

# CHALMERS



## Procurement strategies for technical consultancy services

Practitioner perceptions and best practice cases

*Master of Science Thesis in the Master's Programme Design and Construction  
Project Management*

JOSEFIN HJORTH  
JENNY RÖSTRÖM

Department of Technology Management and Economics  
*Division of Service Management*  
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Gothenburg, Sweden 2012  
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MASTER'S THESIS E 2012:42

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JOSEFIN HJORTH  
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Master thesis E 2012:42  
Department of Technology Management and Economics  
Division of Service Management  
Chalmers University of Technology  
SE-412 96 Gothenburg  
Sweden  
Telephone: + 46 (0)31-772 1000

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Josefin Hjorth

Jenny Röström

Department of Technology Management and Economics  
Division of Service Management  
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## ABSTRACT

Technical consultancy services have a significant effect on the quality of any construction projects' end result. Therefore, it is important that clients acquire the right consultants for the task. However, procuring services is complex since services are intangible and difficult to measure. Public procurers, there among the Swedish Transport Administration (STA), feel restricted by procurement laws and are not adapting their procurement strategies to the needs of each project. The main purpose of this master thesis is to evaluate currently used procurement strategies for technical consultancy services by investigating practitioner perceptions and best practice procurements. Interviews and a multiple case study have been conducted in order to investigate characteristics of successful contract documents and currently used procurement strategies. Findings show that consultants are dissatisfied with the currently used procurement strategies and the strong focus on lowest price. Also, clients have different interpretations of the legislation, which restrict their use of non-price criteria. The interviewed consultants claim that clients tend to request higher competence than necessary and formulate complex and ambiguous contract documents. The four projects included in the case study show that different procurement criteria and evaluation methods can be used when selecting winning tenders. The identified characteristics of success relate to clear formulation of the contract document, the use of relevant demands and the use of non-price-criteria. Also, clients must be able to estimate the prices of the submitted tenders and weight non-price criteria accordingly if a consultancy firm shall be able to offer their most competent consultants. To conclude, the STA should consider the entire lifetime of the built facility when procuring technical consultancy services. The authority also needs to acknowledge that a less strict interpretation of the laws is possible, which allows increased focus on non-price criteria.

Key words: Public procurement, technical consultancy services, contract documents, procurement strategies, procurement criteria.



Strategier för upphandling av teknikkonsulttjänster

JOSEFIN HJORTH

JENNY RÖSTRÖM

Institutionen för teknikens ekonomi och organisation

Avdelningen för service management

Chalmers tekniska högskola

## SAMMANFATTNING

Tekniska konsulttjänster har en betydande påverkan på slutresultatets kvalitet i ett byggprojekt. Därför är det viktigt att beställare upphandlar de konsulter som är bäst lämpade för varje uppdrag. Dock är upphandling av tjänster komplicerat då tjänster är abstrakta och svåra att mäta. Dessutom känner sig vissa beställare, däribland Trafikverket, begränsade av de gällande upphandlingslagarna och anpassar inte sina upphandlingsstrategier efter varje enskilt projekt. Syftet med detta examensarbete är att utvärdera befintliga strategier för upphandling av teknikkonsulttjänster och att belysa framgångsfaktorer för upphandling. För att uppnå syftet har intervjuer med konsulter och beställare inom olika sektorer genomförts tillsammans med en fallstudie av lyckade upphandlingar. Studien visar att konsulter är missnöjda med de vanligast förekommande upphandlingsstrategierna och marknadens stora fokus på lägsta pris. Dessutom har beställare vitt skilda tolkningarna av upphandlingslagarna, vilket begränsar användandet av icke-prisrelaterade kriterier. De intervjuade konsulterna hävdar även att beställare tenderar att begära högre krav på kompetens än nödvändigt samt formulera omfattande och komplexa förfrågningsunderlag. Fallstudien inkluderar fyra exempel på lyckade upphandlingar som visar att olika upphandlingskriterier och utvärderingsmetoder kan användas vid tilldelning av kontrakt. De belysta framgångsfaktorerna från intervjuerna och fallstudien relaterar till tydlig formulering av förfrågningsunderlag, användning av relevanta krav samt användning av icke-prisrelaterade kriterier. Resultatet visar att det är viktigt att beställare uppskattar priset på alla aktuella anbud och därefter väger icke-prisrelaterade kriterier tillräcklig högt för att ett konsultföretag ska kunna erbjuda sina mest kompetenta konsulter. Rekommendationen till Trafikverket är att inkludera en vision av konstruktionens totala livslängd vid upphandling av teknikkonsulttjänster samt att acceptera en mer öppen tolkning av lagarna, vilket kan resultera i en ökad möjlighet för större fokus på icke-prisrelaterade kriterier.

