, the BPS utilised must be able to accommodate a poorly defined scope of work after the strategic objectives of the programme are set. Framework Contracts provide this flexibility to allow teams to works continuously over the duration of the programme on the projects (Watermeyer, 2010).

2.3.4 What factors are required to implement an alternative Building Procurement Strategy?

In order to ensure the best possible BPS is used key principles can be applied to most procurement decisions (Stanley, 2011). These include: that thorough research is required of the purchasing requirement and/ or alternatives; open communication is required with current or potential suppliers; purchasing decisions must be based on a strong relationship of trust; developing a long-term and healthy relationship with a reputable supplier or suppliers and paying the supplier a fair profit margin.

Public procurement is influenced by politicians and requires transparency. When projects turn out unsatisfactorily, it can be claimed that all bidders were evaluated based on a thorough and transparent procurement process (Stanley, 2011). This is a potential barrier to overcome as politicians are reluctant to implement an improved BPS. Competitive tendering should be replaced with an improved BPS based on a long-term mutually beneficial relationship between the client and the trusted reputable suppliers.

Certain important key indicators are required to ensure a successful alliance (Che Ibrahim *et al.*, 2013). These include team leadership where the shared intangible behavioural skills among a group of individuals are used to achieve a common goal. A single team focus on project objectives and Key Result Areas (KRAs) are required to ensure all levels of management have the same focus on the project objectives and established KRAs. Trust and respect between individuals are required to effect complete belief and confidence in another person. Commitment from the project alliance board assists with a high level of engagement and support from alliance leadership towards developing a high-performing team. The creation of single and co-located alliance team at a central office allows for the owner and non-owner participant (NOP) team members to work in a close environment. Collective understanding ensures that one collective “voice” from the team contributes to an effort in order to achieve an outcome. Free flow communication allows for the movement of information between project teams by means of direct and indirect interactions.

In another study they identified critical success factors that influence the success of alliancing (Jefferies *et al.*, 2014). The attitudes of alliance team members need to be “Best-for-Project” to all aspects of the project. The formation of a single entity removes all attachments to the individual organisations e.g. company logo and titles. Adopting a single alliance name and uniform also contribute to the formation of a team environment. Pre-project and early planning workshops between the alliance partners before the client-focussed workshops, help to build good working relationships. Continuous facilitation early in the project establishes a strong alliance team and involvement at various times throughout the project keeps the team motivated. Careful team selection and project specific team alignment maximises the skills and performance required for achieving high standards in key performance areas. Selecting the right project personnel is important as personnel need to be team players, open minded and creative thinkers. Staging of projects and stretch targets are achieved by breaking the project into stages to allow reflection on the results to date and to re-establish future stretch targets. Project-specific Key Performance Indicators (KPIs) ensure that the alliance is driven

in the right direction to motivate success in areas critical to the project requirements. Dedicated clients and commitment by all stakeholders show commitment to the project through participation at a senior level. Benchmarking and continuous performance monitoring is achieved by the implementation of benchmarking and performance monitoring to gauge success and areas for improvement. Early commercial development of a framework at an early project stage assists the team to form skills necessary to achieve high performance in the KPI areas. On-going workshops (including site personnel) must be conducted throughout the life of the project to introduce site personnel to the project alliance concept and to assist with identifying the importance of their role. Web-based management programs allow the individual partners to manage resources and share knowledge. Participants with proven past working relationships must be selected to be part of the alliance partners to ensure good working relationships. All levels of management must be aware of the project aim, objectives and charter. Open book nature between alliance participants causes an open and trusting relationship between one another.

Factors influencing the selection of a BPS need to be considered when investigating what factors hinder the implementation of an alternative BPS. The following factors influence the stakeholders when deciding what BPS to select (Chism and Armstrong, 2010):

Cost: Costs prove to be the greatest risk for project owners in deciding if a large capital project is to proceed. The project needs to be financially viable and an acceptable return on investment is required for the project to proceed.

Schedule: The time required to complete the project may sometimes be more important than the capital outlay due to market conditions for commercial and consumer products. The sooner the project is operational, the sooner the owner can receive a return on investment. Project delays caused by poor planning and bad design also normally result in claims resulting in a financial expense for the project owner.

Quality: Quality refers to the required standard of the features, materials, equipment, workmanship, safety requirements and life-cycle considerations by the project delivery team. Delivering a better-quality product than what is required normally results in additional and unnecessary associated expenses for the owner.

Project scope, size and complexity: If the scope, size and complexity of a project is unclear during the early stages of a project, designers and contractors have very little incentive to offer a fixed price for their services. If there is a strong possibility that the owner might significantly

change the scope a collaborative or integrative approach might prove to be a more favourable solution. The size of a project might also influence an owner's decision to select a BPS, as large projects may require more control and better management, which some of the strategies incorporate better than others. As complex projects require interaction between various design consultants and contractors, selecting a particular BPS can have considerable advantages over another.

Stability of owner's requirements: This refers to the degree to which project requirements might change during the design stage, the construction stage and the operational stage. If there is a high probability that the owner's requirements might substantially change due to stakeholder input, regulatory requirements, market conditions and economic consideration the TBPS and Partnership BPS might not be ideal. The TBPS and Partnership BPS require that the owner's requirements remain constant during the project lifecycle.

Allocation of risk: In a construction project, risk needs to be allocated to the party that is best suited to manage or mitigate this risk. The owner's appetite for risks will influence the BPS as some strategies allow risk to be transferred from the owner to the project delivery team.

Project management resources: The availability of competent and capable resources within the owner's establishment will determine if a more involved approach is selected or if expert resources need to be contracted in. Long-term relationships with the owner's internal staff and external experts may lead to greater trust between parties and may lead to the selection of more trust-based strategies e.g. the Collaborative BPS or the Integrative BPS.

Number of contracts/ interface risk: Owners with limited internal project management resources might choose to limit the number of contracts due to an inability to sufficiently manage the contracts. For smaller contracts the cost of managing the project internally might be exorbitant. For many contracts there might be an overlap of responsibilities if the contracts are related leading to unnecessary costs.

Checks and balances: In the TBPS many checks and balances exist between the owner and the design team as the design team is responsible to monitor performance of the contractor. In the Partnership BPS the financier takes over this responsibility and their focus is normally more on the contractor's ability to fulfil his obligations during construction. In some Collaborative BPSs these checks and balances may not always be in place as the designer and the contractor form one entity.

Project Owner’s culture and internal capabilities: Project owners with sufficient internal competencies and resources who has a more “hands-on” approach are more likely to share risk in a transparent and open manner and will probably be more comfortable with the collaborative and integrative approaches. Owners rolling out similar type projects on an annual basis will probably be more prone to use the Collaborative BPS as they are able to predict their risk exposure very well. In contrast to this, owners who roll out one or two major projects every ten years might be more risk averse and might show a preference for the Partnership BPS in order to transfer the risk to a private partner.

Understanding the project: Repeat projects that are not very complex are well-suited to the TBPS and the Collaborative BPS as the price can be fixed and cost caps can be negotiated. For very complex projects the Integrative BPS might be preferred to the Collaborative BPS as the design process is much longer, more interaction between specialists is required, higher quality is required and the construction duration is normally longer.

If these criteria are not present in the projects the transition from the TBPS to an alternative BPS will not be possible.

2.4 SUMMARY OF CHAPTER

Literature indicates the historical background related to the traditional approach to the delivery of public infrastructure in South Africa where tender awards are mostly based on cost and preference criteria. Public-sector realities include a lack of in-house technical capabilities and a decrease in engineers and technicians employed in the public sector. Literature also indicates that in some countries, infrastructure development is not focussed enough with many countries not spending all their annual infrastructure budgets.

Literature indicates that a cost-based tendering system in the UK was abandoned as a result of poor project delivery and was replaced by a more quality and performance orientated tender system.

The four main categories of BPSs are: Traditional; Collaborative; Integrative and Partnerships. Each of these strategies are discussed with the focus being on the Integrative BPS as there seems to be an international trend where clients are moving more towards an Integrative BPS. Another mechanism of appointment namely Framework Contracts is discussed and entails the appointment of service providers on an as-and-when- required basis without the client having to commit to a quantum of work.

Theoretical factors that could hinder the implementation of an BPS are discussed and include: costs; schedule; quality; project scope, size and complexity; stability of owner's requirements; allocation of risk; project management resources; number of contracts; checks and balances; project owner's culture and his understanding of the project.

3 RESEARCH METHODOLOGY

3.1 INTRODUCTION

The previous chapter discussed the available project delivery strategies within the BES and this chapter will focus on the research methodology followed in this report. The research question is revisited and is followed by a discussion on why a qualitative research approach was adopted. The unit of analysis, the data collection method and the data analysis method are discussed. Finally, the ethical considerations included in this report are considered.

3.2 RESEARCH DESIGN

The methodology is concerned with how a particular piece of research should be undertaken and can be understood as the critical study of research methods and their use. “Research design follows a procedure of work which determines the approach, methods and strategies to be adopted during the study” (Gittins, 1997). Research also needs to address the philosophical aspects of the research as it will assist with the collection, analysis and interpretation of data and drawing conclusions (strategy), evaluate different research methods and assist to select the most appropriate method and ensure that the research approach and techniques are suitable (Easterby-Smith et al., 2002).

The research design is informed by the research philosophy, epistemology, ontology, human nature and axiology. Depending on the nature of the study and the research design, certain research approaches are more applicable for consideration than others. The different research approaches applicable to this study and the most suitable approach is identified. The research design is defined as “organising the research activity, including the collection of data, in ways that are most likely to achieve the research aims” (Easterby-Smith et al., 2002).

The “nested approach” represents the research methodology as a hierarchical model where the research techniques are being directed by the research approach, which in turn is being directed by the research philosophy (Kagioglou, 1998) – refer to Figure 5 below. He claims that the outer rings guide and energises the inner rings and ensures that the chosen research philosophy, approach and techniques are aligned with each other.

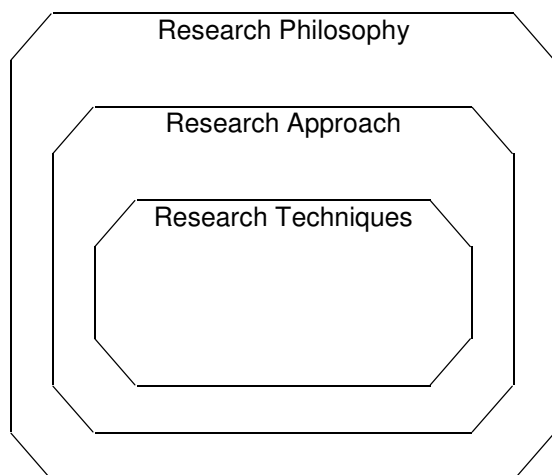


Figure 5: Nested Approach (Kagioglou, 1998)

3.2.1 Research Philosophy

A Research Philosophy is required to develop a research design and failure to consider this can negatively affect the quality of the research (Easterby-Smith *et al.*, 2002). The reasons he gives are that: it will help clarify the research design; it will assist the researcher to identify which designs are more applicable to the research topic and the new knowledge about the research philosophy obtained by the researcher, will assist him to create new designs. The following assumptions are to be considered within the philosophy:

3.2.1.1 Epistemology

Epistemology by definition according to the Oxford dictionary refers to theory of knowledge, especially with regards to its methods, validity and scope, and the distinction between justified belief and opinion (Hornby, 1974). The two main traditions of philosophy are “Positivism” and “Interpretivism or Social Constructionism” at each end of the spectrum (Easterby-Smith *et al.*, 2002). According to the Authors Positivists argue that properties of the world must be measured objectively and not subjectively through sensation, reflection and intuition. They seek to predict events in the social world by searching for regularities and causal relationships between constituent elements.

Interpretivism refers to the fact that reality is determined by people rather than the physical attributes of the object (Easterby-Smith *et al.*, 2002). They further state that the social world is understood from the point of view of the individuals who are involved in the activities to be

investigated. They compare the contrasting implications between Positivism and Interpretivism and the results are presented in Table 3.

	Positivism	Interpretivism (Social Constructionism)
The observer	Must be independent	Is part of what is being observed
Human interest	Should be irrelevant	Are the main drivers of the science
Explanations	Must demonstrate causality	Aim to increase general understanding of the situation
Research progress through	Hypotheses and deduction	Gathering rich data from which ideas are induced
Concepts	Need to be operationalised so that they can be measured	Should incorporate stakeholder perspectives
Units of analysis	Should be reduced to the simplest term	May include the complexity of 'whole situation'
Generalisation through	Statistical probability	Theoretical abstraction
Sampling requires	Large numbers selected randomly	Small numbers of cases chosen for specific reasons

Table 3: Comparison of contrasting implications between Positivism and Interpretivism (Easterby-Smith *et al.*, 2002)

This investigation requires that the researcher is part of the environment and has interaction with the environment to recognise different view-points of people and interpret them (Kulatunga *et al.*, 2006). For this reason, the researcher cannot be separate from the environment as per the case of a Positivist and therefore this study will be classified as having an Interpretivism outlook as the point of view of each individual involved in the activities to be investigated will contribute to understanding the problem statement.

3.2.1.2 Ontology

Ontology refers to the nature of being or a set of concepts and categories or a set of concepts and categories in a subject area or domain that shows their properties and the relations between them (Hornby, 1974). Realism assumes that the external world has a predetermined nature and structure (Johnson and Duberley, 2000) whereas Idealism assumes that external world does not have a pre-determined nature or structure (Gummesson, 2000).

Nomothetic methodologies base research on protocols and techniques in contradiction to Ideographic methodologies that analyse subject matters by getting involved in everyday activities (Gill and Johnson, 2002). As a result, this study leans more towards the Ideographic/ Idealism stance as the researcher will analyse subject matters by being part of the environment.

3.2.1.3 Human Nature

Human Nature refers to the relationship between man and society. Voluntarism refers to each individual that participates in this study will also be completely autonomous and free willed when responding to the problem statement. In contrast to Voluntarism, Determinism regards the individual as being completely determined by the environment. This study will lean more towards Voluntarism as the respondents will be able to make their own decisions and give their own opinions on the subject matter.

3.2.1.4 Axiology

Axiology relates to the nature and types of value such as ethics and religion (Hornby, 1974). The Subjectivist approach to social science allows for value-biased perspective that allows research to be value-laden and completely subjective (Healy and Perry, 2000) and determined by human beliefs. The Objectivist approach suggest that the researcher should retain a value free view (Evered, 1978) and is determined by objective criteria.

This research leans more towards the value-laden axiology as the nature of the research is exploratory and is dependent on people expressing different views.

3.2.2 Revisiting the Research Question to determine the Research Approach

The research methodology selected can be guided by the research question and in this report the research question is as follows:

- Why does the public sector not consider the implementation of an alternative BPS for civil engineering projects in South Africa?

From Section 3.2.1 (Research Philosophy) it was concluded that this study will follow an Interpretivist methodology as the epistemology leaned more towards an Interpretivism outlook, the ontology leaned more towards Ideographic/ Idealism stance and the axiology leans more towards a value-laden stance. Therefore the main methodologies applicable to the Interpretivism outlook need to be investigated further. This research leans more towards the value-laden axiology as the nature of the research is voluntary and exploratory and is dependent on people expressing different views.

3.2.3 Research Methods

3.2.3.1 Action Research

Action Research is variant of the Quasi-experiment methodology. The quasi-experiment does not take place in a laboratory and focusses on real-life, natural occurring events where subjects are not randomly allocated to experimental and control groups (Gill and Johnson, 2002). The Authors state that control and experimental groups are selected based on whether they have experienced the research phenomenon. Furthermore, Action Research is distinguished from the Quasi-experiment by the researcher's approach that involves a planned intervention into a natural setting such as an organisation. The intervention results in certain actions and responses by the organisation that are monitored, and results are evaluated with the aim to determine if the intervention resulted in the expected consequences. The researcher therefore tests his theory by monitoring the changes in the organisation as a result of the intervention. The researcher's interaction with the control group in order to effect change is a fundamental part of the research design. "Generally, the intervention may be perceived as analogous to the independent variables of the Quasi-experiment, with its consequences being treated as dependent variables whose change is monitored and evaluated" (Gill and Johnson, 2002).

As this research question relates more to a phenomenon experienced in the industry as a result of various practices implemented, the Action Research methodology is not the most appropriate methodology to use in this research. The researcher will not be able to introduce a planned intervention in a natural setting in order to test his theory.

3.2.3.2 Ethnography

The ethnographic approach allows researchers to make use of socially acquired and shared knowledge of participants to explain observed patterns of human activity (Gill and Johnson, 2002). The Authors also state that this approach is based on a naturalist mode of enquire e.g. participant observation with a predominantly inductivist framework.

The focus of Ethnography is the way in which people interact and collaborate in observable and regular ways. This is normally completed over long durations through intensive study where the researcher immerse himself in the organisation by participating with the members of the organisation in their activities. The purpose of the researcher is to attempt to be part of the culture of the organisation, but still remain objective to the research question. Observation

and semi-structured interviewing are normally the data collection methods used, rather than documentary and survey data. Extended participant observation is a central feature of most studies (Gill and Johnson, 2002). Ethnographers believe that in order to explain the actions of people within an organisation, it is vitally important to understand the culture of the organisational setting as it is from these beliefs, values and habits that their rational is explained.

Even though this study does investigate people's view of the research question, it does not investigate people's actions in an organisational setting over a long term. For this reason, ethnography is not considered to be the most appropriate methodology to collect data.

3.2.3.3 Case study

Yin (1994) describes a Case study as "an empirical inquiry that investigates a contemporary phenomenon within its real-life context, especially when the boundaries between the phenomenon and context are not clearly evident" (Yin, 1994). Furthermore "the Case study inquiry copes with a technically distinctive situation in which there will be more variables than data points and as a result the method will rely on multiple sources of evidence and development of prior theoretical propositions." Case Studies are "carried out in a way that it incorporates the views of 'actors' in the Case study under observation" (Zonabend, 1992).

Case Studies are open ended and suitable to build theory and generate hypothesis (Amaratunga *et al.*, 2002) and provides the opportunity of dealing with a full variety of evidence such as documents, interviews and observations (Yin, 2003).

The research process selected does not aim to influence or change the response or actions of the participants and does not intend to study the behavioural patterns of the participants. The aim of the study is to identify challenges to the implementation of an alternative BPS by the public sector for the civil engineering industry in South Africa by collecting data from the participants and not to study behavioural patterns or physiology of the participants. For this reason, the Case study approach is preferred over Action Research and Ethnography.

Other Authors also made use of the Case study approach together with an interviewing process to investigate and build their theory and to generate hypothesis. Examples are as follows:

- Identify critical success factors for alliance contracting (Jefferies *et al.*, 2014);

- Re-engineering the construction delivery process: The Museum of Tropical Queensland, Townsville – A Case study (Kennedy and Sidwell, 2001);
- Modelling knowledge integration process in early contractor involvement procurement at tender stage – a Western Australian Case study (Hastie *et al.*, 2017);
- Internet supporting the procurement process: lessons from four Case Studies (Bartezzaghi and Ronchi, 2003); and
- Procurement of construction facilities: a Case study of design management within a design and construct organisation (Smith *et al.*, 2004).

The Case study approach is more suitable to explore different views by different role players within the context of the research paradigm. The Case study provides the opportunity to investigate in depth the reasons why the public sector is not considering the implementation of an alternative BPS for civil engineering projects in South Africa.

According to Yin (2003) Case study research mostly favours “how” and “why” research questions whereas “what” questions are more suitable for exploratory type of research. The research question of this study deals with the “why” and therefore the Case study methodology is favoured.

The main reasons for selecting a Case study for this report can be summarised as follows:

- The study does not aim to influence the respondents, but only gather their views;
- The study does not aim to change the perceptions and actions of the respondents;
- The study does analyse modern-day events and trends;
- The study will be a focussed investigation into a selected small sample of respondents to allow an in-depth investigation of the phenomenon; and
- The study requires that actual views related to the research question be obtained in order to relate the hypothesis theory to the actual responses of the respondents.

3.2.3.3.1 Case study description

This single Case study consists of the investigation of one Local Municipality (the client) located in the Western Cape. Six interviews were conducted with representatives from the municipality that were in management positions and were directly involved with the procurement, implementation and monitoring of civil engineering contracts on behalf of the municipality. The most senior position held by any of the respondents of the client is the Director: Infrastructure Services. The Senior Manager: Water and Sanitation and Senior Manager: Roads, Stormwater, Transport and Traffic report directly to the Director:

Infrastructure Services. The Principal Technician: Water and Sanitation, the Manager: Water and Sanitation and the Manager: Waste Water Treatment report directly to the Senior Manager: Roads, Stormwater, Transport and Traffic. The Principal Technician: Roads, Stormwater, Transport and Traffic position was vacant at the time the interviews were conducted. Other individuals working for the client were all junior staff reporting to the respondents and were not directly involved with the procurement of professional engineering services or contractors. For this reason, interviews were not extended to include them.

The consultants that were interviewed are all from the same consulting engineering firm located in Cape Town and were recently involved on projects completed for the client. Four interviews were conducted with representatives of the consulting engineering firm and the most senior position was held by the former Regional Manager: Western Cape. Due to structural changes in the company the Regional Manager and the Director Advisory Group: Water no longer held their former positions, but were still in the employment of the company. The former Regional Manager is currently busy with a Transport Orientated Development project for the client, while the two Associate Directors Advisory Group: Transport and Planning completed roads infrastructure projects for the client in recent years. The former Director Advisory Group: Water also acted as a director on the upgrading of a Waste Water Treatment Works project for the client and worked closely on the project with three members of the client.