Nyckelord: Offentlig upphandling, teknikkonsulttjänster, förfrågningsunderlag, upphandlingsstrategier, upphandlingskriterier.



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# Glossary of procurement terms

## English - Swedish

Added value	Mervärde
Award criteria	Utvärderingskriterier <sup>*</sup>
Award decision	Tilldelningsbeslut
Contract documents	Förfrågningsunderlag <sup>*</sup>
Contracting authorities	Upphandlande myndigheter <sup>*</sup>
Cost reimbursement	Löpande räkning
Design development documents	Systemhandlingar
Design plan document	Projekteringsplan
Economically most advantageous tender	Ekonomiskt mest fördelaktiga anbud <sup>*</sup>
Evaluation of tenders	Anbudsutvärdering <sup>*</sup>
Framework agreement	Ramavtal <sup>*</sup>
General Rules for Consulting Corks in Architectural and Engineering Activities	Allmänna bestämmelser för konsultuppdrag inom arkitekt- och Ingenjörssamhet, ABK
Negotiated procedure	Förhandlat förfarande <sup>*</sup>
Open procedure	Öppet förfarande <sup>*</sup>
Payment principle	Ersättningsform
Selective procedure	Selektivt förfarande <sup>*</sup>
Shall-requirements	Skallkrav <sup>*</sup>
Technical consultancy services	Teknikkonsulttjänster
Technical specification	Tekniska specifikationer <sup>*</sup>
Tender	Anbud <sup>*</sup>
Tenderer	Anbudsgivare <sup>*</sup>
The principle of equal treatment	Principen om likabehandling <sup>*</sup>
The principle of mutual recognition	Principen om ömsesidigt erkännande <sup>*</sup>
The principle of non-discrimination	Principen om icke-diskriminering <sup>*</sup>
The principle of proportionality	Proportionalitetsprincipen <sup>*</sup>
The principle of transparency	Transparensprincipen <sup>*</sup>
The Public Procurement Act	Lagen om offentlig upphandling, LOU
The Act on Procurement within the Utilities Sectors	Lagen om upphandling inom försörjningssektorn, LUF
Threshold	Tröskelvärde <sup>*</sup>
Utilities sectors	Försörjningssektorer <sup>*</sup>
Value added tax (VAT)	Mervärdesskatt <sup>*</sup>

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<sup>\*</sup> Konkurrensverket, n.y.



# 1 Introduction

Construction is created through a project process, for which foundations are set in the early phases. It is during the planning stage that expectations regarding the outcome are formed and it is during the formulation of the contract documents that the criteria for achieving the final product are chosen. The client is responsible for the main part of the early phases, including defining the project and formulating its requirements. It is the client who develops the project from concept to delivery while ensuring that all needs of different stakeholders are met (The Swedish Construction Clients Forum, 2006). A key factor in achieving this is to procure the right resources for the project, including technical consultancy services.