The interviews conducted with contractors were all from different civil engineering contracting companies that have completed civil engineering projects on behalf of the municipality in the past. Contractor A completed two waste water treatment projects, a water supply project and a bulk sewer project on behalf of the client and worked closely with two members of the client during the implementation of the projects. Contractor B completed a water treatment project in 2019 for the client and worked closely with two members of the client during the implementation of the project. Contractor B also completed various other civil engineering bulk water and sewer related projects for the client during the last 5 years. Contractor C is currently busy with completing a bulk water and sewer related project for the client and have also completed other civil engineering projects for the client in recent years. Contractor D has tendered on various tenders for the municipality during the last 5 years, but were not recently successful in securing any contracts from the municipality. Contractor E recently completed a bulk sewer project for the client and also completed a materials recovery plant for the client. All the contractors that were interviewed were directly responsible for the pricing of tender

documents for civil engineering services for the municipality and therefore invitations for interviews were extended to them.

3.2.3.3.2 Procurement Procedure

The requirement for civil engineering projects is identified by the clients from existing master plans. Depending on the size of the project a request to procure professional services for the design work is completed. The Directorate: Infrastructure Services prepares a scope of work for the professional engineering services required whereafter the SCM department puts the professional engineering services out to tender to appoint the engineer. After the engineers have prepared a tender document (procurement section, schedule of quantity, specifications and drawings) a contractor is appointed for the construction work. Again, the SCM department puts the construction tender out to contractors and appoints a contractor on behalf of the municipality. The consultant does the contract administration on behalf of the municipality and ensures that the contractor completes the construction process in line with the tender specifications.

Depending on the complexity and requirements of a project the client either makes use of a framework/ roster system to award contracts or individual tenders are asked for professional engineering services and contracting services. The client uses an informal quotation system for services up to R 30 000 and a formal request for quotation for services over R 30 000 up to R 200 000. For project bigger than R 200 000 a formal tender process is followed. All tenders are evaluated by a Bid Specification Committee before going out on tender and the Bid Evaluation Committee evaluates the tenders received. The Bid Award Committee makes a final recommendation before the tender is awarded to the successful contractor. Different people from the municipality serve on the various committees, but the same individual cannot serve on the different committees involved in the same project.

Please refer to the organogram below in Figure 6 indicating the relationship between the client, the consultant and the contractor.

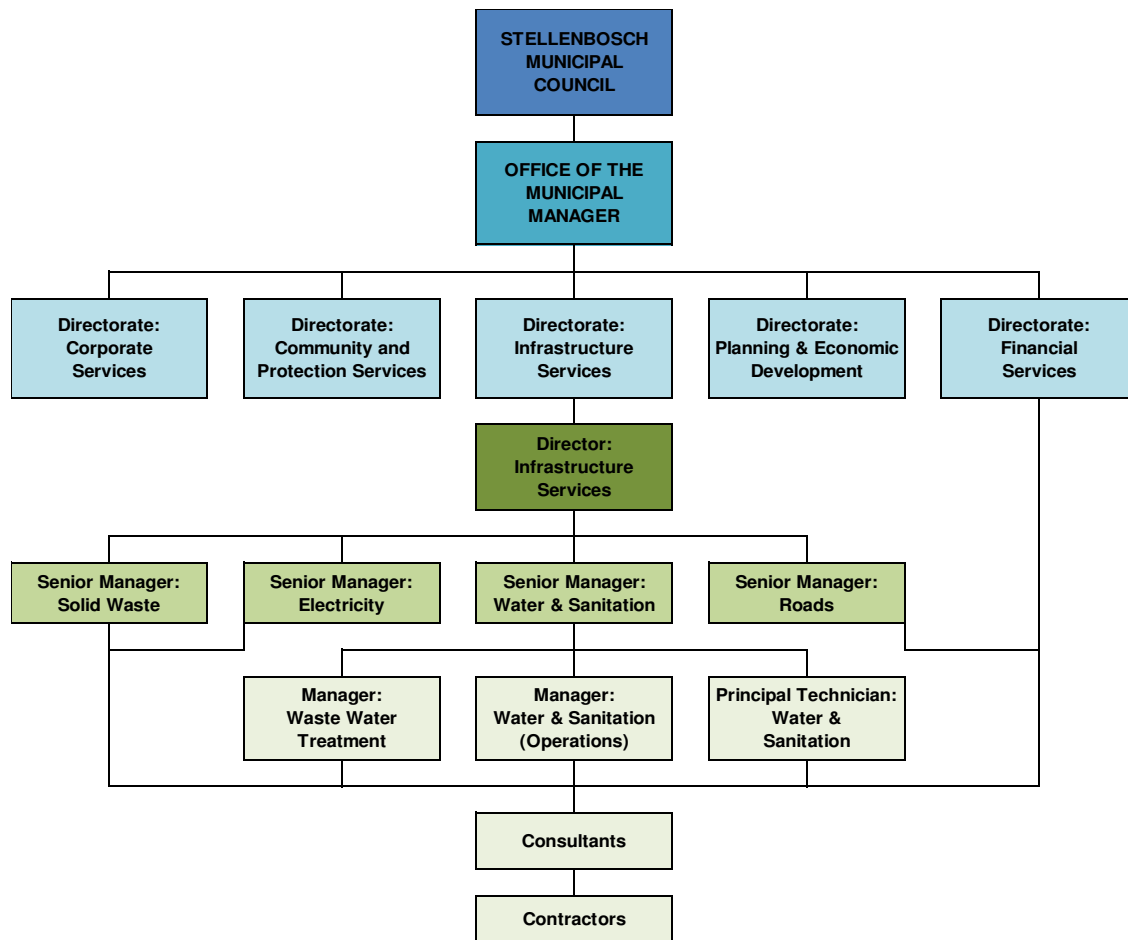


Figure 6: Organogram of Local Municipality

After the selection of the Research Approach the Case study design needs to be considered. The Case study will be a single Case study conducted on the Directorate: Infrastructure Services of a Local Municipality located in the Western Cape of South Africa.

3.3 UNIT OF ANALYSIS

The sampling population can be defined as all people or items (unit of analysis) with the characteristics one wishes to study (Wellington and Szczerbinski, 2007). The unit of analysis is Local Government, more specifically a Local Municipality, involved in the procurement and execution of civil engineering projects in the public sector in the Western Cape.

3.4 METHOD OF DATA COLLECTION

Interviews were scheduled with staff of the client and all staff was in the Directorate: Infrastructure Services. The Directorate: Infrastructure Services consists of a Director, four Senior Managers (Water and Waste Water, Roads, Solid Waste and Electrical) and various

managers and principal technicians reporting to the senior managers. Invitations for interviews were sent out to the director and all the senior managers, but only two senior managers accepted the invitation. Invitations were extended further to staff reporting directly to the senior managers and an additional three interviews were scheduled. All the respondents were directly involved in the execution of civil engineering construction projects.

Invitations to consultants from one civil engineering consultancy company that completed engineering services for the client in recent years were extended and four interviews with consultants were arranged.

Interviews with five civil engineering contractors that completed civil engineering construction projects on behalf of the client in recent years, were scheduled.

Interviews were conducted in person and were informal/ unstructured to allow issues to emerge from the respondent rather than being imposed by the structure of the interview. Questions were focussed, clear and encouraged open ended answers. Interviews were used to explore thinking, assumptions, emotions, attitudes and perceptions of the respondent related to the research question.

The interview structure was designed in four sections to address the research objectives to be achieved. Section 1 addressed background information and criticisms of the current BPS whereas Section 2 addressed the respondent's knowledge of the available alternatives and the preferred alternatives to the current BPS. Section 3 addressed the factors hindering the implementation of an alternative BPS and Section 4 addressed the route to transition from the current BPS to an alternative BPS. Refer to Appendix A for a copy of the research questions focussed on during the interview process.

3.5 DATA SAMPLING TECHNIQUE

Six main sampling techniques were identified to collect evidence namely: documents, archival records, interviews, direct observations, participant observation and physical artefacts (Yin, 2003). Sampling is the statistical process of selecting a subset (called a "sample") of a population of interests for purpose of making observations and statistical inferences about the population (Wellington and Szczerbinski, 2007). The reason for this is due to cost and time constraints it would be impossible to study the entire population.

Sampling techniques can be divided into two main categories namely: probability (random) sampling and non-probability sampling. Probability sampling is used where everyone in the

population has a chance of being selected in the sample and the chance can be accurately determined. Non-probability sampling is usually used when a part of the population has zero chance of being selected and the probability of the selection cannot be accurately calculated (Bhattacharjee, 2012). As the non-probability sampling is not random and subject to bias, the information cannot be generalised back to the population. Non-probability sampling was used in this study as the population was not randomly selected. The sampling technique used in this study is convenience sampling as “the sample is drawn from part of the population that is close to hand, readily available, or convenient” (Bhattacharjee, 2012). The sample was selected based on the Author’s familiarity with the population and the convenience of them being readily available. For this study it was decided that interviewing will be used as the main sampling technique as limited time is available to collect the data and complete the study.

The sampling frame refers to an accessible section of the target population from where a sample can be drawn (Wellington and Szczerbinski, 2007).

3.6 METHOD OF DATA ANALYSES

A Case study database was created to record Case study notes, identify trends from the interviews and narratives/ notes from the researcher to assist with identifying common threads of the interviews. The interviews were scheduled and arranged over a three-month period between May 2019 and July 2019.

The first step to analyse the data was to organise the data. All interviews were transcribed and the data was translated to ensure the anonymity of the respondents – refer to Appendix B for an example of a transcribed interview. The data was cleaned and labelled to provide structure to the data. Thematic analysis is a qualitative approach to analyse research data to better understand and represent the interviewee’s experiences and engage better with them (Denzin and Lincoln, 2011). Coding techniques were used to classify and categorise data into concepts to identify patterns in the data (Bhattacharjee, 2012).

The next step was to identify a framework that will assist in structuring the data, labelling the data and defining the data. A coding plan was developed where data was labelled in different patterns, ideas and theories. Concepts were used to organise and group key ideas.

The next step was to use the framework in a descriptive analysis. The responses were categorised in ranges and recurring themes were identified. The categories were grouped into causal relationships that can explain the phenomenon of interest (Bhattacharjee, 2012). The

last step in the data analysis was to do a second order analysis of the data. Recurring themes and patterns in the data were identified and respondent clusters with related themes were identified. The data was searched to find answers to the research question. Pattern matching was done to match the theory and the observed process variables.

Thematic analysis is a process of identification of themes that emerge from data pertaining to the phenomenon under study (Daly, 1997). This is used to identify common perceptions from different respondents and the data is summarized to abbreviate the data. A Framework for Analysis consists of a three-tier level of ideas where the themes are grouped together by connections between ideas that is pulled together by common themes (Attride-Stirling, 2001). Three of the lowest order Basic themes contribute to one middle order Organising theme and all the Organising themes together contributes to the Global theme. The Global theme is the main idea derived from the Organising themes. The following steps are required to achieve Thematic Analysis:

- Step 1 – Code the data;
- Step 2 – Identify themes;
- Step 3 – Construct the networks;
- Step 4 – Describe and explore the thematic networks;
- Step 5 – Summarise the thematic network; and
- Step 6 – Interpret themes.

The data analysis was performed from the summary table developed in Step 5 – refer to Appendix C for an extract of the summary table of the thematic network.

3.7 ETHICAL CONSIDERATIONS

Ethical clearance to conduct research was obtained in April 2019 - refer to the attached Appendix D for the ethics clearance approval. As part of the ethics clearance application the interview consent form and the proposed questions as part of the interview were submitted for approval. All interviews were recorded, but the anonymity of the respondents was ensured.

No ethical issues were identified as part of this research study. The research community is everyone in the civil engineering industry, specifically members of public governmental entities, members of the consulting engineering industry and members of the contracting industry.

The research was not sponsored and was conducted in a private capacity. The research was required to gain views of various stakeholders in the public sector to establish what alternatives could be considered in the South African BPS and raise awareness of the current detrimental situation of the civil engineering industry. Stakeholders should consider what alternatives are available to consider for implementation and what prevents these alternatives from being implemented.

Respondents' identities were protected by keeping the published content anonymous and using password protected files. The methodology used was to conduct personal interviews with various stakeholders in the civil engineering industry to gather views on the subject from different representatives.

No high or medium ethical risks could be identified, and this research was considered to be very low risk as the interviews will be limited to a maximum of 15 participants. No children younger than 18 or vulnerable communities were interviewed. The data was kept private and forms part of the data collection and analysis sections of this dissertation. No physical risks, psychological risks, social risks or economical risks were identified as part of this study.

The student is the first Author and the supervisor will be involved in reviewing the dissertation before submission for examination. If mistakes in the dissertation are discovered the ethics clearance committee will be contacted to advise on the way forward to rectify the matter. The dissertation was submitted to Turnitin to establish the degree of plagiarism content in the dissertation. The overall Turnitin score was 17 and the Turnitin report was submitted to the supervisor for consideration.

The consent form was discussed with the respondents and the process was explained how the information and data will be treated anonymously. Refer to Appendix E for a copy of a consent form.

Due to ethical considerations and to ensure anonymity the Directorate: Infrastructure Services of the municipality will be referred to as the client and the respondents of the client will be Client A, B, C, etc. The private sector role players were consultants mainly involved in the procurement of services from the Case study Local Municipality referred to as Consultant A, B, C, etc. The third party in the sample was contractors that mainly procure projects from Local Governmental authorities referred to as Contractor A, B, C, etc.

4 DATA PRESENTATION

4.1 INTRODUCTION

This chapter deals with the collection and presentation of data collected from the respondents. Data was collected from investigating a single Case study and is presented in four main sections pertaining to the South African BPS for the public sector in the civil engineering industry. Respondents consisted of the client, consulting engineers that recently were involved on projects for the client and contractors that recently completed or is currently busy with civil engineering projects for the client. From the thematic analysis completed main themes with sub-themes were identified.

4.2 TRADITIONAL BUILDING PROCUREMENT STRATEGY

4.2.1 Understanding of the Traditional Building Procurement Strategy

Eleven respondents confirmed that they understood the meaning of the term TBPS and how it should be applied. They confirmed that “... *this term refers to the identification of a project by a client that then puts out a scope of work to the market to procure professional engineering services whereafter a consultant is appointed to do a design and prepare a tender document. A contractor is then appointed by the client for the construction phase of the project and the professional team ensures that the construction is done according to tender specifications.*”

One of the respondents did add that “... *during the pre-MFMA era the Technical Directorate of the municipality had much more control over the tender process, whereas currently the tender process is much more regulated and controlled by the SCM Directorate of the municipality.*” This view was echoed by another respondent.

Three of the respondents initially stated that they had never heard of the term TBPS, however once it was explained, they confirmed that they understood the system but had never encountered the terminology. One of these respondents also indicated that his involvement in projects only started after the tender phase and that he is never involved in the procurement phase of the project.

Two of the respondents believed that the term referred to the procurement system when consultants did not have to tender for work and that consultants “... *were appointed based on the Guideline for Services and Processes for Estimating Fees for Persons Registered in terms of the Engineering Profession Act, 2000, (Act no. 46 of 2000)*” and “... *they could appoint the*

consultant that they deemed to be the best experienced to execute the project on their behalf and the contractors were always required to tender for the project.”

4.2.2 Problems experienced with the Traditional Building Procurement Strategy

Tenders based on the lowest price or having to provide a discount:

Nine respondents identified that awarding tenders solely base on price was a major problem with the TBPS. Reasons stated ranged from: *“this leads to a lack of training of junior staff and design shortcuts by consultants resulting in overspending during construction...”; “...that tender awards based on price and preference and not quality result in poor project delivery...”; “...this leads to consultants having to give excessive discounts on professional services and as a result use junior staff for site monitoring purposes in an attempt to save on costs.....this leads to more costs as the contractor takes advantage of the inexperience...”* Other respondents added that: *“...the best consultant could not always be appointed as the focus was on price and preference and not on quality during the tender award, resulting in bad project delivery and client dissatisfaction..”; “Awarding a tender based on price and preference is a risk to clients as this may lead to delays during construction and overspending...”* and *“...this can also lead to contractors going insolvent.”* Another respondent argued that *“...the award of tenders for professional services based on price and preference results in poor quality tender documents leading to inflated construction costs as contractors have to price their risk if insufficient details are included in the construction tender document.”* One of the respondents stated that: *“...there is a perception with clients that consultants give excessive discounts that leads to them not providing the necessary input into considering design alternatives and that consultants prepare excessive specifications to drive construction costs up to increase professional fees and that various clients do not have technical skills to put out good quality tender documentation for professional services. Excessive discounts by consultants also leads to poor project delivery and the roster system might be a more suitable solution to appoint consultants.”*

Duration of the procurement life cycle:

Six respondents identified that the duration of the procurement phase of the project takes too long to be effective. Reasons given ranged from : *“...on big and complex projectsas contractors need to be involved at an earlier stage to provide input into the design to save costs and time.”; “...it is difficult to make changes to the scope of work after tender has been awarded.”; “The appointment is only valid for a maximum period of three years.”; “Consultants*

also does not understand the impact of issuing addenda to a construction tender one day before tender closure.”; “... this causes consultants to rush the designs which in turn leads to poor quality tender documents and over expenditure as contractor have to price their risk if insufficient detailed is contained in the tender document.”

Lack of technical competencies/ skills:

Four respondents identified that competency by the client was an issue. The following statements reinforced this concern: *“.....the client has no technical capacity to provide the necessary input into the design process...”; “Clients also do not always have the technical expertise to put out good quality tenders for professional services.”; “The contractor’s CIDB registration also does not mean that he is competent and financially able to execute a contract satisfactorily.” and “The SCM directorates at municipalities are incompetent and award tenders based on price and preference and not technical abilities.”*

Other issues:

A number of additional factors identified were: *“ ...local labour requirements on construction tenders relates to ongoing quality problems experienced during the construction process.”; “Labour and political influence on projects during construction also leads to delays on projects resulting into overspending on projects and sometimes to the abandonment of projects.”; “The trust relationship between the client, the consultant and the contractor have also deteriorated recently..”; “...the MFMA and SCM over regulates tender process causing many tenders to be re-advertised or to be cancelled.”; “....political influence during the project life cycle causes delays.” and “...the focus of the tender award process is on upliftment and it is not results orientated.”*

The respondents stated that the TBPS can only be applied under certain conditions. The following conditions were stated: *“Only if good fees are paid by the client and discounts are not too high”; “...only suitable for uncomplicated projects, when good fees are paid to consultants, when discounts are not excessive and the emphasis during the tender award is on quality and not on price”.*

4.2.3 The impact of the Traditional Building Procurement Strategy on Project Delivery

Twelve of the respondents agreed that the TBPS was not beneficial to project delivery. This was reinforced by the following comments: *“When projects are complicated and time is of the essence, then an alternative strategy e.g. D&B might be a more suitable strategy to follow.”;*

“Only if good fees are paid by the client and discounts are not too high it allows training of junior staff and innovation on projects.”; “... when clients (and consultants) do not define the scope of work for a project very well it usually leads to delays on the projects resulting in overspending on the projects.”; “...due to consultants having to tender too low to ensure the procurement of professional services it leads to the utilisation of junior inexperienced staff for site monitoring purposes in an attempt to save costs. This in turn leads to contractors taking advantage of the situation resulting in cost overruns on projects.”; “... the roster system provides a better rotational system spreading the work better under consultants.”; “...due to the lowest bidder usually being successful, the bidder with the best experience usually is not successful in the tender process which leads to a lack of quality during project delivery.”; “...due to the current tender processes being more focussed on upliftment of previously disadvantaged individuals and job creation than on quality in project delivery, the result is that the best experienced tenderer does not necessarily get to execute the project. This in conjunction with the SCM Directorate controlling the tender process, leads to a lack of quality in project delivery and client dissatisfaction.”; “...due to time constraints on projects consultants make mistakes that lead to delays during construction resulting in overspending.”; “...consultants are tendering too low and as a result they attempt to save costs by rushing the design process and they do not consider all viable design alternatives. In an attempt to be able to provide better input during project execution, the client is building in-house project management and technical expertise to assist with the roll-out of projects and provide input during the design.”; “... clients cannot select the best suited consultant to execute the projects due to the current tender system focussing more on price and preference than on the quality attributes of the consultant/ contractor.”; “...the requirement for consultants having to tender for professional services results in the compilation of a poor quality construction tender documents. This leads to contractors having to price their risk into the construction tender document leading to additional costs and client dissatisfaction.”; “...the TBPS is confrontational as the client pays both the consultant and the contractor. Due to the emphasis during tender award being on price and not quality, it leads to confrontation between the consultant and the contractor resulting in poor project delivery.” and “...some clients are frustrated by all the tender regulations and the interpretation of the SCM Regulations by the SCM Directorate during the award of tenders.”

4.2.4 Why does the Public Sector maintain using the Traditional cost-based South African Building Procurement Strategy?

Six of the respondents believed that the Traditional cost-based BPS is all the municipal officials know and as it has worked in the past change is not necessary. This was enforced by comments as follows: *“...the reason was that it was the only system they were familiar with and they were used to it.”*; *“...the municipality is used to the system, they know how to use it and it worked in the past so why is change necessary...”*; *“...the municipality follows treasury rules blindly without considering the effect of their decisions on project delivery and client satisfaction. Overarching intelligence from SCM is required to do what is best for project implementation.”*; *“...it is difficult to change people's minds to do something different and take a chance.”*; *“...that it is what they used to and what they know and it has worked in the past so why should change be required. The SCM system is never blamed for poor project delivery, but the consultant or contractor is blamed. When problems are experienced on projects the process is then just repeated in an attempt to address the challenges.”*; *“...it is preferred as it is all they know, it worked before and it is what legislation requires of them.”* and *“...people are afraid of and resists change. Clients want change and therefore some of them implemented the roster system.”*

Three of the respondents believed that the main focus of municipalities is cost containment and the Traditional cost based BPS also focusses mainly on financial criteria as per the following comments: *“...the SCM do not take technical considerations into account during the tender award process as cost containment is the main focus of government and not quality.”*; *“...cost is the main focus for government and the traditional system puts most emphasis on costs”* and *“...the focus is on cost containment for the municipality and the traditional system's focus is on costs.”*

Three respondents added that the TBPS was developed over a period to curb corruption and therefore it is still in use. This was reinforced by the following comments: *“...the current systems were developed mainly to avoid corruption.”*; *“...the current system was developed to avoid corruption and that is why it is being followed.”*; *“...National Treasury drives the tender process to prevent corruption and therefore requirements are becoming stricter and more procedural during tender award. With the current levels of corruption, it will not change”* and *“The current system was developed to avoid corruption and therefore it cannot change.”*

Four respondents felt that the SCM Regulations and the MFMA are subject to interpretation and the municipal officials would rather err on the conservative side than to expose themselves

to any risk as per the following comments: “...the aim of a municipality is to receive a clean audit by the Auditor General and therefore they do not try anything different due to the risk of being found non-conforming. Many projects are not awarded due to the SCM officials being afraid of not following the prescriptive process.” and “...SCM officials interpret regulations very strict to avoid being found guilty of corruption and when they are unsure how to interpret a special tender case, they just do nothing.”