Technical consultancy services have a great effect on the outcome of any construction project (Sporrong, 2011). An important and difficult aspect of procuring such services is to identify and select those consultants that have the experience and expertise best suited for a specific project. In addition, the service has to be within a reasonable cost frame. It is the client's responsibility to find the right basis for evaluating tenders, which requires a reasonable balance between price and other award criteria (Day, 1998). In Sweden, as in most other countries, public clients must follow the laws and regulations that govern public procurement. However, many clients find it difficult to procure technical consultancy services and at the same time obey these laws (Sporrong, 2011). Statistics show that the number of court appeals made by discontent service providers is increasing (Taro Lennerfors, 2006). As a consequence, the clients tend to base their decision on measureable criteria, such as price. By focusing on price, other aspects such as competence and service quality tend to be less important in the procurement process (Sporrong, 2011).

## 1.1 The Swedish Transport Administration

The Swedish Transport Administration, or the STA, is the largest public client within the field of infrastructure. The authority is responsible for the long-term planning for all types of transportation in Sweden and is also liable for building, operating and maintaining state-owned roads and railways (Trafikverket, 2010). The STA, which had a turnover of approximately 26 billion SEK in 2011 and has about 6500 employees, became operational in April 2010 (Trafikverket, 2012a). The STA procures around 1,700 different technical consultancy services per year (CTM, 2012) but similar procurement strategies are used for the majority of these. The authority admits being repetitive in the use of procure strategies and finds it difficult to develop and implement new procurement strategies<sup>1</sup>. Different problem areas in need of improvement have also been acknowledged. One aspect is that the authority tends to govern its procured consultants' way of working in a detailed manner. This limits the consultants' possibility to execute the assignment based on their own preferences, which can affect the quality of the delivered service negatively. The STA wishes to change focus when procuring to specify 'what' the consultants shall deliver rather than 'how' they shall deliver it. In addition, the authority seeks high service quality but finds it difficult to procure competence due to the procurement laws. Another aspect in need of change is that cost reimbursement contracts are used for the majority of the projects. The STA believes that this contributes to the trend of consultants lowering their prices to an unsustainable level, since the most contracts are awarded to

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<sup>1</sup> Hermansson, M. Personal communication 22<sup>th</sup> February 2012

the lowest priced tender. Therefore, the authority has taken an initiative to increase the number of procurements with fixed price contracts. The overall goal is to procure at least 10 per cent of the projects in 2012 on fixed price and increase this number to 30 per cent by 2014 (Trafikverket, 2012b). The authority hopes that this initiative will reduce the focus on lowest price at the same time as the best suited technical consultants with the right competence for a specific project are procured. The initiative is one step in the STA's pursuit towards creating better market conditions for increased innovation and productivity within the field of infrastructure. In addition, the authority is refining its role as a client and aims to develop and implement new strategies for procuring consultancy services.

## **1.2 Purpose and scope**

The main purpose of this master thesis is to evaluate currently used procurement strategies for technical consultancy services by investigating practitioner perceptions and best practice procurements. The aim is to find how the Swedish Transport Administration can improve its procurement strategies and terms of contracts when acquiring technical consultancy services. Best practice procurement within infrastructure and other fields will be compared in order to highlight characteristics of successful contract documents and contracting practice.

This thesis considers strategies of procuring technical consultancy service within the three different fields

- Infrastructure;
- Building Construction; and
- Industry and Energy Production.

Information is collected through interviews with technical consultants, clients and a contractor. In addition, a case study is conducted based on examples of best practice procurement within two of the fields, Infrastructure and Building Construction. The cases are selected by the interviewed consultants and are identified as projects where the contract documents provided conditions that allowed the technical consultants to use their competence in a creative and efficient way. The purpose of the interviews and the case study is to illuminate successful characteristics of procurement and different procurement strategies currently used. Areas of focus are

- procurement strategies;
- payment principles;
- demands and level of specification;
- competence and creativity;
- client-consultant interaction;
- responsibility; and
- contractual adherence.

To fulfil the purpose of the master thesis, the following research questions have been formulated:

RQ1) Which are the most important success factors in a contract document?

RQ2) How should a public client procure technical consultancy services in order to acquire the right competence for a specific project?

RQ3) How can the STA improve its procurement strategy by looking at the performance of other clients and considering technical consultants preferences?

The thesis consists of seven chapters and is structured as follows. The first chapter provides an introduction to the thesis and includes purpose, scope and presentation of the STA. The second chapter consists of a description of the procurement process and the main regulations regarding public procurement. In the following chapter, the theoretical frame of reference is presented, which highlights some of the previous research made within the subject. The fourth chapter describes and explains the methodology used in the research, while the fifth chapter consists of the research findings from the interviews and the multiple case study. In the following chapter, the findings are analysed and the research questions are answered. Finally, the last chapter concludes the thesis and provides recommendations for the STA.

## **2 Public procurement**

Public procurement is the process by which public clients, such as government agencies or municipalities, acquire goods and services. In Sweden around 20,000 public procurements take place each year. The area of public procurement stands for a significant part of the country's economy with a yearly turnover of 500-600 billion SEK (Konkurrensverket, 2011a). According to the Public Procurement Committee (2010) this value corresponds to 17 per cent of Sweden's annual gross national product. This indicates the importance of the public procurement, which is governed by laws and agreements.

### **2.1 Legislation and agreements**

All countries within the European Union, EU, are obligated to follow directives regarding public works, public supply and public service contracts. Before the directives came into force, only two per cent of the public contracts were awarded to international tenders. The directives were introduced between 1988 and 1992 with hope of creating a more open market and to encourage international competition (Cox & Furlong, 1995).

In Sweden, the legal framework regarding procurement is presented in the Public Procurement Act and the Act on Procurement within the Water, Energy, Transport and Postal Services Sectors, also known as LOU and LUF. The purpose of the acts is to ensure that public funding is spent in the best way possible, by seeking and taking advantage of the competition on the market. Another intention of the acts is to create a fair market where suppliers can compete on equal terms. In common for the EU directives and the two Swedish laws are the fundamental principles of all public procurement that need to be considered when selling or buying all types of services, products or work (Konkurrensverket, 2011b). The five principles regard non-discrimination, equal treatment, proportionality, transparency and mutual recognition.

#### **2.1.1 The Public Procurement Act**

The Public Procurement Act, also known as LOU, entered the Swedish legislation in the early 1990s and had its latest update in 2007 (SFS 2007:1091). Obligated to follow LOU are local and central government authorities, county councils and some specific public parties that procure work, services or products in Sweden (Konkurrensverket, 2011b).

Different rules in LOU is apply dependent on if the expected value of the contract is below or above a certain threshold. It is the responsibility of the contracting authority to calculate the expected value of the contract with the restriction that subdividing the procurement so it falls below the thresholds is not allowed (Konkurrensverket, 2011b). The thresholds for the different areas can be seen in Table 1.

Table 1: Table of threshold values for products, services and works for LOU 2012 (SFS 2007:1091)

LOU	Thresholds for 2012	
	EURO	SEK
<b>Products and services</b>		
Central government authorities	130,000	1,233,401
Other contracting authorities (e.g. municipalities, country councils, the public utilities sector, associations, foundations)	200,000	1,897,540
<b>Works</b>	<b>EURO</b>	<b>SEK</b>
All contracting authorities	5,000,000	47,438,500

It is the responsibility of the contracting authority to decide the type of procedure that is used in the selection process. There are several different types of award procedures that can be applicable in different scenarios. The simplified procedure is the most commonly applied in Sweden for contracts below the threshold. It enables all suppliers to submit tenders and the contracting authority has the possibility to negotiate the sent in offers with one or more suppliers. The open procedure is the most commonly used procurement procedure above the threshold. 73 per cent of all tender announcements in Europe are open procedures (Strand et. al, 2011). It provides all suppliers with the possibility to submit tenders after the contracting authority publishes a contract notice (SFS 2007:1091). A selective procedure can also be used, in which suppliers must apply to send in tenders and the contracting authority selects some suppliers that later are invited to participate in the submitting of tenders. In this procedure, negotiations can take place with one or more tenderers before making the final decision.