Most of the consultants felt that clients are trying to move away from the TBPS in order to improve project delivery and client satisfaction as per the following comments: “...clients are looking for alternatives (like the roster system) to move away from the traditional cost-based system, but clients do not have skills to effectively implement this.” and “...clients are trying to move away from traditional system by using longer term Framework Tenders. As it is difficult to change tender scope after a tender is awarded.”

Consultant D preferred the TBPS on condition that “consultants did not have to tender and tender awards are not mainly based on pricing criteria but mainly on quality criteria.” He also stated that “if consultants are appointed on a roster system with limited discounts based on ECSA then the traditional system work well.”

Client A preferred the TBPS for “smaller, repeat projects and the Integrative BPS for bigger, high risk projects.” Client B preferred the TBPS as “it was adapted and moulded to curb corruption. The implementation of alternative strategies will open opportunities for collusion and corruption.” Client E preferred the TBPS for smaller and repeat projects and added that “the municipality does not have technical skills to implement an alternative BPS as 50% of posts are currently vacant at the municipality.” He felt that the TBPS “worked well when the best experienced contractor was appointed and tender awards were not only based on price.” He also added that municipalities “do not have the technical expertise inhouse to define good quality criteria for inclusion in tender documentation.” Client F disapproved of any changes as he felt that “the traditional system was developed and moulded to suit current SA requirements and the industry was not geared for such a change.”

Contractor A preferred the TBPS for public clients and felt that the D&B BPS was “better suited to be implemented by private clients. The TBPS worked well in the past when tender awards were based on quality criteria and not mainly on pricing criteria.”

4.3 APPLICATION OF ALTERNATIVE BUILDING PROCUREMENT STRATEGIES

4.3.1 The Collaborative Building Procurement Strategy

The respondents identified D&B (12 respondents), Turnkey (7 x respondents) and Engineer Procure Construct Manage (EPCM) (2 x respondents) as the other collaborative BPSs they were familiar with. Consultant A defined it as “...where the contractor becomes involved at a much earlier stage in the project.” Consultant B defined it as “...it is like the New Engineering Conditions of Contract where there is more communication between parties” and Client E defined it as “...a joint partnership between consultant and contractor to work for the client.”

Design and Build/ Turnkey/EPCM:

12 respondents stated that they were aware of and 7 stated that they were previously involved in or had used the D&B BPS. Seven respondents were aware of, but only 1 was involved in or had used the Turnkey BPS. Two respondents were aware of the EPCM BPS, but none of the respondents have ever been involved with this BPS. They identified the following issues:

Consultant A preferred the TBPS, but added “that the D&B BPS is well suited to be implemented only on very big projects if client does not have the necessary technical capacity to roll out the project.” He believed that D&B allows “to transfer risk from the client to the contractor/ consultant, but the risk is included in the price. If the scope of work and specifications are well defined and controlled by the client, it could lead to savings on a project.”

Consultant B believed that D&B strategies are more applicable to mega projects (>R5b) with longer durations (> 20 years). If projects are relatively small and the scope of work is well defined by the client, then D&B can be successful even though clients have little input into the construction process. He also believed that the difference between Turnkey and D&B was that the client cannot influence design as much in a Turnkey project. He also stated that “...for complex mega projects D&B is better suited as clients are mostly not able to provide a detailed scope of work in tenders.”

Consultant C reckoned that “Turnkey strategies takes very long to be awarded, but it assists the project by involving the contractor early during the design stage. The D&B project was very successful and the client appointed in-house expertise in order to assist with the implementation.” He noted that “public clients usually struggle to prepare a good quality scope of work when putting out tenders to tenderers leading to contractors including a risk portion in

their pricing.” He preferred the TBPS for smaller projects and the D&B BPS for mega projects. He mentioned that in the D&B BPS it is usually difficult to compare tenders during tender evaluation as the scope of work is usually not well defined by client. In the D&B BPS the client transfers risk to contractor when the client does not have the necessary technical skills to execute the project.

Consultant D was involved in D&B projects in the past. He warned that the procurement of a D&B consortium is *“very difficult as the scope of work is not normally defined very well”* therefore making the comparison of tenders very difficult during the adjudication process. For this reason, clients need an owner’s engineer to assist with the development of a good quality scope of work. The D&B BPS is better suited to bigger and more complex projects as clients transfer their risk to the contractor.

Client B also has not been involved in any alternative BPSs, but believed that the advantages of the D&B BPS are that *“less time is lost due to tender processes and there are less changes during construction. The negative aspect however, was that the client has limited input in design.”* He argued that the *“D&B BPS is useful when municipalities do not have technical expertise to implement the project, but a lack of trust between the client, the consultant and the contractor prevents the client from making use of D&B strategies.”*

Client C and D were not involved in any other strategies available on a project. Client C believed that *“contractors, clients and consultants are not geared for the roll-out of different strategies e.g. D&B and therefore the TBPS will remain in use. However, the D&B BPS will lead to time-saving as a result of having only one tender process.”* He admitted that clients currently make use of contractors to advise them on the TBPS. Client D also added that the D&B strategy is used to transfer risks from client to contractor.

Contractor A has been involved in D&B and Turnkey projects for private clients, but not for public clients. He stated that Turnkey projects requires *“a better-quality scope of work from clients than D&B as the client has no influence during the construction process.”* He thought that Turnkey projects *“allow for better sharing of risk between the client and the contractor than the TBPS.”*

Contractor B has also been involved on D&B projects for private clients, but not for public clients. His experience was very positive as *“the project was completed within the client’s budget”, “the project was profitable for the contractor”, “the project was completed within the client’s required timeframes” and “there were not any arguments related to the calculation of*

quantities.” He reiterated that *“a very detailed scope of work is required from the client for D&B projects to make the tender evaluation process possible. D&B projects are also difficult to procure in the public sector due to a lack of technical competence from client staff.”* He felt that *“D&B projects were better suited to mega projects and not small projects.”*

Contractor C has never been involved in any alternative BPSs and Contractor D was involved in a D&B project and a negotiated concessionaire. Contractor E was involved in a negotiated appointment with private clients and a D&B project, but not for any public clients.

4.3.2 Partnership Building Procurement Strategy

Twelve respondents identified Partnerships as another BPS they were familiar with. All respondents except for two clients and a contractor were aware of PPPs as an alternative BPS. Only one client was previously involved in a PPP. Three respondents indicated that they were familiar with the Design Build Operate Transfer (DBOT) BPS, another form of the Partnership BPS. When asked to describe their understanding of the PPP BPS Consultant A commented that *“where the consortium provides funding on a long-term project and operates the infrastructure on behalf of the client”*. Consultant B commented *“where risk is allocated to the party best suited to mitigate it and involves long term agreements”* and Client E commented that *“private partner takes on more risk on behalf of the municipality and operates the infrastructure on a long-term basis.”* Two consultants and one client were familiar with the DBOT alternative BPS.

Consultant B has never been appointed on an alternative BPS, but has tendered on a DBOT for a mega project. He felt that *“alternative strategies deliver mixed results depending on the team’s commitment and how well the scope of work was defined. In a D&B BPS the contractor moves out after construction and in DBOT the contractor remains responsible to operate infrastructure.”*

Consultant C believed that *“PPPs are more applicable to mega projects and contributes to the project by the private sector arranging for the funding of the project on behalf of the client.”*

Consultant D was involved in DBOT projects in the past. He stated that *“the PPP BPS is difficult to procure, but useful when client do not have the technical capability to roll out the project or do not have access to funding for mega projects.”* The D&B BPS is *“better suited to bigger and more complex projects as clients transfer their risk to the contractor.”* He also believed that DBOT strategies that continues for more than 30 years has *“a high-risk*

component to it as the long duration makes it unpredictable. The appointment of consultants is more successful when it is based on ECSA fee scales as they cover the client's and the consultant's risk better."

Client A has not had any exposure to any alternative BPSs and admitted that *"the municipality does not have the necessary technical competency to put out PPP tenders therefore they will remain using the TBPS."*

Client D thought that *"PPPs can assist smaller municipalities in securing funding for projects and added that the municipality is recruiting professional project managers to assist with rolling out projects."*

Client E was previously involved as a client on a tender process of a project that utilized the PPP BPS. He admitted that *"the procurement process for a PPP BPS could take very long (in excess of 4 years) as political influences could change every 5 years. Due to this reason many PPP projects are also not being awarded."* He stated that *"the MFMA does allow to put alternative BPSs out to tender and does not require the use of only the TBPS."* Client F has also not been involved in any alternative BPSs, but believed that *"the TBPS is best suited for repeat type projects and PPPs are better suited to specialist projects."* He also thought that *"PPP projects are used to shift risk from client to contractor."*

Contractor A believe that on PPP projects the *"flow of money takes long to commence and therefore the contractor takes much of the risk during the initial phase of the project."*

4.3.3 Other Building Procurement Strategies

Only three of the respondents were familiar with the terms Collaborative BPS and the Partnership BPS and only two respondents were familiar with the term Integrative BPS. This shows that very few of the respondents have had any exposure to the term's Collaborative, Partnership and Integrative BPS. Even though they had limited exposure to some of the alternative strategies that are categorised under the main strategies, they were mostly not very familiar with the term Integrative BPS. When asked to define the Integrative BPS Consultants B commented *"...an agreement between two parties undertaking to work cooperatively on a shared risk and reward basis, for the purposes of achieving agreed outcomes based on principles of good faith and trust and an open book approach with shared profit and loss between parties"* and Client E commented *"...various parties working together at an earlier stage of the project to share risks and rewards."*

Consultant A would prefer to move to a more Integrative BPS to “*spread the risk between the client and the consortium. The collaborative and integrative approach would be best suited for larger projects and consultants will get better fees when working for contractors.*” This will result in better project delivery as better-quality tender documentation will be prepared.

Consultant B believed that the TBPS “*is best suited to smaller projects and the Integrative BPS is better suited to larger projects.*” Consultant C did prefer a move towards a more Integrative BPS as “*government is not spending their annual budgets and therefore a change is required.*” He was unsure if the MFMA allows for implementation of an alternative BPS. He also suggested that “*Implementing Agencies be established to assist Local Government to manage their projects and assist with spending their annual budgets.*”

Client A supported a move to a more Integrative BPS as this would result in “*less delays and more risk sharing between the client and the consortium on larger projects.*” Client B was against any changes as the existing TBPS “*was moulded to curb corruption and alternative strategies will present opportunities for collusion and corruption.*” Client C agreed that a move to a more Integrated BPS could be “*beneficial to project delivery and client satisfaction due to the benefits associated with these strategies.*” Client F stated that “*should an alternative BPS be implemented some risks for the municipality could be mitigated by transferring the risk from the client to the contractor.*”

Contractor A did not approve of a change from the TBPS as “*the consultant and contractor must remain independent to avoid corruption and collusion. For private clients the Integrative BPS can work as there is more trust between parties. For public clients, consultants are needed to police the contractor.*”

Contractor B did support a change to the Integrative BPS but believed that corruption is preventing this from happening. He stated that “*the TBPS will be successful if tender awards were based on quality criteria and not mainly on pricing criteria.*” He also felt that “*it would not be possible as the MFMA and regulations from treasury will not allow this. The TBPS was adapted and developed in an attempt to curb corruption.*”

Contractor C would prefer an alternative BPS where the contractor is involved at an earlier stage resulting in cost saving on the project. He believed that “*it would be beneficial to change, but corruption is preventing this from transpiring. A panel or roster tender is well suited to*

prevent delays on projects as only a single tendering process is required. Clients don't have the necessary technical capacity to include the Integrative BPS in a tender document."

Contractor D also preferred that an alternative BPS be implemented as the current TBPS *"is failing the industry and as a result, contractors are going bankrupt and therefore a change is required. Tender awards must be based on quality criteria and not pricing criteria."* He would welcome a more Integrated BPS and argued that *"if the consultant and the contractor team up to form a team, it will result in lower project costs. This will also help consultants to put out better quality tender documents resulting in better project delivery."*

Contractor E was pro change as *"it will result in lower project costs and less delays on projects as a result of involving the contractor at an earlier stage of the project."*

4.3.3.1 Influence of an alternative Building Procurement Strategy on Project Delivery and Client Satisfaction

Twelve of the fifteen respondents believed that a transition to a more Integrative BPS would benefit project delivery and consequently improve client satisfaction.

Consultant A thought that *"an Integrative BPS where you negotiate your fees and your scope of work and you involve the contractor much earlier on the project will result in a better product and better client satisfaction."* Consultants B did not believe that *"an alternative BPS would solve all the problems. Technical people from municipalities must have more control over which service provider is appointed and not SCM."* Consultants C stated that *"the current system is causing major contractors to fold and expertise is leaving the country. Clients need more technical people to control the tender- and construction process."* Consultant D was *"unsure if this will benefit project delivery as clients do not have the technical competencies to roll out alternative procurement strategies."*

Client A and B agreed that *"for more technically challenging and larger projects it would be a benefit and for smaller project the TBPS is sufficient."* Client B also stated that *"an alternative BPS is required as SCM treat procurement of services the same as the procurement of products and it is not all about costs."* Client C and D agreed that a change would be beneficial, but *"Case Studies should be done to test it and then it should be adopted if proved successful."* Client E added that *"municipalities need to have more technical people involved and controlling the award of a tender. Treasury is not in touch with project delivery problems and needs to see the whole picture."* Client F believed that *"the industry is not geared for an*

alternative BPS and changes will cause confusion, it will be open to interpretation and this will lead to ambiguity resulting in paralysing the officials into doing nothing.”

Contractor A and B felt that *“corruption is preventing any changes to occur and that people are scared of changes.”* Contractor C felt that *“the Collaborative BPS (specifically D&B and Turnkey) will have a positive impact on project delivery. It will also lead to a better end product and value-for-money for the end the user.”* Contractor D stated that *“it will require Case Studies to be conducted to prove that it works better before it is implemented.”* Contractor E stated that *“project awards must be quicker and based on experience. Framework Contracts and Turnkey strategies are better than the TBPS.”*

4.3.3.2 Factors hindering the implementation of an alternative Building Procurement Strategy and the route to make the transition

The respondents had different views on the factors that prevent the implementation of an alternative BPS. The mentality of officials coupled with technical incompetence and a misunderstanding of the legislation were the main factors preventing the implementation of an alternative BPS.

Consultant A listed the following factors: Legislation; MFMA, client technical knowledge and a lack of strategic thinkers on board with clients. Consultant B listed: mistrust between clients, consultants and contractors and a lack of technical capabilities of clients. Consultants C thought that *“the interpretation of the MFMA by municipal officials and the mentality of the SCM officials are hindering change.”* Consultant D mentioned the following factors: SCM regulations; incompetence of officials to define a good quality scope of work and the mindset of officials.

Client A thought that *“the focus must not be on costs and there is no trust in alternative BPSs that they will work better. Proof is required before this can be considered.”* Client B listed the following factors: mentality of SCM officials that treat procurement of services the same as products; clients are incapable to supply a good quality specification or scope of work for tender purposes and common sense of SCM officials in the tender process is not there as they only follow Regulations. Client C mentioned that *“the huge mental and technical gap between the municipal technical team and SCM officials”* is a factor together with *“tendering being a tick-box exercise for SCM officials.”* He felt that SCM *“do not understand the problems associated with project delivery”* and *“...no trust between the technical team and SCM of municipality.”* Client D explained that *“the focus is on cutting costs and the current tender*

system focusses on that. Proven case studies are required to show that alternative strategies work better than the TBPS.” He included the following factors that need addressing: officials need to be educated on MFMA and SCM Regulations and the mentality of the SCM officials need to be changed. Client E thought that “the system was developed over a period of time to suit current requirements and that legislation requires the current process to be followed.”

Contractor A believed that *“the current system was tailored to curb corruption and therefore the process will not change.”* Contractor B mentioned that *“the president of South Africa should eradicate corruption and focus on the delivery of infrastructure. Willingness from government to deliver quicker than the current system allows will also assist the process.”* Contractor C mentioned: *“Case Studies are required to show alternative strategies work better, officials are used to doing the TBPS relatively successful and officials are not familiar with the alternative strategies.”* Contractor D listed: Treasury; MFMA and SCM Regulations. He added that *“the history of doing things relatively successful will make it difficult to change the mindsets of SCM officials.”* Contractor E mentioned: rules and regulations; top politicians are not aware of the project delivery challenges; National Government must be made aware of project delivery problems and existing system are tailored to avoid corruption.

Eight of the respondents urged the representative bodies (ECSA, SAICE, CIDB, the South African Federation for Civil Engineering Contractors (SAFCEC), etc.) to be more focussed in driving the process of informing political decision makers to effect change.

Consultants A thought: *“...pilots and case studies are required to proof that an alternative system is better than the current system implemented, campaign trails are required, advertisements are required, clients must be informed of the benefits of an alternative BPS and workshops and conferences must be arranged with clients.”* Consultant B stated that *“the current mistrust between private and public sector needs to be addressed whereafter policy changes need to happen to allow private spending in public sector.”* Consultant C mentioned that *“the SCM officials’ interpretation of the SCM Regulations needs to change and SCM officials require technical skills to understand implications of tender decisions.”* Consultant D explained that *“CESA/ ECSA need to drive the process of change and the built environment profession must contact ministers to effect changes and make them aware of the current dire situation regarding project delivery and a new system should be proposed.”*

Client A thought *“...training of clients on alternative strategies needs to be done and the benefits associated with the alternative system need to be explained to them. The CIDB, ECSA and National Government must drive the process.”* Client B suggested that *“alternative*

processed should be clearly defined then go through an approval process through council – if the proposal aligns with the MFMA, PFMA and SCM Regulations then National Treasury must implement.” Client C thought that “National Treasury, should motivate for an alternative BPS, introduce an alternative system and drive the process. The CIDB and ECSA should motivate for an alternative BPS and inform National Government more on project delivery issues. Amendment of the MFMA and SCM Regulations are required.” Client D proposed that “the technical services department of municipalities must drive change after National Treasury proposed alternatives. The CIDB and ECSA should inform National Government of ongoing project delivery problems and drive change. More technically orientated people must have influence on the services delivery tender process.” Client E recommended “the education of officials to demonstrate that alternatives are legal” and Client F called for “National Treasury to reconsider procurement Regulations.”

Contractor A believed that “no change can occur before corruption is not eliminated from National Government.” Contractor B reckoned “the President should focus on infrastructure development and drive change on the procurement side and stop corruption. The mentality of officials must change to deliver quicker than what the current system allows for.” Contractor C proposed that “SAFCEC, SAICE, ECSA and CIDB need to drive the change process and the mentality of clients need to change in order to change the procurement regulations.” Contractor D thought that “service delivery must be the focus of National Government and SAFCEC, ECSA and SAICE should promote different alternatives for implementation.” Contractor E argued that “SAFCEC, ECSA, CIDB and EMISA must drive the process to change legislation and tender procurement rules. National Government must make changes then municipalities will follow.”

4.4 TENDER SELECTION PREFERENCES

4.4.1 Exposure to Tender Evaluation Methods and Preferences

Only three respondents were not entirely sure what the four tender evaluation methods entail, while one was totally unfamiliar with the four tender evaluation methods. All respondents felt that Method 4 (price, preference and quality) was the best method to use during tender evaluation while Method 2 with a functionality gate is currently the most used method by the public sector. Consultant A and B reiterated that “quality must play the biggest role during tender evaluation” and Consultant B thought that “Method 4 gave the best value-for-money for the clients.” Consultant C was “comfortable with a functionality gate requirement whereafter the award is made on pricing and preference criteria.” Consultants D did not want “quality to

be just a gate, but tender points needed to be allocated for quality criteria. Pricing should also count less than 30% of the tender award points during evaluation.”

Client A felt that *“strict quality criteria are important to manage the risk of the client”* and Client B, E and F argued that *“quality needs to be the most important criteria during tender evaluations.”* Client C, D E and F also agreed that *“all three criteria (quality, price and preference) needed to be included in the tender evaluation process.”*

Contractors A and B argued that *“quality needs to be the most important criteria during tender evaluations and that all three criteria (quality, price and preference) needed to be included in the tender evaluation process.”* Contractor B pleaded that *“quality must count 80% of the tender award points during the tender evaluation process.”* Contractor C, D and E was comfortable that *“quality serves as a gate requirement and then the award is based on points awarded for price and preference criteria.”*

4.4.2 Problems associated with the current Tender Evaluation Methods and Preferences with regards to emphasis on Quality, Price or Preference

Consultant A had the following concerns with the various tender evaluation methods:

- Method 1 – *“The lowest tenderer will get the work irrespective of their technical competence to complete the work”;*
- Method 2 – *“The lowest tenderer combined with his preference score will be awarded the project that could lead to poor project delivery and client dissatisfaction”;*
- Method 3 – *“I do not believe that this is still an option according to the MFMA, but noted that it was a good way to do tender evaluations.”;* and
- Method 4 – *“I would prefer that the quality evaluation forms part of the points allocation during tender evaluation. The quality gate requirement still allows for a scenario where the better service provider could not be awarded the tender.”*

Consultant A stated that *“quality must be part of points during tender evaluation and tender award.”* Consultant B was not familiar with the four tender evaluation methods, but stated that *“quality is the most important tender evaluation criteria to be considered.”* He reckoned *“Internationally quality criteria count up to 70% of the tender award points and it will be beneficial if South Africa could implement this system.”* Consultant C stated that *“if the focus during tender evaluation is on price and preference it leads to poor project delivery.”* He also complained that it was *“difficult to eliminate a tenderer if he has the lowest price and that the*

project management and technical ability of clients are insufficient to allow the definition of a good quality scope of work.” He added that “more experienced companies will then be appointed to execute the project resulting in better project delivery and client satisfaction.” Consultant D noted that “contractors are provided with a good quality tender document that assist in the pricing of items, whereas consultants normally get very poor-quality tender documentation that makes it difficult to price. Consultants also have to give too much discounts to secure professional services resulting in poor project delivery and client dissatisfaction.” In addition to that “contractors price very low resulting in less fees for consultants.” He pleaded that “price must count less than 30% during tender evaluation as consultants adjust their rates based on market prices and not based on the scope of work in order to secure an income. The current state of the industry is leading to a mass exit of professional engineers from South Africa.”

Client A motivated that “Method 2 leads to poor project delivery and that the specified quality criteria in tender documents needs to be improved to require client reference letters. An accredited CIDB grading does not mean a contractor can necessarily perform technically and financially and that the CIDB must regulate the grading of contractors stricter.” He stated that “this will avoid contractors securing tenders that is not competent to deliver.” Client B reiterated that “the SCM section of a municipality does not have the technical capabilities to consider all factors during the tender evaluation and award process irrespective of what tender evaluation method is used.” He pleaded that “the quality criteria requirement must be dynamic to address the particular requirements of the project. Less quality criteria requirements are applicable to smaller, uncomplicated projects and stricter quality criteria requirements must be applicable to technically challenging projects.” Client C mentioned that “it was difficult to disqualify a tenderer if it is obvious that he is technically incompetent to perform the work, but he was the lowest tenderer.” He pleaded that “the focus during tender evaluation must be on the quality criteria and not on pricing and preference criteria.” He agreed that “this will assist to avoid quality issues during construction and major discounts leading to poor project delivery and client dissatisfaction.” Client D was not involved in tendering but stated that “this will improve quality during construction and lower life cycle costs on projects.” Client E felt that “too little emphasis is put on quality criteria during tender evaluation. After a tenderer passes a quality criteria gate then pricing and preference criteria is still used as basis for award. The award of points for quality criteria is subjective and problematic and therefore the quality criteria should be better defined in tender documents to avoid subjectivity.” He added that “more emphasis is required on life cycle costing on a project and quality construction will lead to lower maintenance costs on projects.” He would prefer that “the quality criteria requirement be

incorporated in the tender evaluation points system, but that the MFMA prohibits this. This focus will also improve quality during construction.” Client F admitted that “the quality criteria requirement in tender documents were not specific enough causing incapable contractors to still qualify and get tender awards based on pricing and preference criteria. Quality criteria requirements should be better defined to suit a specific project.”

Contractor A stated that *“the quality gate requirement in a tender is good to select better qualified and experienced contractors. Consultants are not subject to very strict quality criteria whereas contractors are subject to unreasonable quality criteria for site personnel.”* He also mentioned that *“the quality criteria specified in tenders did not ensure that a good quality contractor is appointed and that more focus should be on staff and personnel experience than on previous experience of the company.”* He pleaded that *“better quality criteria requirements need to be included in the tender documentation to avoid subjectivity and be tailored to be more project specific.”* Contractor B felt that *“tender quality requirements for contractors were not realistic and too strict for smaller projects. Bigger projects justify stricter quality criteria and smaller projects justify less strict quality criteria.”* He agreed that *“more emphasis should be placed on the experience of a person than on the qualification of the person.”* He stated that *“it is very important to select the right contractor to do work and pricing should not be the deciding factor in selecting the better contractor. The average price of all the tenders should be used as a guide during tender evaluation to determine the correct price for a tender. This will prevent poor quality tender documents leading to poor project delivery and client dissatisfaction.”* Contractor C complained that *“appeal periods are too short and that municipalities do not inform unsuccessful tenderers timeously. Tender validity periods keep on being extended for unacceptable durations.”* He stated that *“it is vitally important that the quality criteria requirement weighs more than the price to ensure a good quality product during construction.”* Contractor D proposed that *“an average of all the tender prices received be used for tender evaluation purposes except where a contractor has a definite strategic advantage. Some clients still have closed tenders and are therefore not transparent and more exposed to corruption.”* He also stated that *“clients do not inform tenderers timeously on the results of the tender and the CIDB is not monitoring contractor gradings well enough to ensure acceptable project delivery.”* He proposed that *“the quality criteria requirements be stricter on technically difficult projects and that the two-envelope system be used more often. Quality criteria need to be more specific and tailored to a project to prevent manipulation during the tender evaluation process. For smaller projects the quality criteria requirement is not that important.”* He also thought that *“the quality criteria requirements be better defined in tender documents to include metrics to avoid subjectivity during tender evaluation. Quality criteria*

requirements need to be tailored to suit the size and complexity of the project.” Contractor E stated that “on Method 1 the quality criteria requirement is not applicable and therefore not a good tender evaluation method. Method 2 is good as it considers all three criteria namely quality, pricing and preference criteria. On more technically challenging projects the quality criteria requirements need to be stricter and better defined to ensure acceptable project delivery.” He stated that “the current quality criteria do not guarantee that the appointed contractor can execute the project satisfactorily and tender evaluation is just a paper tick box exercise. Quality criteria should be tailored specifically to suit the type, size and complexity of the project.”

All consultants felt that quality criteria must have the biggest influence during tender evaluation and one consultant would prefer that tender evaluation points also be awarded for quality criteria. All clients felt that all three criteria must be considered during tender evaluation and all except for one thought quality should be the most important criteria. All contractors believed that quality needs to be the main consideration during tender evaluation and that stricter quality criteria improved project delivery. Two contractors believed that it was important that all three criteria be considered during tender evaluation. Overall most of the respondents agreed that quality must play a bigger role during tender evaluation as what is currently the situation. After the quality gate requirements are considered awards are still based on pricing and preference criteria resulting in the best experienced tendered not necessarily being awarded the tender.

4.4.3 Problems associated with a competitive Building Procurement Strategy for Professional Engineering Services

Twelve of the respondents stated that a competitive BPS for consulting engineers in South Africa leads to too much discount offered leading to a decline in service delivery and a shortage of skills in the industry.

Consultant A stated that *“the consultant’s scope of work is normally not well defined during the tender stage leading to excessive discount to ensure the procurement of services. I would prefer that ECSA fees be used as a basis with limited discount and the tender award must be based on quality criteria requirements and not pricing criteria. Consultants utilise junior staff to execute projects and perform site monitoring activities in an attempt to save costs that lead to poor project delivery.”* An additional negative aspect is that fact that *“poor fees for professional services is causing a mass exodus of professional engineers from the South African market resulting in a skills shortage in South Africa.”* Currently he has been

experiencing a substantial increase in the number of professional indemnity insurance claims on projects as a result. *“Consultants having to tender for work leads to a lack of training of junior staffs in an attempt to save on expenses.”* He stated that *“consultants do not earn sufficient fees to do a proper design, to adequately consider design alternatives and therefore take shortcuts resulting in poor project execution and client dissatisfaction.”*

Consultants B reckoned *“this allows for deconstructive tendering if the award is solely based on pricing criteria in order to secure work. Clients do not trust consultants as their trusted advisor as was the case in the past.”* He felt that ECSA fees with limited discount created a good environment for consulting engineers. He added that *“consultants can be efficient up to a point before they have to under-price a tender to secure work. When consultants tender too low, it results in many variation orders and legal battles during the construction process.”* All of these reasons lead to clients not trusting consultants anymore as their trusted advisor and therefore it will be beneficial if consultants team up with contractors and not the client.

Consultants C felt that *“the client introduced the roster tender system to move away from the TBPS in an attempt to put more decision making in the hands of the client during appointments. On the roster system consultants can decline work if it is deemed to be unprofitable.”*

Consultant D added that *“consultants normally do not receive a good quality scope of work to price a tender document as is the case for contractors and therefore they cannot price accurately at the start of a project and this leads to bad project delivery. ECSA fees with limited discount was a good system and currently on the traditional system it is not uncommon that you have to give 60% discount on ECSA professional fees to secure services. The roster system mostly also limits discounts on ECSA fees and works well as the client has more say on who to appoint.”*

Client A noted that *“consultant fees are approximately only 10% of the total project value, but determines the construction costs that is normally 90% of the project budget. To save on professional fees does not make sense as it leads to poor project delivery and client dissatisfaction. Discounts needs to be limited and should be based on ECSA fee scales. Currently consultants utilise junior staff to execute projects in an attempt to save costs leading to poor project deliver and client dissatisfaction. In recent years quality from consultants has been steadily deteriorating as a result.”*

Client B argued that *“the competitive environment should lead to more creative and innovative thinking when it comes to tendering, but practically it does not work. For this reason, the roster system is used as it allows the client more say in selection of service providers.”*

Client C argued that *“if contractors do not give discounts, why is it a requirement that consultants give discounts? Professional fees should be based on ECSA fee scales with limited discount. Not enough emphasis is put on quality during tender awards which are mostly based on pricing criteria. The roster system works good if it is based on ECSA fee scales with limited discount.”*

Client D admitted that *“bigger companies have more overheads and too much discounts on professional services leads to bad project delivery, client dissatisfaction and client mistrust. The perception was that consultants inflate construction costs to get more professional fees.”*

Client E added that *“municipalities do not have technical competencies to define a good scope of work in tender documents for consultants and therefore it is impossible to determine a price well at the beginning of a project. The roster system based on ECSA fee scales and limited discount is well suited for the industry as it sets out the scope of services well. A competitive tendering system leads to excessive discounts resulting in bad project deliver and client dissatisfaction.”*

Client F stated that *“too much discount leads to consultants using more junior staff on projects and lead to poor project delivery. A project cannot be executed if sufficient funding is not available. Municipal officials need to do more on the project due to problems experienced on contracts as consultants don't have enough money to execute properly.”*

Contractor A added that *“the quality of tender documents from consultants is poor due to too much discount offered to procure work and this leads to poor project execution and client dissatisfaction. Consultants do not do proper investigations and designs and this leads to additional costs during construction. The roster tender system is good when used with ECSA fee scales and limited discount.”*

Contractor B blamed *“too much discount as consultants are cutting rates, delivering bad quality tender documentation and using junior staff to execute projects and designs. All of this led to poor project execution, additional costs during construction and client dissatisfaction.”*

Contractor C agreed that *“after the tender system became a requirement for consultants the quality of project delivery deteriorated leading to bad quality tender documents, resulting in more costs during construction and leading to client dissatisfaction.”*

Contractor D stated that *“after consultants started tendering the quality of their service delivery declined. The rotational/ roster system is better to ensure all service providers get work at acceptable fee scales. Consultants also use junior staff to complete investigations and designs and this leads to ambiguity in tender documents, which in turn leads to additional costs and bad project delivery. Contractors will abuse ambiguity in tender documents resulting in claims, extension of time, etc. and consequently additional costs.”* He stated that *“a competitive procurement system for professional engineering services does not provide good value-for-money to the public.”*

Contractor E explained that *“lower prices lead to lower quality. ECSA fee scales with limited discount is a good option. Low prices from consultants lead to bad quality tender documentation, consequent delays and claims for which the client has to pay more during construction.”*

4.5 THOUGHTS ON APPLICATION OF FRAMEWORK CONTRACTS

4.5.1 Exposure to Framework Contracts and Preferences

All respondents were aware of what Framework Contracts are and have been involved in this mechanism of appointment and 14 respondents supported the use of this appointment mechanism as it resulted in a streamlined tender process.

Consultant A mentioned *“...the procurement process is much quicker with this form of appointment as all service providers only tender once every three to five years at beginning of the cycle. However, this opens the appointment process of the municipality to corruption as one entity could theoretically be appointed for all projects in that 3-year cycle.”* Consultant B believed that with the roster system clients could *“manipulate the award of projects to a specific consultant or contractor better than with the TBPS. It is a more balanced approach in terms of quality- and pricing criteria as an entity is prequalified based on quality criteria and then provides a quotation to execute the work.”* Consultants C supported this form of appointment as *“prequalified service providers are appointed to execute the project on an as-and-when required basis. It also allows for a streamlined procurement process”*. Consultant D argued that as service providers are prequalified and ranked on a list, the client *“can select*

the best suited service provider for the project to execute on an as-and-when required basis.” Also, it is possible for clients to use the same service provider for a different scope of works based on the same rates as originally tendered.

Client A thought this method of appointment *“streamlined the procurement process and the client could appoint service providers on an as-and-when required basis. After passing a quality gate the service providers are asked to submit a financial proposal and normally the best experienced service provider can be appointed.”* Client B and C also thought the use of Framework Contracts resulted in a *“streamlined procurement process and service providers are appointed on an as-and-when required basis.”* Client D new that the municipality made use of Framework Contracts, but was unsure what the associated benefits were. Client E and F thought that *“the benefits were that the municipality could appoint a service provider on an as-and-when required basis without committing to a quantum of work and it was a streamlined procurement process.”*

Contractors A, C and E had experience with Framework Contracts and stated that *“the scope of work does not have to be well defined at tender stage as only rates for certain generic activities are required to be priced.”*The process resulted in a *“very streamlined tender process and contractors are appointed on an as-and-when required basis but are not secured of any work.”* Contractor B and D also agreed that it *“was a streamlined procurement process and only required certain rates during the tender process. Appointments are made on an as-and-when required basis or when there is an emergency.”* Contractor D also thought that *“with this form of appointment the scope of work does not need to be well defined at tender stage and it is well-suited for maintenance type projects.”*

5 ANALYSIS OF DATA AND DISCUSSION OF FINDINGS

5.1 DATA ANALYSES

This section comprises the analysis and interpretation of the collected data and includes a discussion interpreting the findings associated with the collected data. Refer to Appendix F for the data tables.

5.1.1 Traditional Building Procurement Strategy

Three consultants were familiar with the meaning of the term TBPS. Consultant D thought the term related to the consultants being appointed on the Guideline for Services and Processes for Estimating Fees for Persons Registered in term of the Engineering Profession Act. Client B, D and Contractor B had never encountered the term, but they were aware of the process after the meaning of the term was discussed with them. Client B thought the term related to a previous method of tender evaluation based on quality criteria and not on pricing and preference criteria. Contractor B thought the term related to the pre-MFMA era where clients could appoint consultants without the requirement to tender. Most of the respondents were familiar with the term TBPS and had good exposure to the system during the previous decade.

Only two consultants and one client agreed that using the TBPS in South Africa had a positive impact on project delivery and client satisfaction. Consultant A and B did qualify their choice by stating that it was dependent on good fees being paid to consultants. From the rest of the respondents it was clear that clients do not have the necessary skills to define a good quality scope of work for tender purposes which leads to delays and additional costs. It was clear that consultants offer too large discounts when tendering for professional services and therefore they have to make use of junior staff to perform most of the functions on a project. Most of the respondents responded by relating the problems associated with the current tender evaluation system, that is mostly based on pricing and preference criteria, to the TBPS. What came strongly out of the interviews were that consultants are paid too little fees to ensure good quality services as they offer too much discount to ensure an income. This was a serious problem for the consultants, the client and the contractors as it influenced all three parties negatively and it resulted in poor project delivery and client dissatisfaction due to bad quality tender documentation.

Most of the consultants felt that clients are trying to move away from the TBPS to Framework Contracts in order to improve project delivery and client satisfaction. Six of the respondents

believed that the Traditional cost-based BPS is all the municipal officials know and as it proved to be successful in the past change is not necessary. Three clients believed that the main focus of municipalities is cost containment and the Traditional cost-based BPS also focusses mainly on financial criteria. Four clients felt that the SCM Regulations and the MFMA are subject to interpretation and the municipal officials rather err on the conservative side than expose themselves to any risk. Two respondents also added that the TBPS was developed over a period to curb corruption and therefore it is still in use.

5.1.2 Application of alternative Building Procurement Strategies

All respondents except for one consultant and two clients were aware of the D&B alternative BPS and all respondents except for two clients and a contractor were aware of the PPP as an alternative BPS. Less respondents were aware of the Turnkey alternative BPS as two consultants, four clients and two contractors were unfamiliar with this BPS. Only one consultant and one client were familiar with the EPCM alternative BPS whereas two consultants and one client were familiar with the DBOT alternative BPS. Only one consultant mentioned the Unsolicited Bid BPS that is also available.

It was clear that most of the consultants were previously involved in the D&B BPS and one was also involved in a DBOT type project. Only one client was previously involved in a PPP. All except one contractor were previously involved in D&B projects and one was involved in a Turnkey project. Another contractor was part of a concessionaire and one contractor was part of a negotiated contract. None of the four consultants preferred that an alternative BPS be implemented on condition that tenders are awarded based on quality criteria and not pricing and preference criteria. Some consultants also called for a different appointment mechanism e.g. the framework/ roster system to avoid excessive discounts from consultants. Most of the consultants also believed that D&B projects are better suited to larger type projects where the TBPS was well suited to regular and repeat type projects. They also felt that D&B is a suitable solution when clients do not have the technical skills to define a good quality scope of work for tender requirements. It would appear as if consultants are comfortable with the TBPS, but would prefer some changes to the tender evaluation methods currently in use.

Most of the clients felt that the implementation of an alternative BPS would benefit project delivery and client satisfaction as the client can transfer some of the risk to the contractor (and consultant). Two felt that the TBPS is well suited to smaller and repeat type projects and one client believed that the existing system was developed to curb corruption and therefore cannot change. Client A and C thought a more Integrative BPS would be preferred to the TBPS where

Client D preferred a more Collaborative BPS. From the interviews it was clear that clients would prefer to transfer some of the risk on a project to consultants/ contractors.

Only Contractor A felt that the TBPS is best-suited to public clients where a more Collaborative BPS is more suited to the private clients. The other four contractors were all supporting the implementation of an alternative BPS with two preferring a more Integrative BPS. As contractors have more exposure to alternative BPSs with private clients, it would seem as if they would prefer that this is also rolled out by public clients.

As most of the respondents were not familiar with the term Integrative BPS the definition and the purpose of this BPS was discussed with them whereafter they were asked to confirm if they would prefer that the industry move more towards an Integrative BPS. Two consultants did prefer a move while the other two were comfortable with the TBPS. The two consultants that preferred the move thought that risk would be shared better between client, consultant and contractor and that it would assist municipalities in spending their annual budgets. They also thought that the Integrative BPS was well suited to larger and more complex projects.

Only two clients preferred a move while the rest felt that the TBPS was developed for South African conditions to curb corruption and works well if tender awards are not based mainly on pricing and preference criteria, but on quality criteria. They also felt that the industry was not geared for change. The two clients that preferred a move stated that the benefits associated with the Integrative BPS would improve project delivery on bigger projects. It would appear as if the clients were hesitant to embrace an alternative BPS, as they felt that if the current problems associated with the tender evaluation system were addressed, the TBPS would deliver better results.

All contractors except for one believed that a move to a more Integrative BPS will benefit project delivery and client satisfaction. Three contractors referred to corruption that prevents changes from occurring. Only one contractor felt that the consultant and the contractor must remain independent while the other believed that if they team up it will result in better quality tender documentation by consultants, less delays on projects and less over-expenditure on projects that will lead to better project delivery and client satisfaction.

Twelve of the respondents believed that a change from the TBPS would improve project delivery and client satisfaction. The consultants mainly believed that clients do not possess the necessary technical skills to roll out an alternative BPS and that the technical officials from a municipality must have more control over the tender evaluation process. Three respondents

pleaded for Case studies to be completed to prove the benefits of alternative BPSs and two respondents believed that corruption is preventing the implementation of any alternative strategies.

Five respondents believed that the technical incompetence of the decision makers during tender evaluation is preventing any changes to the TBPS. Six respondents suggested that current legislation (MFMA and SCM Regulations) and a lack of understanding of this legislation is preventing change. Nine respondents blamed the mentality of the SCM officials as a factor hindering change as they are not fully aware of the current problems experienced by the technical directorate of the municipality associated with tender evaluation based on pricing and preference criteria. Two respondents also referred to the mentality of the SCM officials treating the procurement of services the same as the procurement of standard products and suggested that a different SCM process is required for the procurement of professional services. Three mentioned the mistrust relationship between clients, consultants and contractors as a factor preventing change.

Eight of the respondents believed that ECSA, SAFCEC, SAICE and the CIDB must play a more pivotal role in promoting alternative BPSs and making politicians aware of the dire situation the civil engineering industry is currently in in South Africa. These organisations need to drive the process of change at a higher political level and inform clients of the benefits associated with alternative BPSs. National Government needs to be informed of the difficulties experienced in poor project delivery whereafter policy changes need to be implemented and filtered down to the SCM officials of municipalities.

5.1.3 Tender Selection Preferences

Many of the respondents referred to the current tender evaluation system as problematic when questioned about the problems associated with the TBPS. Eleven of the respondents were familiar with the different methods available for tender evaluation and all of them agreed that the system that is currently most used is Method 2. Eight of these eleven added that this system is currently used with a quality gate requirement to be eligible to tender.