### 2.1.2 The Act on Procurement within the Utilities Sectors

The Act on Procurement within the Water, Energy, Transport and Postal Services Sectors, or LUF, concerns procurement within the utilities sectors and was last updated 2007 (SFS 2007:1092). LUF covers contracting authorities that purchase activities within the field of gas, electricity, water, transport services and postal service as well as those active within extraction of fuels or provisions of ports or airports. LUF can also apply to certain public undertakers that engage in any of the mentioned fields. As for services procured under LOU, simplified and open procedures are the most applied for procurement under LUF (Konkurrensverket, 2011b). LUF could be considered to be slightly more flexible than LOU. For an example, the contracting authority is free to choose whatever type of procurement procedure it likes, with the threshold as its only restriction. Therefore, above the LUF threshold, a negotiated procedure is always an available choice. In addition, there are higher threshold values for procurement of goods and services in LUF than LOU. The LUF thresholds for the different areas can be seen in Table 2.

Table 2: Table of threshold values for products, service and works for LUF 2012 (SFS 2007:1091)

<b>LUF</b>	<b>Thresholds for 2012</b>	
	<b>EURO</b>	<b>SEK</b>
<b>Products and services</b>		
All contracting authorities	400,000	3,795,080
<b>Works</b>	<b>EURO</b>	<b>SEK</b>
All contracting authorities	5,000,000	47,438,500

### 2.1.3 ABK

ABK is a Swedish standard contract agreement named General Conditions of Contract for Consulting Agreements for Architectural and Engineering Assignments. The first edition came into force 1966 and it was last updated in 2009. It regards agreements between clients and consultants in all areas, from the design phase to the completion of the project. The aim of ABK is to provide the involved parties with conditions for executing an assignment with high quality. To do so, it is required that the client and consultants have similar expectations regarding the projects' purpose, scope and level of quality (BBK, 2010). ABK includes all phases of a project and covers

- scope;
- execution;
- organisation;
- time;
- responsibility;
- finances;
- rights regarding project outcome;
- cancellation of contract; and
- solutions of dispute.

According to ABK (BBK, 2010), there are two payment principles that are based on either fixed priced or cost reimbursement contract. In fixed price contracts the procured supplier is bound to carry out a specific service for a fixed amount, excluding value added tax, VAT. This type of contract is also called lump sum contract and is applicable when the service performance standards and quantity of work are known. Through fixed price contracts the performance risk is transferred from the client to the procured supplier (Kammarkollegiet, 2010). Research show that the most common contract form used in infrastructure projects in Sweden is a cost reimbursement contract (Pakkala, 2007). The procured supplier is allowed to be compensated for its costs up to a predetermined level that is mentioned in the contract (Kammarkollegiet, 2010). Therefore the contract form is appropriate when the client is aware of the type of service needed, but the required quantity is unknown. Compensation can also be provided through incentives, which can be included in both fixed price contracts and cost reimbursement contract. In these cases, the incentives must relate to the aim of the project or accomplished result and performance, as well as to consider responsibility and risk for the procured supplier.

## 2.2 Procurement process

The structure of the procurement process is similar for all types of procurement, regardless if the project has to follow the regulations in LOU or LUF. An illustration of a typical procurement process can be seen in Figure 1.