All fifteen respondents agreed that Method 4 must be used as all three criteria (quality, pricing and preference) are very important for evaluation purposes. All consultants felt that quality criteria must have the biggest influence during tender evaluation and one consultant would prefer that tender evaluation points also be awarded for quality criteria. All clients felt that all three criteria must be considered during tender evaluation and all except for one thought

quality should be the most important criteria. All contractors believed that quality needs to be the main consideration during tender evaluation and that stricter quality criteria will improve project delivery. Two contractors believed that it was important that all three criteria be considered during tender evaluation. Overall most of the respondents agreed that quality must play a bigger role during tender evaluation as what is currently the case. After the quality gate requirements are considered awards are still based on pricing and preference criteria, resulting in the best experienced tendered not necessarily being awarded the tender.

Eight of the respondents believed that during the tender evaluation process more focus must be put on quality criteria than on pricing and preference criteria to avoid service providers being appointed that are not competent to deliver the service. Eight of the respondents experienced that the quality gate criteria currently used in tender documents is of poor standard as they are either too relaxed for consultants or too strict for contractors and does not ensure that the service provider can perform the required service. The requirement to better consider quality criteria in tender documentation was clear from the respondents and some proposed that the strictness of the quality criteria be varied in accordance to the size and complexity of the project. It was evident that some tenderers submit tender prices based on the market driven prices and not based on the scope of work provided and this ultimately results in poor project delivery. Two respondents also referred to the importance of the role of the CIDB in grading contractors which is currently not guaranteeing that the contractors are technically capable and financially viable to complete the construction process. Two respondents believed that once a tenderer has the lowest price, it is difficult not to award the contract to him even though his quality credentials are questionable.

Fourteen respondents felt that more emphasis should be put on quality criteria during tender evaluation with some proposing as high as 70 to 80%. One client called for the tender evaluation process to be more flexible in terms of quality criteria requirements by varying the requirements based on the size and complexity of the project. Two clients called for the tender evaluation process to consider life-cycle costing more during award and not just to focus on the capital expenditure. It was clear that there is currently a problem with project delivery as result of the tender evaluation process focussing on pricing and preference criteria and not on quality criteria and all of the respondents would call for the system to be amended to be more quality criteria orientated.

Twelve respondents believed that a competitive BPS for consulting engineers in South Africa leads to consulting engineers offering too much discounts on professional services leading to

a decline in their service quality. Two consultants mentioned that the civil engineering industry is experiencing a mass exodus of professionally registered engineers as a result of the state of the industry. Most of the consultants felt that the consultant's scope of work is never well defined by a client for tender purposes, making it difficult for consultants to price accurately. Various respondents also referred to the current mistrust relationship between clients and consultants and the perception that consultants inflate construction costs to earn more fees. Four respondents mentioned that consultants use junior staff to save costs resulting in poor quality tender documentation and contractors abusing the situation. Seven respondents felt that the roster system was an improvement on the TBPS as it normally limits the discount on professional services and the client has more input in the selection of the successful service provider.

The criticisms of the current South African BPS were focussed around the requirement of consultants to tender for professional services leading to poor project delivery and the current tender evaluation systems that mainly focusses on pricing and preference criteria and not on quality criteria. Respondents felt that the current tender evaluation system allows for poor quality consultants and contractors being appointed, resulting more often than not in poor project delivery and client dissatisfaction. Two of the respondents thought that contractors were involved at too late a stage of the project to provide their input into the design process and four of the respondents thought that clients do not have the technical skills and competencies in the SCM directorate to take decisions regarding the appointment of consultants and contractors. Four of the respondents also complained that the tender process takes too long leading to consultants rushing their design process leading to poor project delivery.

5.1.4 Thoughts on application of Framework Contracts

All respondents were familiar with Framework Contracts and twelve mentioned that it results in a streamlined tender process. The consultants felt that clients moved towards this alternative appointment mechanism to better manipulate what company is awarded the project based on quality and not only on pricing and preference criteria. They agreed that the service provider could be appointed on an as-and-when-required basis without committing the municipality to any quantum of work for a specific period. Five clients believed that the use of Framework Contracts resulted in a streamlined tender process and clients could appoint service providers on an as-and-when-required basis without guaranteeing them any work. One client believed that the mechanism favours awards based on quality, while one client was

not familiar with the mechanism. All the contractors agreed that it results in a streamlined tender process and awards are made on an as-and-when-required basis. Four contractors agreed that the scope of work does not have to be well defined at tender stage as the tenders are rate based and not that dependent on a specific scope of work. All respondents except for one, was very familiar with the benefits associated with using Framework Contracts and approved of the use of this award mechanism.

5.2 COMPARISON OF FINDINGS TO LITERATURE REVIEW

A study concluded that: 18% of Local Municipalities only employ 1 civil technician; 16% of Local Municipalities only employed technologists and technicians under the age of 35 and 19% of Local Municipalities only employ one civil engineer (Lawless, 2005). One of the clients claimed that 50% of the technical posts at the municipality were vacant, but five clients had engineering degrees with three clients having a post graduate qualification. There was clearly a contradiction to the literature and the results of the Case study with regards to the number of technically skilled officials in the employment of the Local Municipality. Reasons for this could be attributed to the study being conducted in 2005 and since then many municipalities could have realised the importance of employing technical skilled technologists, technicians and engineers.

Another study concluded that public-sector clients do not have in-house design capacity and therefore are required to make use of external consultants to provide these services (Watermeyer, 2010). The same study also referred to projects being broken down into smaller projects due to annual budget constraints, resulting in a start-stop delivery model that often is associated with disappointing outcomes. Various respondents confirmed that the Case study municipality had a lack of technical competencies to oversee and monitor the design and construction process and therefore they employ consultants to assist with this function. One of the clients confirmed that they are currently looking to strengthen their project management capabilities to enable them to provide better input in the design and construction process. Various of the respondents also referred to the annual budgetary constraints that is a result of the long tender processes, requiring annual budgets to be considered during the project execution phase and resulting in excessive costs and poor project delivery.

National Treasury is believed to be unhappy with the number of South African municipalities that regularly cannot spend their annual capital budgets (Wall *et al.*, 2012). It was evident from the interviews that municipalities were unable to spend their annual capital budgets as two

consultants believed that a move to a more Integrative BPS would assist municipalities in spending their annual capital budgets.

5.2.1 Traditional Building Procurement Strategy

According to the literature review most of the projects delivered in 2010 by public-sector clients were delivered using the TBPS (Watermeyer, 2010) and this compared well with the information received from the respondents. Only eight of the respondents have used another alternative BPS on a few occasions other than the TBPS and all of them agreed that this was not a common practice, especially for public-sector project delivery. Watermeyer (2010) also claimed that the TBPS works best when sufficient time is available to complete the designs and sufficient in-house capacity from the client is available to oversee the design and tender process. Clients are also under constant pressure to deliver projects on time, within budget and faster and therefore projects are fast-tracked by not fully developing the scope of work and the designs before tenders are awarded. Many of the consultants, the contractors and especially the clients complained about the drawn-out tender process resulting in pressure on consultants during the design process leading to poor project delivery. Various of the respondents also thought that the clients lack technical capacity and that the tender process is driven by the SCM officials who are not technically skilled.

The nationwide survey conducted by Bowen et al. in 1999 revealed that the TBPS was the preferred choice of consultants and clients and it was the second choice of contractors (Bowen *et al.*, 1999). All four consultants indicated their preference for the TBPS which correlate well with the findings of Bowen. In contradiction, only 2 of the six clients interviewed indicated their preference towards the TBPS where the other four preferred a move towards a more Integrative or Collaborative BPS. Four contractors preferred a move towards a more Integrative system and only one preferred the TBPS. Bowen et al. (1999) also found that the decision on what BPS to implement was largely influenced by previous experience and in-house experts of clients and not by external consultants and that clients had limited knowledge about another available BPS. Six of the respondents believed that the Traditional cost-based BPS was all that the municipal officials knew and have worked with in the past with relatively good results and therefore a change to an alternative BPS is not required.

According to the literature the TBPS works well if the scope remains unchanged, but fails when the client is indecisive and makes substantial changes during construction (Chism and Armstrong, 2010). Various respondents referred to clients that do not have the technical capacity to define a good quality scope of work for tender purposes, resulting in the scope

being amended during the execution of the project. Various respondents also referred to the quality of tender documentation from consultants deteriorating as a result of too little fees, leading to poor project delivery and client dissatisfaction. This relates well to the theory supporting that the current TBPS and the technical competence of clients creates an environment where substantial changes are required after appointment, resulting in poor project execution, additional costs and client dissatisfaction.

5.2.2 Application of alternative Building Procurement Strategies

Most of the respondents were aware of the D&B and PPP alternative BPSs, but fewer were familiar with the Turnkey, EPCM, DBOT or other. Only three of the respondents were familiar with the terms Collaborative and Partnerships BPS and only two were familiar with the term Integrative BPS. Only one client was familiar with all three terms therefore supporting the notion that clients are not very well informed about other available BPSs.

Watermeyer (2010) also argued that clients need to be the drivers of change to affect a sector culture change to align the delivery approach with the skills available in the public sector to secure project delivery. Eight of the respondents believed that the regulatory bodies like ECSA, CESE, SAICE and the CIDB must be the drivers of change and inform politicians on a higher level of the current problems associated with project delivery in South Africa. Once politicians believe that a change is required, only then National Treasury will be forced to implement change that will filter down to the Local Municipalities for implementation.

Current literature shows that internationally there is currently a move from the TBPS towards the Integrative BPS (Chism and Armstrong, 2010). Information gathered from the interviews indicated that during the 90's and early 2000's there was an initiative in South Africa to make more use of PPPs and D&B projects. However, it would seem as if the PPP initiative (Partnership BPS) came to a halt due to implementational challenges on Local Government level and as if the private sector embraced the D&B BPS (Collaborative BPS) more than the public-sector clients. No evidence could be found during any of the interviews that public-sector delivery was moving away from the TBPS to a more Integrative BPS.

The Collaborative BPS (of which D&B is an example) allows for the contractor to become involved in the project at a much earlier stage of the project as the contractor and the consultant joins forces under one contract to provide the required services (Chism and Armstrong, 2010). This allows the contractor to provide input into the design process and the contractor takes sole responsibility for project delivery. Twelve of the respondents were aware

of what the D&B BPS entails, but less were aware of what the Turnkey BPS and the EPCM BPS entails. Most of the consultants and all of the contractors were previously involved in a D&B project and reflected the view that involving the contractor at an earlier stage of the project benefits projects delivery and client satisfaction. They also agreed that some of the risk is transferred from the client to the contracting party during the Collaborative BPS.

The Integrative BPS works well on projects where the deliverables (cost, time and quality) is equally important and not fully defined during the early stages of a project (Chism and Armstrong, 2010). Alliancing is part of the Integrative BPS and breaks away from the traditional “adversarial” approach to a more cooperative environment (Holt *et al.*, 2000). One of the contractors preferred that a more Integrative BPS be used as the TBPS is confrontational as the client pays the consultant and the contractor. Most of the respondents were unfamiliar with the Integrative BPS therefore very little information was received during the interviews on Alliancing, Partnering and Integrated BPS.

Only one client was previously involved in a project utilising the PPP BPS, but twelve respondents were aware of what this BPS entails. One client thought that the PPP BPS could be beneficial to assist smaller municipalities to obtain funding for projects while simultaneously transferring some of the risk to the private sector. This correlates well with the literature available on PPPs. Very little information was obtained from the respondents on PPPs due to the respondents not having much exposure to this BPS.

Stanley believed that public procurement is influenced by politicians and requires transparency and this is a potential barrier to overcome as politicians are reluctant to implement an improved BPS (Stanley, 2011). Eight of the respondents believed that the regulatory institutions e.g. ECSA, SAFCEC, SAICE and the CIDB must play a more vital role in promoting alternative BPSs and make politicians aware of the current desperate situation the civil engineering industry is in in South Africa. They need to drive this process on a higher political level to convince National Government that a change is required. Only after National Government implements policy changes it will filter down to municipalities for implementation.

Literature suggested that the some of the factors that influence the selection of a BPS were (Chism and Armstrong, 2010):

- Cost;
- Schedule;
- Quality;
- Project scope, size and complexity;

- Stability of owner's requirements;
- Allocation of risk; and
- Project owner's culture and capabilities.

Most of the respondents referred at some point during the interviews to problems associated with cost criteria and tight project schedules leading to delays and project execution problems. On various times during the interviews they referred to the project scope, size and complexity that are negatively influenced by the TBPS. Many of the respondents felt that currently clients do not possess the necessary technical skills to provide sufficient input during the design and construction process and agreed that this needs to be considered in deciding what BPS to utilise. Various of the respondents also referred to the need for clients to allocate risk to the contractors as they are not the best equipped to mitigate those risks. An alternative BPS could assist clients with sharing some of those risks with consultants and contractors.

5.2.3 Tender Selection Preferences

In the UK in 1996 CCT was announced, but due to problems associated with poor quality project delivery the system was abandoned in 1997 (Hoxley, 1998). The Best Value commission was implemented on projects and CCT was only enforced on Local authorities as a penalty when the Best Value commission proved to be unsuccessful. Results from the interviews indicated that the cost-based competitive BPS is still in use by the public-sector clients and many factors are hindering the move to an alternative BPS. The CIB of the UK released a report in 1996 where the indicative quality/ price ratio varied from 85/15 for investigations and feasibility studies to 20/ 80 for repeat projects (CIB, 1996). As projects required less innovation, were less complex and were repeated less focus was put on the quality criteria requirement and more focus was shifted to pricing criteria. One of the clients recommended that the BPS in South Africa must also be dynamic and more project specific to require different quality criteria requirements to suite different types of projects.

In 2010 a judgement by the KwaZulu Natal High Court concluded that quality criteria points could not be awarded in the scoring of a tender (SAFLII, 2010) and therefore public-sector clients resorted to using quality as part of the eligibility criteria to create a quality gate for tenderers. Eleven respondents agreed that the tender evaluation method that is currently most in use is the Method 2 with a quality gate where points are not allocated to tenderers for quality criteria, which is aligning with the literature.

The PPPFA was promulgated in 2000 and allowed government officials to procure goods and services and allowed the establishment of the SCM policies (Bolton, 2008). This was done in an attempt to hold accounting officers responsible and accountable for the procurement of goods and services. Additionally, National Treasury's 2015 Public Sector SCM review implied that the current supply chain was "traditionally misunderstood and undervalued" (Treasury, 2015). Four respondents believed that clients do not have the technical skills and competencies in the SCM directorate to take decisions regarding the appointment of consultants and contractors. Four clients thought that the SCM Regulations and the MFMA are subject to interpretations and that SCM officials rather err on the conservative side than exposing themselves to any risks. Results of the interviews confirm that ambiguity exists with the interpretation of the MFMA and the SCM Regulations by the SCM officials leading to very conservative decisions when in doubt and a mental gap exists between the technical officials and the SCM officials.

The interviews also revealed that consultants are offering large discounts to ensure the procurement of services and they do not price the actual scope of services. Consultants are then financially restrained to perform the required services and this leads to poor project delivery and client dissatisfaction. Another study found that the ability of South African consulting engineers to provide sound technical advice to clients are becoming more of a challenge as a result of declining fees paid to them (Okonkwo and Wium, 2018). The SCM review of 2015 also required reform of the current system to affect the following benefits:

- good-quality service delivery will be increasingly possible;
- the economy will grow as economic infrastructure is expanded and efficiently maintained;
- goods, services and infrastructure will be bought at lower costs;
- innovation will result in different approaches to the commodities used in some sectors; and
- for suppliers, the cost of doing business with the state should decrease substantially.

All of these benefits are dependent on a reformation of the current SCM insinuating that the current SCM Regulations are preventing the achievement of these benefits. It was clear from the interviews that the level of service provided by professional consultants deteriorated significantly over the last decade and recently the civil engineering industry has shown signs of disarray with many very large contracting companies going bankrupt. Services and infrastructure, however, are being procured at a lower initial cost as consultants and contractors tries to maintain a steady stream of income, but this appears to result ultimately in

additional costs due to poor project delivery by consultants. As a result of the financial pressures on consultants, innovation is also overlooked by consultants as they try and minimize expenditure during project execution.

From the literature review it was clear that the procurement of standard goods and services are currently treated the same by government institutions as the procurement of infrastructure related goods and services and the case was made that a separate supply chain process was required for infrastructure related goods due to the differences in the services (Watermeyer *et al.*, 2013). Two respondents referred to the mentality of the SCM officials treating the procurement of services the same as the procurement of a standard product and suggested that a different SCM process is required for the procurement of professional services.

According to Watermeyer *et al.* (2013) awarding tenders based on the lowest price has a negative effect on the procurement of construction services and this was in agreement with the results of the interviews. Fourteen of the fifteen respondents believed that quality criteria must be the most important criteria during tender evaluation and less focus must be on pricing and preference criteria.

According to Hoxley (2000) the effect of lower fees paid for professional services has resulted in less design alternatives being considered and simpler designs being produced to minimise input and this leads to the decrease in quality of professional services provided. This correlates well with the response from the respondents as twelve respondents agreed with this statement. Weideman (2014) concluded that lower fees for professional services is causing pressure on the industry and this is resulting in a lack of knowledge and skills. In line with this statement two respondents mentioned that the civil engineering industry is experiencing a mass exodus of professionally registered engineers as a result of the state of the industry. On top of this one client stated that 50% of the available technical positions at the municipality is currently not filled and most of the respondents believed that clients do not possess the necessary technical skills in-house to provide adequate input into the design process, the tender process and the construction process. Visser and Joubert (2008) also identified the following business risks that threatens the business and operational activities of an organisation's competitiveness:

- shortage of key skills (human capital);
- tendering and contract exposure; and
- client relationships.

In line with this, various respondents referred to the current mistrust relationship between clients and consultants and some clients even insinuated that some consultants inflate the construction costs to earn more fees. This leads to a breakdown of the client-consultant relationship which poses a big risk to consultants and it is evident this mirrors the currently situation in the industry.

A study concluded that public-sector clients that used QBS to procure engineering services produced better results with regards to quality than when other BPSs are utilised (Chinowsky and Kingsley, 2009). As a quality-based system is currently not in use by the Case study municipality, no correlation could be made between the use of the TBPS versus a quality-based BPS. However, eight of the respondents believed that more focus needs to be put on quality criteria during tender evaluation and less on pricing and preference criteria. All fifteen respondents agreed that Method 4 needs to be used for tender evaluation purposes and that the quality criteria must have the biggest influence during tender evaluation.

5.2.4 Thoughts on application of Framework Contracts

Watermeyer (2010) claims that Framework Contracts works well with a poorly defined scope of work and implementation of projects are broken down in accordance to annual budgets. All of the respondents were familiar with Framework Contracts and twelve agreed that it resulted in a streamlined tender process. Some of them also believed that clients make use of this form of appointment to be able to better manipulate who are appointed for a specific project. All the contractors agreed that this method work well if the scope of work is not well defined during the tender process.

6 CONCLUSIONS AND RECOMMENDATIONS

6.1 INTRODUCTION

This section follows on the discussion of the findings and relates to conclusions made from the collected data. Recommendations are made for consideration and further research topics are identified as a result of the data analysis.

To facilitate the appropriate conclusion to this research paper, it is necessary to revisit the research question:

- Why does the public sector not consider the implementation of an alternative BPS for civil engineering projects in South Africa?

The above research question led to the development of the following proposition:

- The implementation of a quality-based BPS for civil engineering projects in the public sector will address the current problems on delivering project objectives.

6.2 REVISITING RESEARCH OBJECTIVES

Recently professional organisations within the civil engineering industry have published reports claiming that the civil engineering industry has seen a downturn in revenue despite an increase in the volume of work available. Some role players blame the cost-based competitive BPS currently widely used by the public sector, while others believe the TBPS is to blame. Currently in South Africa the BPS used during tender awards are mostly based on financial offer and preference criteria and not on quality criteria. Therefore the four tender evaluation methods needed to be investigated to establish what their contribution is to the perceived current decline in project delivery in South Africa and consequently to client dissatisfaction. The TBPS also needed investigation as it was claimed that the initial intention of the BPS in South Africa is not having the desired effect on the clients, consultants and the industry as originally intended due to the current implementation and interpretation of the legislation.

Research objectives to be achieved were:

6.2.1 Objective 1: Determine problems experienced by the Public Sector with the price-based Building Procurement Strategy and establish what criteria should be the main focus during the Tender Evaluation Process

The biggest factor identified leading to a decline in the state of the civil engineering industry in South Africa, is the requirement for consultants to tender on cost-based criteria for delivering professional consulting services. The scope of work for consulting engineering services are usually not well defined at the project inception phase, preventing consultants from accurately pricing the delivery of the services. On the other hand, contractors are usually provided with a detailed scope of work, specifications and associated pricing criteria allowing them to more accurately price the project. This in conjunction with limited investment from National Government in infrastructure projects, leads to a fiercely competitive professional services market resulting in consultants offering excessive discounts to secure the appointment. Due to a lack of available fees, consultants minimize their delivery input to save costs resulting in sub-standard quality construction tender documentation and ultimately to poor project delivery. With a lack of tender details, contractors must price their risk thereby inflating construction costs. They also take advantage of the situation by submitting more claims due to poor quality tender documentation resulting in additional costs. The cost-based BPS for contractors also leads to a decline in the quality of construction projects, resulting in a decline in the trust relationship between the client, the consultant and the contractor. The competitive market for consultants and contractors also leads to a decline in available funding for the training of junior staff and resulting in less career development opportunities for more experienced staff. In turn, this results in a technical skill shortage with many professional leaving South Africa to pursue better career opportunities abroad. Due to these problems experienced by the public sector with the price-based BPS, the implementation of a cost-based BPS for civil engineering projects in the public sector in South Africa leads to a decline in the quality of project delivery and client satisfaction.

Tender awards based on pricing criteria is not the preferred method of tender selection due to the consequential problems associated with project delivery and client dissatisfaction. More focus is required during tender evaluation on quality criteria to ensure better project delivery. Pricing and preference criteria should still play a role during tender selection to ensure the development of emerging contractors, but the focus must be shifted to ensure better value for money. Quality criteria defined in tender documentation are subjective and open to

interpretation resulting in ambiguity during tender evaluation. Current evaluation criteria allow less experienced contractors to be awarded the project, resulting in poor project delivery and client dissatisfaction. The preferred tender selection method is Method 4 that considers pricing, preference and quality criteria.

6.2.2 Objective 2: Identify whether alternative Building Procurement Strategies are being used by the Public Sector on Civil Engineering Projects

The process associated with the TBPS in South Africa is well-known in the industry even though the terminology is not that familiar. The TBPS is currently still mainly in use by the public sector even though the appointment mechanism might have changed from putting out single tenders to Framework Contracts. Criticisms of the TBPS were mostly related to the requirement to award tenders mainly based on pricing criteria and not quality criteria that leads to a breakdown of trust between the client, the consultant and the contractor. Very little other criticisms were directed at the TBPS. The Collaborative BPS (D&B) is commonly used in the private sector, but mainly not used in the public sector. Consensus was that D&B projects are better suited to more complex and larger type projects, where the TBPS is well suited for less complex and repeat type projects. The Partnership BPS used to be popular around the turn of the century, but problems related to implementation resulted in public-sector clients moving away from this strategy. The industry in South Africa has very little exposure and knowledge of the Integrative BPS, but believes that more risk distribution between parties and allocating risk to parties best suited to mitigate the risks, will be beneficial to project delivery and client satisfaction. The believe is that a move to a more Integrative BPS would result in better project delivery, but the insufficient technical competencies at municipal level is preventing this from occurring. Currently the TBPS is mainly still in use by the public sector with the Collaborative BPS (D&B) and the Partnership BPS (PPP) used occasionally.

6.2.3 Objective 3: Identify what factors hinder the implementation of an alternative Building Procurement Strategy for use by the Public Sector on Civil Engineering Projects

Technical Directorates in the public sector are frustrated with the SCM official's interpretation of the MFMA and the SCM Regulations and the application of the Regulations. Technical competencies are required to do tender evaluations to ensure that correct decisions are taken during tender evaluation. SCM officials' conservative approach during tender evaluation, with

the evaluation focus on pricing criteria and not quality criteria, allows for second rated contractors to be appointed leading to poor project delivery. After tender award, the SCM officials are not directly involved in the project execution and therefore they are often unaware of the ongoing declining state of project delivery. In order to maximise chances of a clean audit, SCM officials conservatively apply the MFMA and SCM Regulations to avoid drawing attention to them. The intention of the current costs-based BPS was to provide best value-for-money by appointing the lowest tenderer, but due to the fierce competitiveness this is resulting in a decline in project delivery and client satisfaction. The focus of Local Government is also on cost containment measures and the existing cost-based BPS is in line with this strategy. The existing procurement processes was also tailored over the last decade to curb corruption and therefore Local Government maintain using the cost-based BPS.

Technical incompetence of SCM officials coupled with their interpretation of the MFMA/ SCM Regulations and their conservative approach during tender evaluation are the main factors hindering change. They apply the Regulations across the board for the procurement of services and products, whereas the procurement of services requires a different approach to the procurement of products. National Government seems to be oblivious to the ongoing problems associated with public sector delivery and the ongoing decline in the civil engineering industry. The possibility of corruption in public-sector delivery is preventing any changes to the current system. All of these are factors hindering the implementation of alternative BPSs being used by the public sector on civil engineering projects.

6.2.4 Objective 4: Determine if Clients are adopting the use of Framework Contracts in Public-Sector Delivery

The technical directorates of municipalities are moving away from the Traditional cost-based BPS by implementing Framework Contracts with limited allowable discounts. This is done to better influence the project award process to be based more on quality criteria and less on pricing and preference criteria to ensure better project delivery. Another reason is to save time on the projects as only a single procurement process is required every 3 to 5 years.

6.2.5 Objective 5: Determine what the preferred Building Procurement Strategy is in Public-Sector Delivery

The TBPS is not to blame for poor project delivery, but the cost-based BPS is to blame. The focus during tender evaluation is on pricing and preference criteria and not quality criteria and this leads to poor project delivery. Consensus is that a shift to a more Collaborative or

Integrative BPS could benefit project delivery as risk is distributed better between parties. Better risk sharing between parties should lead to better project delivery as all parties will benefit from successful project delivery. The industry supports a move to a more Collaborative or Integrated BPS in the public sector as this proved to be very successful in the private sector. It is concluded that the implementation of an alternative BPS (Collaborative or Integrative) will have a positive effect on delivering project objectives and client satisfaction and therefore are the preferred BPS.

6.3 THE RESEARCH QUESTION AND PROPOSITION REVISITED

The data collected reflected that all respondents desired a better track record for public-sector delivery in the civil engineering industry in South Africa due to ongoing challenges experienced during project execution. The TBPS is currently still mainly in use by the public sector and proved to be a very successful BPS when executed in the past. Even today, the TBPS still prove to be a successful BPS on some projects implemented with more and more projects showing signs of poor project delivery leading to a decline in client satisfaction. So why does the public sector not consider the implementation of an alternative BPS for civil engineering projects in South Africa?

From the conclusions in Section 6.2 it was clear that according to most of the respondents the TBPS does not seem to be biggest reason for declining results in public sector delivery. Most of the criticisms of the TBPS were all directed at the current system used for the evaluation of tenders that is based on pricing and preference criteria and not on quality criteria. Professional service providers influence the performance of public sector delivery the most of all the role players (clients, consultants and contractors) as they are responsible to prepare the design information used by contractors for the execution of the projects. The quality of their contribution to the project determines the project metrics. The requirement for professional service providers to compete based on pricing and preference criteria has initiated a chain of events that has resulted in the current problems associated with public-sector delivery. Contractors have always been presented with good quality tender information to determine a competitive price, but in recent years this has changed as a result of professional service providers being required to compete based on pricing and preference criteria.

The track record of public-sector delivery Internationally proved that a cost-based tender selection process leads to a decline in project delivery whereas a quality-based tender selection process is better suited to address public sector delivery. Therefore, the implementation of a quality-based BPS for civil engineering projects in the public sector will

address the current problems on delivering project objectives. The Collaborative and Integrative BPSs are alternatives that could also address this, but the public sector has very limited exposure to these alternative strategies. The current cost-based tender selection process was developed in line with South African conditions and requirements and until the actions of the National Government, politicians, the municipal officials, the professional service providers and the contractors change, results will reflect the current dire situation of the civil engineering industry in South Africa.

6.4 RECOMMENDATIONS

The following recommendations follow on from the conclusions:

- a) Consideration should be given by National Government to develop an alternative BPS for services to distinguish between the provision of services and the delivery of goods.
- b) The technical directorates of municipalities should attempt to develop better scope of services for professional engineering services on projects to allow better pricing by the consultants during tender stage. A detailed work breakdown structure of the planned scope of services will assist professionals to accurately price the tender and ensure that all the requirements of the client is included by the professionals. This will avoid conflict after appointment related to the scope of services and additional fee motivations by the professional team. Standard scope of services for repeat projects could be developed and be made available to all municipalities for use. For more complex projects the help of a specialist could be sourced to assist in the development of the scope of services.
- c) The public sector should include a requirement in the tender documentation for the training of junior staff within the professional team and within the client's organisation. This will ensure that sufficient funding is available to ensure the continuing professional development of junior engineers in South Africa.
- d) SCM officials need to be thoroughly trained on the MFMA and SCM Regulations in order to better interpret the legislation during tender evaluation. This will assist in achieving the original intention of the MFMA to provide better value-for-money.
- e) Technically skilled people need to be appointed and trained to manage the SCM process in municipalities to ensure better value-for-money on construction projects.

- f) Representative bodies e.g. ECSA, SAICE, SAFCEC and the CIDB need to play a more active role in awareness campaigns to inform National Government of the current ongoing decline in public-sector delivery in the civil engineering industry of South Africa. If there is a good understanding of the current problems resulting from the current BPS, the need to change will be identified at National level and change will be initiated.
- g) Awareness campaigns should be completed by the representative bodies to inform clients of the processes related to the Collaborative and Integrative BPSs and the associated benefits related to these processes. The application of these strategies within the current legislative framework needs to be clear to ensure that municipal officials are confident to roll out these strategies legally. A shift to more Collaborative and Integrative BPSs will allow for better risk distribution between parties to allow risk to be allocated to the party best suited to mitigate the risks. In turn this will lead to better project delivery and more client satisfaction.
- h) Currently the public sector should consider the roll-out of Framework Contracts that is solely based on quality criteria to rank tenderers on a roster. Once the project is ready for implementation, the top three service providers could be approached to deliver the services and the award could be based on pricing and preference criteria. The successful service provider will not be eligible to submit another proposal on another project and the unsuccessful providers will be included in the next round of invitations.
- i) Consideration should be given by National Government in South Africa to change the current tender evaluation methods for services in South Africa to a system that incorporates more quality criteria in the tender evaluation process to ensure better project delivery and client satisfaction.
- j) Quality criteria defined by the technical directorate in tender documentation should be tailor made to be more project specific. This will avoid ambiguity during tender evaluation and be less subjective during tender award.

6.5 AREAS FOR FURTHER RESEARCH

It is recommended that further research be conducted on the follow topics:

- a) Investigate SCM officials' experience and background and what the requirements are to be a SCM official in the public sector. The purpose of the study would be to establish

claims by the technical directorate that technically skilled people are required to manage procurement processes to ensure better project delivery and client satisfaction.

- b) Investigate the role representative bodies currently play in ensuring the progression and prosperity of public-sector delivery in the civil engineering industry in South Africa.
- c) Investigate National Government's position related to the requirement for a separate BPS for the provision of services as opposed to the delivery of goods.
- d) Investigate the relationship between the Collaborative/ Integrative BPSs and successful project delivery.
- e) Investigate the role of good quality criteria specified in tender documents to ensure successful project delivery.
- f) Investigate current practices related to the training of junior technical staff and the effect of these practices on the professional development of these individuals.

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APPENDIX A
Research Questionnaire

QUESTIONNAIRE:

THE SOUTH AFRICAN BUILDING PROCUREMENT STRATEGY FOR PUBLIC-SECTOR DELIVERY IN THE CIVIL ENGINEERING INDUSTRY: INVESTIGATING ALTERNATIVES

Completed by:.....

Date completed:

Position:

Qualification and/ or registration:

Organization:

Interview Questions:

Section 1: Background and criticisms of the current Building Procurement Strategy

- 1) Describe your involvement in South African public Building Procurement Strategy?
- 2) What is your understanding of the term "Traditional Building Procurement Strategy"?
- 3) Do you believe that making use of the Traditional Building Procurement Strategy in South Africa has a positive impact on project delivery and client satisfaction? Please justify your selected answer.
- 4) Do you have any criticisms of the current South African Building Procurement Strategy? If so, please indicate what these criticisms are.

Section 2: Alternative Building Procurement Strategies

- 5) Are you aware of any alternative Building Procurement Strategies available for consideration? If so, please indicate what alternative Building Procurement Strategies you are familiar with?
- 6) Have you ever used any of the alternative Building Procurement Strategies on a project? If so, which alternative strategy did you use and how did the results compare to the Traditional Building Procurement Strategy?
- 7) Would you prefer that an alternative Building Procurement Strategy be implemented in South Africa and which procurement strategy would you prefer to use and why?
- 8) Are you familiar with the terms Collaborative, Partnership and Integrative Building Procurement Strategy? What is your understanding of these terms?

- 9) Would you prefer that the industry move more towards a more Integrative Building Procurement Strategy from the Traditional Building Procurement Strategy?
- 10) Do you make use of Framework Tenders? If so, what are the benefits associated with this model?
- 11) What tender evaluation method are used more frequently? Method 1, 2, 3, or 4?
- 12) What are your preferred method of evaluating/ awarding tenders and why? Method 1, 2, 3, or 4?
- 13) What problems do you experience with each of the tender evaluation methods?
- 14) Would you prefer that more emphasis be put on quality than on price during the tender evaluation process? If so, why?
- 15) Do you believe that the implementation of a competitive Building Procurement Strategy for professional engineering services in SA leads to a decline in the quality of project delivery and client satisfaction? If so, why?
- 16) Why does the public sector maintain using the Traditional cost-based South African Building Procurement Strategy despite overwhelming claims by the profession of ongoing project delivery failure and client dissatisfaction. Please justify your selected answer.
- 17) Do you believe that the implementation of an alternative Building Procurement Strategy will have a positive impact on delivering project objectives which will lead to more client satisfaction? If so, why?

Section 3: Factors hindering the implementation of an alternative Building Procurement Strategy

- 18) What are the factors hindering the implementation of an alternative Building Procurement Strategy in the Civil Engineering industry in SA?

Section 4: Route to transition from the current system to an alternative Building Procurement Strategy

- 19) What is the route/ process to make the transition from the current system to an alternative system?

APPENDIX B
Example of Transcription

RECORDING – [REDACTED]

INTERVIEWER: Zwingli Visser
INTERVIEWEE: [REDACTED]
DATE OF INTERVIEW: 29 May 2019
TIME OF INTERVIEW: 15:30
LOCATION OF INTERVIEW: [REDACTED]
CONDUCTED FOR: M.Sc (Project Management) dissertation

[Begin transcript 00:00:01]

Interviewer: Good afternoon [REDACTED] uhm, thank you for affording me the time to uhm, to do this interview. The topic is ah, the South African building procurement system for public sector delivery in the civil engineering industry. We're investigating alternatives. Uhm, just for record purposes, you have signed this ah consent form, and you are familiar with, with the information contained in the consent form. And everything will be treated anonymously, so I won't mention any names or the municipality's name, or it is just to get the knowledge from you, which will then be analysed. Uhm and you've also confirmed that that information that's provided on this questionnaire form is correct.

Then we can start with ah, with the questions. The questions are divided into four sections. Uhm, the first section is basically looking at the traditional procurement methods, and the criticisms that you might have of, of the systems, and the issues that you've experienced. And the second section which is really the important bit is what alternative building procurement systems are available in the market, and your exposure to... You know as a municipality, to those, to those systems. And then thirdly, ah what factors are hindering or preventing the implementation of an alternative building procurement system. And then the last section pertains to the, ah process, or the pathway to transition from the current system to an alternative system. But the bulk goes around what alternative building procurement systems are available for consideration and your exposure to that.

Okay, first question – uhm, describe your involvement in the South African building procurement system?

[REDACTED]: Well, we're all in a municipality of a municipal environment, and we fall under two very critical uhm ah, Acts. The first one is the Public Finance Management Act, and the second one is the Municipal Management Finance Act. There are a lot of other guidelines, and also legislation that guide us, because we are working with public money. So, that forms the basis of our uhm, guides and how to work with funding. Ah, we are uhm, absolute bound to service delivery. Service delivery means that uhm,

delivering basic services. Basic services are a function of construction. So, that is the cycle. If you want to be in the public sector, you must deliver services and there's funds and the spending of funds involved, and where there's funds and money involved, very strict checks and balances and regulations and legislations must be in place. That is the background.

Interviewer:

Ja. And your physical involvement in putting out tenders for consultants and contractors? Do you vet that documentation; do you have any input into, into the functionality and quality and usability criteria that goes into those documents?

██████████:

That's a very, very difficult thing uhm, to, to uhm; accommodate all the different priorities that we have currently in South Africa. We are working in a post-apartheid era where previously disadvantaged groups must get the benefit to also share in the economic uhm, benefits of ah, service delivery. So, the procurement process must make provision for these previously disadvantaged people to have also access in getting parts of tenders, or getting tenders. So, that has got a tremendous influence on the way, how we evaluate and how we compile tender documentation. Certain things can't be changed. Basic work and simplistic work are very easy and small jobs uhm, to give out to people with limited skills. But somewhere there must be a benchmark recognised, and how do we set a benchmark on quality and time on projects. And that's where we do a functionality test to certain criteria on who to distinguish on what, or what contractors will be able to do certain types of works.

So, in terms of that, that's my opinion, yes. Whether it is always giving the best contractor or consultant the task, or the tender, or the job, obviously that is then limited. Because now you've got a functionality based on BEE status, uhm, there's a percentage uhm, 80% of... Or 8 out of 10 now are being allocated to not as a professional evaluation, but as a BEE qualification. That has got, I think significant changes on uhm, compiling and ah, controlling tenders and construction. So, I maybe I... That is the direction you want to go.

Interviewer:

Ja, we, we'll, we'll get... Later on, we'll get a bit further into the detail of, of the different methods of, of award of the tenders. Ah, but you yourself are involved in the procurement of professional services and also contracting contractors?

██████████:

Yes, yes. Tender processes, uhm – tender processes are for consultants for specialised type of consulting work. Tenders for uhm, construction of water and sanitation infrastructure, tenders for acquiring of material and uhm, store items that has been used in a normal water and sanitation environment in municipalities.

Interviewer:

Sorry and maybe just for record purposes, I neglected to say in the beginning, today's the 29th of May and ██████████ is the Senior Manager for Water and Sanitation for the ██████████ Municipality. Just if they request a recording. ██████████ what do you understand with the term traditional procurement strategy?

Uhm, well traditional, I think first we must decide how far we're going to go back. A traditional procurement strategy was, for example in the 1960's and early 70's, for example resolving the traffic and the uhm, roads uhm, issue that existed in the old Transvaal, now Gauteng. Around big centre cities and outside cities, Pretoria and Johannesburg are two very good examples of traditional procurement processes. Uhm, national government made available an amount of money for all the big cities, Johannesburg, Pretoria, Cape Town, Durban, Bloemfontein, ah I can't remember if there was... PE was also involved. But what happened was, Johannesburg immediately set out and uhm used, let's call it traditional processes. Appoint a group of consultants and gave them a task, and say, "Resolve our traffic uhm, crisis that may follow in the next 50 years or next 80 years, design and build". Uhm, the result was that uhm, Johannesburg invested all the funds uhm, made available by national government and built the western bypass, the eastern bypass, the southern routes uhm, internal uhm, major routes. And even for today, met on the standards. The position and the thoughts and the projections that resulted in a traditional, by that time, a traditional process resulted in that.

On the other hand, the Pretoria area did not invest ah, the money into what they were supposed to be doing and building routes, they only built one route, ah, called the N1 through the southern part, past the eastern part to the north of, of the country. So, they did not use that use that opportunity. Western Cape used partially the ability and that traditional procurement processes. So, that was a benchmark at that time set. Later on, uhm, consultants were more appointed first to act on a master plan, or a sector plan. That changes, I think the tradition again, what is now a traditional process. So, the consultants were appointed different consultants now to resolve and compile master plans. Then a second set of consultants were appointed to design ah, detailed plan, and then obviously the procurement process and the tender process follows with that. So, I think that was another standard that was set.

And then we came with the post-apartheid era where black economic empowerment starts playing a role, previously disadvantaged groups must be acknowledged, economic uhm, equity uhm, starts also to influence the processes. And obviously that changed the way that the normal procurement process uhm, is being done during the recent times.

So, that is the eras I think. An open check book previously in the 60's and 70's. No limits, only produce results. Change to a little bit of a more controlled environment, and then now an extremely well controlled environment, but the ah, focus is not so much more on the result; it's more about development and developmental government and developmental economic ah participation for all groups in South Africa. So, it's a flexible process, but it is very dynamic, and I foresee it's not going to stay like this, somewhere we will have to turn back and we will have to focus again on certain outcomes, rather than uhm, social empowerment.

Interviewer:

More on, on, on the quality side, rather than the cost side?

██████████: Yes. Uhm, the quality, it was always results driven and then it's changed, it's changed now. There's still a factor of results and quality, but I think the focus is currently more for ah job creation, uhm, social upliftment, financial, uhm, well upliftment that are partaking in the economic wealth or growth, or sector for these previously disadvantaged.

Interviewer: When I referred to the traditional procurement strategy, it is the current uhm, one that you're referring to where uhm, where the, the local authorities or local government make use of consultants to do designs, and then they appoint a contractor at a later stage. Uhm, and then they monitor the construction and make sure that it was... The construction is in line with the specifications. So that, so that is the model that I referred to when I referred to the traditional procurement strategy. Do you think that strategy still has a place in South Africa, and it provides good results, uhm, or do you think it leads to maybe unsatisfied clients and, and poor project delivery? What is your sentiments with regards to that?

██████████: Why I gave this very long elaboration on this view, is I came from a big metro where we had uhm, internal design teams, we had internal construction teams, we had capacity inside the metropole. Meaning that we had specialised consultants doing master planning or sector planning, we know that was uhm, the view and the mission for example, the water and sanitation department for 80 or 100 years in future. And now we prioritise projects. Uhm so certain projects is very easy to do in-house, detailed design in-house. So when we control the output, we control the contractors. So only the contractor ah, was then acquired by normal traditional procurement tendering processes. So those are the most beneficial because uhm, if you look at the cost of consultancy ah, for that specific uhm, department, was a tenth of the price that uhm, consultants would have cost us. That is all cost to company of all the personnel involved, from designer to supervisor, to the GIS, to the detailed uhm, design engineer, to the contracts engineer – and that's another department, and also the quality control by works inspectors. So a very controlled environment.

Interviewer: So, so you would prefer to have the technical skills in-house to do the designs and put out the work to a contractor, he can produce better project delivery and better client satisfaction. So you're not entirely happy with the current traditional way of putting the work out to market?

██████████: There're again two scenarios – there's a South African, now let's take for example, an International scenario for... In Australia. When you put it out to a contract in South Africa, then you have got one specific uhm, purpose, ah or uhm, uhm... What you should do, is to create jobs. Meaning that you will have certain aspects and parts of the contract to be labour intensive, and the labour-intensive ah, means that all labour must come out of the specific area where you are doing the project. If you're laying a pipeline, if you go through a certain area you must acquire local labour from that specific area. If you move further, you acquire local in the next area.

Meaning that it is a tedious process, and we can refer to the Africa factor. If you do the same project in an Australian environment, uhm, it is

completely a different exercise. Uhm, you will not make use of uhm, labour intensive methods, everything is mechanised. For example, to build a reservoir in South Africa uhm, you can think of all the labourers, they are doing certain ground works, installations, small scale excavations, uhm, everything is done by hand. If you do the same thing in South Africa, re-bar, reinforcing all the building or the re-bar shuttering and so forth. The same thing if you do it in Australia, it's all pre-manufactured, it's only a small team of five people on site building a whole reservoir, laying all the pipes. In South Africa, you can count ah, between maybe 50 to 200 on site building the same reservoir.

So there's a completely different approach, and eventually if you look at the Australian model, you can't believe how many savings each and every project brings uh, back because the project manager is also being benefitted by his savings. The contractor needs to move as quick as possible, because he's got the means. South Africa, you've got labour issues, you've got union issues, you've got other uhm, political factors influencing your productivity. You cannot build a reservoir uhm, and there's a few examples in Pretoria area ah, the northern parts of Pretoria. If the community decide you're not going to finish a project because they are, whatever reason unhappy for, you will not finish that. Then the contractor leaves site, he abandons site. And it's legally acceptable.

So, you must balance with the new, I would say tender approach, unfortunately all this into a workable scenario. So, you will have to make use of labour-intensive methods, you will have to acknowledge the areas with people living in the area, you will have to acknowledge a tedious process and build in the Africa factor. You will have to acknowledge black economic empowerment as part of the process. That is the reality. So, uhm, you know in the previous uhm, before the 93/94 there was a different approach, and I think there was a lot of different role plays. So, it's a, it's a 100% uhm, uhm, unique situation that you must absolutely acknowledge all the role players.

Interviewer:

Are you aware and exposed to any other or alternative building procurement methods that's available out there on the market?

[REDACTED]:

Well, it's a difficult uhm, situation I think in a municipal environment. You've got supply chain policies and you've got the MFMA that guides you how to acquire any product or service in a municipal environment. Uhm, then each and every municipality must uhm, develop a supply chain and a financial management policy. By that, there's also a by-law that's been implemented in a municipal environment. And normally what happens, the legislator uhm, empowers the municipalities and uhm, give them the opportunity to develop their own set of regulations in terms of acquiring labour, or acquiring uhm, procurement processes. So, the law makes provision that the uhm, by-laws and the policies of areas or municipalities override the Act and guided by the Act. So that opens up, if you are in a specific area or region, you can adopt, you can change your supply chain policy, uhm, and that may lead to using different approaches.

Interviewer:

Ja, but now are you familiar with the collaborative approach, for example uhm, turnkey or, or design and build? Uhm, and also in partnerships, PPP's uhm, it's a more long-term exercise, and there's also, there's a new, new movement. It's called the ah, Integrative Strategy, uhm, where they make use of alliancing and partnering where you get the consultant and a contractor in at a much earlier stage, and there's risk sharing between the parties, so if there's savings on the, on the overall projects, all parties shared in that saving. All parties shared in the risk, but also if there's overruns than all parties also shared in, in, in the overruns. Are you aware of those strategies, or not, not really?

██████████:

Yes. So, the first one, the turnkey operation has got a very specific environment where you work with, where you've got extreme specialised environment. You cannot let a general tender out on a, for example, an ozonation plant. How to build an ozonation plant, or design and build it because ozone filter system into water purification. That's normally a turnkey operation where you get in a specialist, and it's also going hand-in-hand with design and build. The turnkey operation, I uhm, place in a very specialised category, in a very specialised place in ah, the procurement process. Uhm, and then design and build, for example new technologies. Uhm, everybody is not up... Aware and has got the knowledge of new technologies. And then you incorporate design and build components into, for example, I don't want to mention ah, uhm, what you call it, a civil works special, let's call it, yes technology, of certain new designs. Then you unfortunately you must have a design and build component of the – uhm, not copyright – what is that uhm, copyright protected work then unfortunately if you want to make use of those technologies, you will have design and build, then you have got different parties go into that. So, there's a space or a place for that, very specifically.

Public and private partnerships, ah for example there's an ah, electricity crisis in South Africa, and there's a lot of small uhm, scale hidro and solar panel initiatives. There's a space for that, definitely then you make use of that because the national grid uhm, provider, Eskom will not be involved in small scale maintenance and erection of... On farms. So, there's a space and a place for it, wheat farms. But then you must get mechanism and acknowledge from national government to accept these. And now it's a very difficult thing when you have got a corrupt environment, or government that controls and manipulates and has got the monopoly over big enterprises, it threatens the development of public and private uhm, enterprises.

Interviewer:

And, and as the ██████████ municipality, do you ever make use of, of turnkey or design and build, or PPP's to the projects that you put out. Uhm, have you ever made use of any other than traditional model to put out services and, and, and construction works?

██████████:

I think it's a mixed grill. For example, when you build a new generation waste water treatment works. Civil works is normally a straightforward exercise, its contract works, it's structural engineers and they do a design, and it is part of the consultant's appointment. But when you go to electrical and mechanical design, normally that goes hand-in-hand with the design

and build relationship of the contract. So, it's a, it's a mixed grill of what you want to do uhm, well it depends on the type of project.

Interviewer:

Ja, I mean the, I think, I think the design and build that you're referring to is, is where the consultants still in the traditional way, puts out the, a functional specification and does a preliminary design, but the, the contractor does the final detailed design. I think the design and build strategy, procurement strategy that I think there's more, more with regards to where uhm, where the consultant and the contractors join forces, and they are appointed as a consortium or joint venture, or whatever you want to call it. And then they do the design and the construction. So, so, there's a, there's a bit of an advantage, you don't have to appoint the consultants first, go through the process and then appoint contractors. And also that then appears and then there's changes, uhm, and there's an also an incentive for the, the contractor and the consultant to, to do things as, as, as cheap as possible, and not to, not to try and make money from delays or changes because ah, because they will only be, be paying for it themselves, you know. So, I think when I refer to design and build, it's more in with that regard where the municipality can appoint a consortium to design it and build it.

But also, the negative effects of that or the negative part of that is that uhm, the client has a very limited input in that, in the end product and what he gets, except if there's a very detailed specification right at the beginning.

██████████:

That is exactly the issue. For example, building a water treatment works with absolutely newest technology in terms of ozone treatment. Nowhere in South Africa did we have any expertise in the consultancy to do a detailed design of ozone treatment works. Uhm, Rietfontein uhm, Pretoria uhm, water treatment works, Rietvlei Dam for example. That was an appointment for consultant and contractor on a base of design and build. Because the consultant didn't have the knowledge to prescribe and compile a list of specifications that he could tender out. So, there's a specific scenario when you involve that.

Uhm, advantage for the whole project is one uhm, uhm, given as an enterprise to the consortium. That's very difficult to control because if you appoint a guy to do the detailed design, but you also appoint him now to do the follow... The whole uhm, construction in South Africa for example, there's a big gap for opportunists to make illegal, well benefits from that. Uhm, but uhm, then you can design a massive expensive thing, there's no benchmark where you can draw a line and say that is a cost per kilolitre, or cost per megalitre or ton that you can draw a line. So, there's, there's always... In South Africa there's other things that you must...

Interviewer:

So, you say there's also maybe a, a, a trust concern with clients putting out work on a design and build, so where they don't have that much input in the product that they're getting at the end of the day, and, and how that relates to the, the operating procedures and, and, and maintenance requirements of, of a project. So, you mean that's a bit of a, a restriction

for you, why you're not that comfortable to putting out work on a design and construct basis, or not really?

██████████:

And then afterwards uhm, when you make use of technology that's very much advanced, when the product is finished, ah what then in the municipal environment. So you must have uhm, a certain designer to refer to the best design in a municipality is that design that will work for the municipality with all factors taken into consideration. And that's always the newest technology, that's not always the best advanced systems. It's a very simplistic, practical solution that is best for a municipality. So one must marry these two worlds into a procurement process. Yes, there's a chance.

Interviewer:

Uhm, do you believe there's merits in, in moving away from the traditional procurement methods and, and consider maybe the collaborative approach, or the integrated approach, or the partnership approach for everyday projects, and, and, and repeat projects. Most of the projects that some large municipality put outs, uhm, is put out on the traditional, traditional way of procuring services, do you believe there is scope to, to move away from that in certain areas, or on project size, or project complexity, or, or repeat projects. Or do you believe that the traditional system, the existing system is sufficient and, and will remain in place, and there's no need to change that?

██████████:

Uhm, you must still control everything that you are doing. And if you are allowing too many external interference and management into your projects or your procurement processes, you are going to lose... Totally control or your funds and the... Where your funding is going to be spent. So, I think there's always a fine balance uhm, refer to the traditional way as you described it, uhm somewhere accountability will have to be acknowledged more and more in future. We have gone through a period where uhm, the misuse and the irregular and illegal uhm, uhm, expenditure was, was on a day-to-day... uhm, or exercised in many municipalities. And service delivery was never done. Now, I think you must first go to the very basic financial analysis uhm, of municipalities, for example, National Treasury has got a very good uhm, project analysing the financial statements of each and every municipality. There's quite a lot of uhm, financial indicators in terms of ratios being mentioned on the public website. That will give you, for example, how much cash is there in that municipality at this very moment, what was the tendency of the cashflow over a few years. What is the amount of money being invested into operations and maintenance, what is the amount of money being invested as a percentage of your total income on the capital projects? There're some certain indicators, and one must marry the responsibility and accountability of a specific environment where you want to implement a procurement process on what that uhm, entities financial ah responsibility, or their uhm, current status is. And I think that will show you, you can risk uhm, giving more projects, for example in a municipality that's well controlled.

But in a municipality where you cannot give anymore management away of the, of the uhm, using or spending of funds, that will indicate to you, I think on a scale how far you can go off away from your traditional

procurement processes. But you need people that can make informed and sensible decisions. Uhm, so there can't be a rigid tender process, and so this is now the only process that we're going to follow in South Africa. Unfortunately we need competent people to make that sensible decisions.

Interviewer:

So, so, so you believe that the current system and the, and the laws, and by-laws and, and, and guidelines that are in place are basically there to, to prevent corruption or, or, or to limit corruption on, on projects. And if you go over to, to alternative strategies, do you think there would be more chance of, of, of corruption uhm, if those strategies are, are implemented?

██████████:

That's why I referred to, if you look at the analysis of the entity where you want to implement the specific strategy, if you analyse the current financial management uhm, characteristics of that entity, it will, it can indicate to you, you can go further away from a traditional uhm, procurement or tender process. Because there is responsibility in that environment. If you go to an environment where you want to implement procurement processes and you go to the characteristics of... Financial characteristics of that entity, it will guide you to stay as far, or as close as possible to a very conservative, traditional tender process. So, I think you know, it's a dynamic and flexible...

Interviewer:

Yes. So, so, so there is room for alternatives depending on the project and, and what it entails and, and who the client is and, and what type of project it is?

██████████:

Yes.

Interviewer:

Okay. Uhm, do you make use of framework tenders and what do you understand about the term framework tender?

██████████:

Uhm, what I understand as a framework tender is that it's a standard tender that's just been adopted to, well via a supply chain or by procurement process. That's what I understand on a framework tender. So, you can just enlighten me if I'm right or wrong.

Interviewer:

Ja, I mean my understanding of a framework tender is that a... Is where... I've actually got a definition in here – is where you appoint an organisation uhm, on certain rates and prices, and you make use of them on an as-and-when requirement basis for a specific duration. So, you appoint them for a three-year period, uhm you don't have to give them work, uhm, but if you need them to do work, then you've got these agreed rates and principles in place, and then you can make use of them.

██████████:

Okay, well we, we never used framework term in that connection. We only refer to them as year tenders, or as-and-when. That's the two descriptions that we have. And we do have them, uhm, you cannot work without them. In the city of ██████████, we had in the construction department as-and-when contractors, we appointed a few contractors on their rates, meaning that all... Everybody that were uhm, or, what's the name – went through the procurement process and uhm, successfully were appointed, you can use... And then there's a combination of factors, availability is one, price is

another one and so on and so on. So, there will always a list of contractors, uhm available on a year tender.

Interviewer:

So the benefits with a framework tender is really the availability or the duration when those people are needed, that they are immediately available because we've already gone out with a tender process and they're on standby, so when you need them then they're immediately available.

██████████:

Can I just mention an interesting point there, there's the importance to notice when you've got general work to do and when you've got a specialist or a specialised task. If you want to lay a high-pressure pipeline of two meter diameter over 50km or 100km, you're going to go out on tender to make sure that you get people that know how to do it. If you are going to lay network pipes, all the network pipes in uhm, towns, then you have got year tenders, or as-and-when tenders because that's not... It's a general, very general work of pipeline to do. So, there must then be again, a sensible decision maker before the decisions.

Interviewer:

Okay. Uhm, are you familiar with the, the four methods of tender award that, that's currently in use, method one, two, three and four?

██████████:

You can enlighten me uhm...

Interviewer:

Method one is ah, just based on the financial offer, method two is, is 100% it is just on price. Method two is financial offer and preferences that's 80/20 or 90/10 depending on, on contract value. Method three is financial offer and quality. And then method four is financial offer, quality and preference. Uhm, and, and I don't know on method four what the, what the split is between the financial offer of the quality and the preference. I think ah, the client can decide how they want to do that split. Uhm, I don't know what the, what the, what the municipal you know, what the law says, uhm, but those are the four methods currently used for appointment by consultants and contractors. Which one of those are the one that you most frequently use?

██████████:

Uhm, I think if you take the whole conversation up to now, it boils down to – if there were competent people that can make informed decisions on what must be achieved in a procurement system, this is a very dynamic and extremely beneficial uhm, situation to get maximum uhm, benefit for funds in a public and a municipal environment. If there was a CFO with the right experience, if there was a municipal manager with the right technical side, as well as legal side, and you have got engineers that are really results driven, you can build the near perfect supply and procurement process, utilising all four and different types of projects. For example, uhm, when you want to build a water purification work, you are going to only got for financial and results as a criteria obligation. If you are going to build public toilets uhm, on informal settlements, that is a different ah, approach to the procurement process to follow. Because service delivery, public participation is the first priority of all criteria. So, I think if you have got real competent people driving the process, uhm or driving the project

processes and then decide which one to use is the best solution. You cannot have a one-suit-all.

Interviewer: Are you aware of what method is, is mostly used by the [REDACTED] Municipality?

[REDACTED]: Ja. It's a combination between our own interpretation, the 80/20 or 90/10 preference. Yes, and uhm, but there's always space in procured processes for specific things. For example, when you want to appoint a service provider that's sole a service provider in a specific service, service, then it's a different process and you do not use a normal one to four uhm, options. That is uhm, in the MFMA, uhm; it makes provision for other processes as well. So, at least you know demonstrate there must be some dynamics in your preferred system.

Interviewer: Uhm, what problems do you experience with each of those tender revelation methods?

[REDACTED]: [Laughter]. The moment that you've got a supply chain department that's under threat, or they do not know how to manage supply chain properly. By poor experience or by interference, it doesn't matter which one you are going to use, you're get an ineffective system. And I think that is the biggest threat, is having the incorrect people in managing positions in supply chain uhm, processes.

Interviewer: Okay so, so you greatly concerned about the technical competency of the supply chain management staff, the people that's responsible to put out this work, and their lack of being in touch with the technical requirements of the service providers that they appoint?

[REDACTED]: That is extreme important, the technical competency. But then another thing is, the auditor general uhm, the, uhm zooming in political motivated onto certain municipalities and putting supply chain under microscope. Because that is uhm, the tendency in South Africa. So, there's, there's a political interference factor as well into supply chain uhm, by national government and by national treasury that puts the process, or threatens the normal procurement processes.

Interviewer: Would you prefer that more emphasis be put on quality, rather than on price during the tendering relation process?

[REDACTED]: That's why I refer to a very dynamic system and you must have the ability when you put the tender out to envisage which process will be the most beneficial. Uhm, if you build a very specialised and high technology water purification works, cost and final product uhm, must be your criteria. If you want to build public toilets in informal settlement then you've got different set of uhm criteria to evaluate.

Interviewer: Next question uhm, do you believe that the implementation of a competitive procurement system for professional engineering services is a benefit to project delivery and client satisfaction, or do you think it, it, it causes a negative effect on project delivery and client satisfaction?

██████████:

Well, there's, there's so many answers to this question. Uhm, professional people for example, professional engineers are part of a professional group of classified people or... Uhm, what do you call it, professions uhm, and there's a code of ethics that goes along with a professional group of people. But when times are tough, and when finances are difficult and work are getting difficult and you must make your company stay afloat, you can, in brackets, legally do anything to keep your company afloat after your appointment. Uhm, there's a very competitive mechanism. Uhm, it might be that there's a very competitive mechanism up to the point where the consultant is appointed for a specific task, right. So, you can ah, compare a lot of aspects, it can be roster appointment, where you just uhm, roster where you just rotate through all the consultants and there's a process of quality control ah, for the consultants, how you validate them and it determines whether you can appoint them. But after the appointment, there's no mechanism uhm, beneath the fact that the client must have the technical and experience to control the consultants work, and that does not exist anymore.

There's a big gap there. So, meaning that after the appointment of the consultant, it's an open check book up to certain levels to do a design, or a project, if there's not very ah, uhm, good control or knowledge to uhm ring-fence cost and scope.

Interviewer:

Ja, sorry maybe I'm misunderstanding here. Uhm, the competitive environment for professional engineering services, do you think that creates a healthy environment to be able to provide the services, or do you think it's detrimental to the environment of providing those, those services?

██████████:

It's always good to have competition. Because then it, it, it uhm, ignites a lot of other positive points of creativity and initiatives and uhm, also keeps you on our toes for new technology and invest into people and uhm, their uhm, knowledge. So, if, if there's no spirit of competitiveness, then you destroy all these nice lively factors that keeps them on their toes. So, no definitely.

Interviewer:

Do you think it's a good thing?

██████████:

It's very good.

Interviewer:

Uhm, there is a perception in the industry that uhm, the traditional cost base South African building procurement strategy, where they appoint based on price basically, uhm, is, is leading to, to project delivery failure and client dissatisfaction. Do you agree with that statement, or not really?

██████████:

Well, it's a very obvious uhm, issue if you've got tenders set out and you have... You've estimated the value on R10 for a project. Now the average that you will accept is 10% up and down from your estimation. And now, if you only want to go on a cost or price appointment, there's one guy here and he's tendering R5 for a R10 job, and according to supply chain policy of appointing the cheapest, you will appoint him. So, if there's no common sense behind uhm, I would say uhm, arguing or motivating why you want

to appoint the cheapest appointment. So, I think again you must have common sense only to appoint a person on the cheapest appointment.

Interviewer:

Uhm, do you believe that if, if, if you make use of an alternative building procurement system, procure services and contractors, uhm, it will have a positive effect on, on delivering of project objectives which will lead to better client satisfaction. Again, I think you've answered that question that it depends on what the type of project it is. Uhm you know if, if, if the, if the size of the project and the complexity of the project, and the technology involved in the project warrants a different procurement method then that ah, then that is applicable. But then that would be specific to that project.

But for everyday repeat projects, do you believe that the traditional procurement is, is applicable and, and best suited for those type of projects?

██████████:

I would really think so. Because if you take for example, a social, social environment like China, or the old USSR, if you need toilet paper, then there's a state company appointed to provide toilet paper. So, whether you get your toilet paper or not, it will be a very, very harsh type of toilet paper being delivered. Now are you really going to be satisfied with that if you cannot control your toilet paper, you're... It's a very simple example. So, I really think the answer is yes.

Interviewer:

Okay. Uhm, what do you believe stands in the way of, of moving from the traditional procurement system to a new system? Obviously in your case, it, it, it's dependant on the type of project and the technology required for the implementation of that project. Uhm, and then you also mentioned uhm, you know you've got supply chain management policies; you've got MMA that, that, that, that, that guides you with regards to the procurement processes. Uhm, you also have, you know people from treasury and by-laws. Uhm, you've also said that the competent people required in supply chain management to be more in touch with the technical aspects and, and the requirements that you need. It's not toilet paper that you're buying, it is a service that you're buying and ah, and you need to treat that differently to procuring a product. Whereas, whereas where you're procuring a service, it is easy to say, "The toilet paper must be white, and, and, and the roll must be so long and so wide", but when you're procuring a service, uhm, it's very difficult to, to get all the details of that service right at the beginning before the project's actually commenced. And I think that is why there's sometimes a bit of a, a disjointedness between, between the, the, the procurement of services as opposed to the procurement of a product like ah, like stationary, or toilet paper, or something that's a lot easier to define. Whereas a service, you can't... It's a lot more difficult to define a service and to price that service.

██████████:

You've touched on one of the most difficult things because if you want to order something now through the supply chain process, they want specifications. Now, that is two world... Two worlds you must marry two worlds. How do you marry common sense and specifications? Uhm, unfortunately, you cannot evaluate common sense, if you want toilet paper

and you send out a request to three or twenty suppliers, "Give me a price on toilet paper?" Uhm, what the benchmark would be, uhm, there is a standard for the length, and the weight and the colour. You will accept, you send out a request, "Quote me on rolls of toilet paper". And then you're going to get the non-common-sense thing of the people supplying an under-graded, cheap, smaller, thinner toilet paper.

So, there's a space in this whole equitation or problem, or specifications. And that becomes a bigger and a bigger issue. You are not allowed to mention a, a, a name or a manufacturer. But if you want to buy Cobra fittings, it's a general name used throughout plumbing, Cobra, it's the manufacturer's name. How do you then provide specifications that's equivalent to the specifications of the quality of Cobra brass fitting and not mentioning the name. Unfortunately that led to the decision that you can now mention Cobra, because it's referred to a standard.

Interviewer:

Ja.

██████████:

So, there's a lot of challenges when you want to define specifications and specifications led to the criteria that define the quality of a product of work or service. So, common sense – if you don't have common sense in the process, it's nowhere to be written, it's not quantifiable, but that comes with the leadership that you need to have in a procurement and a tender process.

Interviewer:

Okay if ah, if, if, if the municipality decides to adopt a different procurement strategy. What do you think would the process, the process would be in order to, be allowed to do that?

██████████:

Well first of all you must define your process very well, document it in terms of a proposal for an alternative procurement process. So, that must be the, the basis of your, your plan. This will have to go through quite a few uhm, approval processes. For example, if engineers want to introduce this, this will have to go through top management, uhm, directors that will have... Have to go to the director's forum. The director's forum under the head of municipal manager that is the framework that we have, we have discussed this. This will be uhm, tabled by the municipal manager uhm, into the uhm MAYCO. That is the mayoral committee. The mayoral committee will have to table this through the whole council for approval. The whole council will approve this, but it will have to... First have to be uhm, evaluated by a committee that we call the financial oversight committee that is parallel to municipal structures, and oversee the financial systems, policies and procedures uhm, that's been implemented. And also on the by-laws they have an oversight role.

So that is the process that will have to work. This oversight committee uhm, consists of internal and external auditors, and they must legally align the proposal with legislation and that is first MFMA, the PFMA and all other uhm, national uhm, treasury guidelines.

Interviewer:

So, if, if you decide you want to put out a design and construct tender, or a design and build tender, uhm, I believe that the, that the, the procurement

system allows for that, uhm, it will just require a, a mind shift from the engineers to request that, and then there will be approval process within the municipality itself and by council. Uhm, but, but, but I don't believe that there is any legislation preventing you from implementing, maybe design and construct, maybe on, on the, on the more integrative approach where you appoint a specific consultant, and a specific contractor right at the beginning. I think there... That's a bit more of a grey area because uhm, because the competitiveness will be, will be taken out of it and I think there will be concerns there because you can't just say, you want to appoint that, that consultant and that contractor and they must form a team with you right at the beginning without giving anybody else an opportunity to, to also tender for that work.

██████████: You can do that. And that's why the MFMA makes provision under certain... Section 36 for example, to be able to do that. But then you must have very good reasons. You know so the legislative framework has already got that provision. I can say, "I want this consultant because he's the only guy that knows how to do this." And I appoint him on ECSA fees and that is where you bring in the legality of the decision. Refer to the uhm, uhm, what's the name – numeration of the project according to approved hours work, and approved ECSA fees and there it's set. So, it's not an illegal appointment. So, we do that.

Interviewer: But isn't that just for, for a, a sole provider of the service, or the...?

██████████: That's right. There're a few criteria when it's impossible, impractical to appoint somebody else.

Interviewer: Okay.

██████████: When there's an emergency and when there's a sole provider and there's a one-on-one requirement.

Interviewer: Okay. Okay, ██████████ thank you very much. I think uhm; I think it was a very interesting conversation.

██████████: [Laughter].

INTERVIEWER: I, I appreciate your time; I know you guys are very busy. Any last thoughts on, on the topic that you'd like to add?

██████████: Well when there's money, there will always be hands and eyes trying to get their hands and eyes on the money. So, unfortunately our honest and our pure, our intentions of engineers as a professional is... We will have to acknowledge the other side. And we will have to acknowledge that people will always be looking over their shoulder and they will want to make sure that everything is done in a sound financial manner. We can be very good engineers, but we cannot forget about the money, the management, the financial management side. So, yes, that's all.

Interviewer: ██████████, thank you very much. Appreciate it.

[End transcript 00:59:11]

APPENDIX C
Extract and Summary Table
of the Thematic Network

Extract of Summary Table of Thematic Network

Alias	Consultant D	Client A	Client B	Client E	Client F	Contractor A
Date of Interview	4/6/2019	29/05/2019	29/05/2019	3/7/2019	17/07/2019	5/6/2019
Position	Associate Director: Transport & Planning	Principal Technician: Water & Sanitation	Senior Manager: Water and Sanitation	Director: Infrastructure Services	Senior Manager: Roads & Stormwater, Transport & Traffic	Manager: Tender Department/ Contract Manager
Qualification/ Registration	B.Eng (Civil), Pr.Eng	B.Tech (Civil), PGDip (PM)	M.Eng (Civil), M.Eng.	B.Sc.Eng (Electr), Pr.Eng	B.Tech (Transport Planning)	B.Tech (Civil)
Organization	RHDHV	Stellenbosch Municipality	Stellenbosch Municipality	Stellenbosch Municipality	Stellenbosch Municipality	CSV Construction
Company Alias	Company A	Municipality A	Municipality A	Municipality A	Municipality A	Contractor A
Interview Questions						
Section 1: Background and Criticisms of the current Building Procurement System						
3) Do you believe that making use of the Traditional Procurement Strategy in South Africa has a positive impact on project delivery and client satisfaction? Please justify your selected answer.	No, the consultants need to be appointed on a roster system and not on per project basis.	No, causes a lack in quality in project delivery because the lowest bidder is always appointed and not the best experienced bidder.	No, pre 94 the focus was more on the result and now it is more on upliftment and job creation. The controlled SCM process causes that not the best tenderer executes the project.	No, only if the client can select the most suitable consultant with the best experience.	Yes, if consultant and contractor has the right mindset and both work together to avoid delays and additional costs.	Yes, as long as the consultant get sufficient fees to provide a good tender document. If not, then contractor price his risk leading to additional costs and client dissatisfaction.
4) Do you have any criticisms of the current South African Building Procurement System? If so, please indicate what these criticisms are.	Tender process is very long. Clients do not have technical capacity. Too high discounts for consulting tenders. Roster system avoids delays due to tender durations.	Lowest tender and good BEE get work and leads to bad project delivery. On big projects with high risk to clients need to consider alternative award method. Contractor is not involved in an early stage on the project to give input. Due to SCM/ MFMA difficult to make changes in scope after tender process.	No, due to local labour requirements political influence it leads to quality problems on projects and abandoning of projects. Municipalities do not have technical capacity and focus is on upliftment not the result. Labour and political influence lead to delays/ abandonment.	Client cannot appoint best experienced consultant for the work due to MFMA leads to bad project delivery client dissatisfaction. Municipalities do not have technical capacity to write good tenders. Tender system is over regulated by SCM regulations.	Tender process takes too long to appoint service provider. Political influence cause delays on projects.	Awards are based on price and preference not best experienced contractor gets project. Lowest price has a risk for the client and leads to delays and additional costs.
Section 2: Alternative Building Procurement Systems						
5) Are you aware of any alternative procurement strategies available for consideration? If so, please indicate what alternative procurement strategies you are familiar with?	He is aware of Design-and-construct, PPPs, DBOT.	He is aware of Design-and-Construct.	He is aware of Turnkey, Design-and Build, PPPs.	He is aware of Turnkey, Design & Build, PPPs.	He is aware of EPC, design-and-construct, and PPPs.	He is aware of Design-and-construct, Turnkey, PPPs.
6) Have you ever used any of the alternative procurement strategies on a project? If so, which alternative strategy did you use and how did the results compare to the traditional procurement strategy?	Yes, D&B, DBOT Procurement of D&C is very difficult as scope of work not normally very good and difficult to compare tenders. Client needs owners engineer to develop SOW. DBOT transfer >30 years and very risky to contractor as long duration makes unpredictable. Appointment b/o ECSA better for consultants as covers client/ consultant risk. D&B for bigger projects and client transfer risk to contractor. PPPs where client does not have capacity/ funding for mega projects - difficult to procure.	No, municipality does not have technical capacity to put out D&B/ PPP tender only traditional.	No, only traditional. Advantages of D&B is: shorter tender time, less changes during construction, client has limited input in design. D&B is good where municipality does not have expertise. Lack of trust between parties makes client not do D&B.	Yes, PPP s. MFMA allows for other strategies. Compare D&B tenders b/o value for money. PPPs very long process - > 4years. Political influences changes over 5 years leads to PPPs not being awarded.	No, traditional is good for repeat projects and PPPs good for specialist projects. D&B and PPPs good to shift risk from client to contractor.	Yes, D&C and turnkey for private clients. Turnkey requires better scope of work from client than D&B. Turnkey better sharing of risk between client/ contractor. PPPs takes long for the flow of money for contractor and contractor takes much risk.
7) Would you prefer that an alternative building procurement strategy be implemented in South Africa and which procurement strategy would you prefer to use and why?	No, if consultants did not have to tender like previously then it works good. If appointed on a roster system with limited discounts based on ECSA then no problem.	Yes, many benefits for integrative strategy with bigger contracts and high risk projects. Traditional is good for smaller repeat projects.	No, the existing system was molded to curb corruption. Alternative strategies will open opportunities for collusion/ corruption.	No, traditional is good for smaller repeat projects. Municipality does not have skills to do it differently - currently 50% of posts are vacant.	Yes, in the traditional system the client carries all of the risk. Alternatives to transfer risk to contractors will be good.	Yes, D&B for private clients not public clients. Public client traditional is good. Traditional good if awarded b/o quality not price with good functionality requirement.
8) Are you familiar with the terms Collaborative, Partnership and Integrative project delivery models? What is your understanding of these terms?	No, he was not familiar with the terms.	No, he was not familiar with the terms.	No, he was not familiar with the terms.	Yes, Collaborative - joint partnership between client, consultant and contractor, Partnerships - private partner takes on more risk from municipality, Integrative - various parties working together at an earlier stage to share risks and rewards.	No, he was not familiar with the terms.	No, he was not familiar with the terms.
9) Would you prefer that the industry move towards a more integrative project delivery strategy from the traditional project delivery strategy?	No, current system works well if award is not mainly based on price. Roster system works well with limited discounts.	Yes, many benefits for integrative strategy with bigger contracts with less delays and more risk sharing.	No, the existing system was molded to curb corruption. Alternative strategies will open opportunities for collusion/ corruption.	No, traditional strategy is good if the best experienced contractor needs to be appointed and not only based on price. Municipalities does not have technical expertise put out good quality criteria.	No, system was developed to suit current SA requirements. Industry is not geared for the change.	No, the consultant and contractor must remain independent to avoid corruption. For private clients integrative strategy can work as more trust between parties. Consultants needs to police contractor.
10) Do you make use of framework tenders? If so, what are the benefits associated with this model?	Yes, prequalified on list and get work as-and-when required and can appoint best suited provider. Can use same provider for different scope of works based on same rates.	Yes, streamlined procurement process on an as-and-when required basis. Only quality gate then asked for RFO - best suited gets the job.	Yes, appoint provider on as-and-when required basis. Rates tender to get on list then asked for RFO. Streamlined procurement process.	Yes, appoint provider on as-and-when required basis without committing to a quantum of work. Streamlined procurement process.	Yes, streamlined procurement process. Appoint as-and-when required basis.	Yes, scope does not have to be defined tender only rates. Streamlined tender process. Appoint on as-and-when required basis. Not secured any work. More suitable for maintenance projects.
11) Are you familiar with the tender evaluation methods and what tender evaluation method are used more frequently? Method 1, 2, 3, or 4?		2/2 with quality gate	Did not answer question	He was unsure.	Method 2 with a functionality gate	2 - with quality gate criteria
12) Which is your preferred method of evaluating/ awarding tenders and why? Method 1, 2, 3, or 4?	4 - quality must not just be gate but count more towards tender points during award.	4 - quality is important to manage risk of municipality	4 - quality needs to be most important criteria	4 - quality is important and all 3 criteria needs to be considered.	4 - quality is very important and all 3 criteria needs to be considered.	4 - quality is very important, all three criteria needs to be considered. Quality must count 80 points during evaluation.

Complete Summary Table of Thematic Network (scale was too big to include legible in report)

Stakeholder Name	Stakeholder Role	Stakeholder Address	Stakeholder Contact	Stakeholder Email	Stakeholder Phone	Stakeholder Fax	Stakeholder Website	Stakeholder Address	Stakeholder Contact	Stakeholder Email	Stakeholder Phone	Stakeholder Fax	Stakeholder Website	Stakeholder Address	Stakeholder Contact	Stakeholder Email	Stakeholder Phone	Stakeholder Fax	Stakeholder Website
1.0 Summary of the current business strategy																			
2.0 Key Business Objectives																			
3.0 Key Strategic Initiatives																			
4.0 Key Performance Indicators (KPIs)																			
5.0 Key Risk Factors																			
6.0 Key Stakeholder Engagement																			
7.0 Key Resource Allocation																			
8.0 Key Governance Framework																			
9.0 Key Compliance Requirements																			
10.0 Key Financial Projections																			
11.0 Key Operational Challenges																			
12.0 Key Innovation Opportunities																			
13.0 Key Sustainability Initiatives																			
14.0 Key Digital Transformation																			
15.0 Key Talent Development																			
16.0 Key Customer Experience																			
17.0 Key Supply Chain Optimization																			
18.0 Key Regulatory Updates																			
19.0 Key Market Trends																			
20.0 Key Future Outlook																			

APPENDIX D
Ethics Clearance Approval

APPLICATION FORM

Please Note:

Any person planning to undertake research in the Faculty of Engineering and the Built Environment (EBE) at the University of Cape Town is required to complete this form before collecting or analysing data. The objective of submitting this application prior to embarking on research is to ensure that the highest ethical standards in research, conducted under the auspices of the EBE Faculty, are met. Please ensure that you have read, and understood the EBE Ethics In Research Handbook (available from the UCT EBE, Research Ethics website) prior to completing this application form: <http://www.ebs.uct.ac.za/ebs/research/ethics1>.

APPLICANT'S DETAILS		
Name of principal researcher, student or external applicant	Zwignli Visser	
Department	EBE	
Preferred email address of applicant:	zwignli.visser@rdhv.com	
If Student	Your Degree: e.g., MSc, PhD, etc.	MSc (Project Management)
	Credit Value of Research: e.g., 60/120/180/300 etc.	60
	Name of Supervisor (if supervised):	Mark Messyn
If this is a research contract, indicate the source of funding/sponsorship	N/A	
Project Title	The South African Building Procurement System for Public Sector Delivery in the Engineering Industry: Investigating Alternatives	

I hereby undertake to carry out my research in such a way that:

- there is no apparent legal objection to the nature or the method of research; and
- the research will not compromise staff or students or the other responsibilities of the University;
- the stated objective will be achieved, and the findings will have a high degree of validity;
- limitations and alternative interpretations will be considered;
- the findings could be subject to peer review and publicly available; and
- I will comply with the conventions of copyright and avoid any practice that would constitute plagiarism.

SIGNED BY	Full name	Signature	Date
Principal Researcher/ Student/External applicant	Zwignli Visser	Signature Removed	30 Mar 2019

APPLICATION APPROVED BY	Full name	Signature	Date
Supervisor (where applicable)	Mark Messyn	Signature Removed	30 Mar 2019
HOD (or delegated nominee) Final authority for all applicants who have answered NO to all questions in Section 1; and for all Undergraduate research (including Honours).	Click here to enter text.	Signature Removed	Click here to enter a date.
Chair: Faculty EIR Committee For applicants other than undergraduate students who have answered YES to any of the above questions.	NIEN-TSU TLIAW	Signature Removed	5 Apr. 2019

APPENDIX E
Copy of Consent Form

PART IV EXEMPLAR OF INFORMED CONSENT DOCUMENT

INFORMATION SHEET & CONSENT FORM – STAKEHOLDERS CONCERNED WITH ENGINEERING AND PUBLIC SECTOR

THE SOUTH AFRICAN BUILDING PROCUREMENT SYSTEM FOR PUBLIC SECTOR DELIVERY IN THE ENGINEERING INDUSTRY: INVESTIGATING ALTERNATIVES

Hello, my name is Zwingli Visser and I am conducting research towards a master’s degree at the University of Cape Town. I am researching different alternatives available for the South African Building Procurement System and would like to invite you to participate in the project.

The project is investigating what alternatives to the current South African Building Procurement System are available for implementation and what is preventing these from being implemented.

I am interested in finding out about your knowledge related to available alternatives to be considered for implementation and I want to understand what your preferences are. I would like to interview people who work in the engineering industry and who has contact with the public sector.

Please understand that you do not have to participate, i.e. your participation is voluntary. The choice to participate is yours alone. If you choose not to participate, there will be no negative consequence. If you choose to participate, but wish to withdraw at any time, you will be free to do so without negative consequence. However, I would be grateful if you would assist me by allowing me to interview you.

Participants would be asked to make time available on an agreed date and time. It is anticipated that the interview will last approximately 60 minutes and no costs of any kind will be applicable. Unfortunately no payment for the interview will be applicable as this is a privately funded course. It is intended to record the interview and permission is requested to proceed with the recording of the interview.

There will be no direct benefits to participant.

There will be no risk to the participants, there will be no harm to the interviewee and there will be no consequences to the interviewee. Permission is requested to use the data for analyses as part of the interviewer’s dissertation report. All identities of the respondents will be kept anonymous. Please state what you are willing to allow to be used in the dissertation report and any exclusions that may not be used in the data analyses.

Anonymity will be preserved by protecting the identity of the respondents and password protected files will be used. Confidentiality will be maintained by keeping all records private and secure.

Data will be analysed as part of the dissertation report and a copy of the dissertation report will be made available to the interviewee should he request this.

Name of participant Signature of participant

Date Date

APPENDIX F
Data Tables

Respondent	Alternative Building Procurement Strategy respondent is aware of					Other
	Design-and-Build	Public-Private-Partnerships	Turnkey	Engineer Procure-Construct-manage	Design-Built-Operate-Transfer	
Consultant A	✓	✓				
Consultant B		✓	✓	✓	✓	Unsolicited bid
Consultant C	✓	✓	✓			
Consultant D	✓	✓			✓	
Client A	✓					
Client B	✓	✓	✓			
Client C						Emergency procedures
Client D		✓			✓	
Client E	✓	✓	✓			
Client F	✓	✓		✓		
Contractor A	✓	✓	✓			
Contractor B	✓	✓				
Contractor C	✓					
Contractor D	✓	✓	✓			
Contractor E	✓	✓	✓			

Alternative Building Procurement Strategies respondents are aware of

Respondent	Alternative Building Procurement Strategy used by respondent					Other
	Design-and-Build	Public-Private-Partnerships	Turnkey	Engineer Procure-Construct-manage	Design-Built-Operate-Transfer	
Consultant A	✓					
Consultant B						
Consultant C	✓					
Consultant D	✓				✓	
Client A						
Client B						
Client C						
Client D						
Client E		✓				
Client F						
Contractor A	✓		✓			
Contractor B	✓					
Contractor C						
Contractor D	✓					Concessionaire
Contractor E	✓					Negotiated

Alternative Building Procurement Strategies respondents were involved in

Respondent	Prefer an alternative Building Procurement Strategy		What alternative Building Procurement Strategy is preferred
	Yes	No	
Consultant A		✓	
Consultant B		✓	
Consultant C		✓	
Consultant D		✓	
Client A	✓		Integrative strategy
Client B		✓	
Client C	✓		Integrative strategy
Client D	✓		PPP/ D&B
Client E		✓	
Client F	✓		
Contractor A		✓	
Contractor B	✓		Integrative system
Contractor C	✓		
Contractor D	✓		
Contractor E	✓		Integrative system

Summary of respondent's preferences related to Traditional and alternative Building Procurement Strategies

Respondent	Respondent's familiarity with alternative Building Procurement Strategies		
	Collaborative	Partnership	Integrative
Consultant A	✓	✓	
Consultant B	✓	✓	✓
Consultant C			
Consultant D			
Client A			
Client B			
Client C			
Client D			
Client E	✓	✓	✓
Client F			
Contractor A			
Contractor B			
Contractor C			
Contractor D			
Contractor E			

Summary of the respondent's familiarity with the terms Collaborative, Partnership and Integrative Building Procurement Strategies

Respondent	Preference to move to a more Integrative Building Procurement Strategy	
	Yes	No
Consultant A	✓	
Consultant B		✓
Consultant C	✓	
Consultant D		✓
Client A	✓	
Client B		✓
Client C	✓	
Client D	Did not comment	Did not comment
Client E		✓
Client F		✓
Contractor A		✓
Contractor B	✓	
Contractor C	✓	
Contractor D	✓	
Contractor E	✓	

Summary of the respondent's preference to move towards a more Integrative Building Procurement Strategy

Respondent	Was the respondent familiar with the 4 Methods of Tender Evaluation		What Method was most often by the public sector?	Which is your preferred Method of Tender Evaluation?
	Yes	No		
Consultant A	✓		Method 2 with a functionality gate	Method 4
Consultant B		✓		Method 4
Consultant C	✓		Method 2	Method 4
Consultant D	✓		Method 2	Method 4
Client A	✓		Method 2 with a functionality gate	Method 4
Client B	Did not answer			Method 4
Client C	✓		Method 2	Method 4
Client D	He was unsure			Method 4
Client E	He was unsure			Method 4
Client F	✓		Method 2 with a functionality gate	Method 4
Contractor A	✓		Method 2 with a functionality gate	Method 4
Contractor B	✓		Method 2 with a functionality gate	Method 4
Contractor C	✓		Method 2 with a functionality gate	Method 4
Contractor D	✓		Method 2 with a functionality gate	Method 4
Contractor E	✓		Method 2 with a functionality gate	Method 4

Summary of the respondent's familiarity with the four Tender Evaluation Methods and an indication which method is used by most often