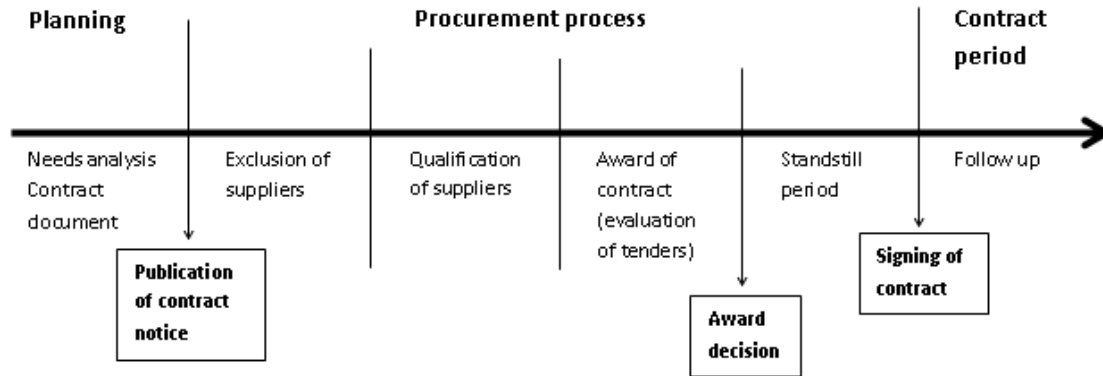


Figure 1: Procurement process (Konkurrensverket, 2011b)

The procurement process is dependent on the contracting authority's ability to determine and specify the award criteria, which is done through a needs analysis in the planning phase (Sporrong et al., 2005). The contracting authority is obligated to formulate these needs and criteria in the contract documents where the information regarding the tender is presented. The contract document must be clear, correct and contain at least five parts (Konkurrensverket, 2011b), which are

- requirements on the supplier;
- technical specifications;
- principle for evaluation;
- commercial conditions; and
- administrative provisions.

Possible requirements on the supplier are necessary when procuring through an open and simplified procedure. It can include demands regarding the economic, technical and professional suitability of the supplier. A description of the task at hand must be presented in the technical specification. The contracting authority has the choice of formulating the specification as either performance-based or non-performance-based requirements (Konkurrensverket, 2011b). Performance-based requirements refer to 'what' will be delivered while non-performance-based requirements explain 'how' it will be delivered. Also, there is a possibility to formulate the requirements in terms of references to standards. When using technical specifications the contracting authority should try to avoid referring to trademarks and brands. However, if the task at hand cannot be described accurately enough without doing so such references can be presented if the term "or equivalent" is added.

Regarding the principle for evaluation, the contracting authority must declare how its selection will take place. The winning tender could either be

- the most economically advantageous tender; or
- the tender with the lowest price.

If the contracting authority is planning to use the principle of the most economically advantageous tender the evaluation criteria must be clearly stated in the contract document. When awarding the most economically advantageous tender the contracting authority has the responsibility to formulate the criteria chosen. The criteria must be relevant for the specific project and be based on different types of conditions, such as price, quality, time, service and environmental effect (Konkurrensverket, 2011b). The award criteria could either be weighted against each other or be prioritised in a certain range (Kammarkollegiet, 2010). Non-price criteria such as the experience and competence of the supplier are only allowed if it is necessary for the procured project. The commercial conditions in a contract document should include a description of terms of payment and supply while the administrative provisions should include information regarding time validations, deadlines and award procedures (Konkurrensverket, 2011b). The contracting authority also has the possibility to enforce other requirements regarding how the work presented should be performed. Such requirements often include social and environmental consideration. According to both acts, a supplier has the possibility to appeal the procurement process and the award decision if they feel that the contracting authority not correctly follow the acts. The decision can be aborted or corrected if the court discovers a violation of the acts and considers that this has caused effects on the procurement's result. When involved in a proceeding at the court the contracting authority and the supplier are normally responsible for covering their own costs.

### **3 Theoretical frame of reference**

The public sector is often criticised for its low level of performance and standardised way of working (Altamirano, 2010). Traditional procurement methods and contract forms have dominated the market in most countries for a long time. Regarding procurement of technical consultancy services, a major change of strategy occurred in the 1990s due to the implementation of existing laws (Bröchner et al., 2006). The laws were an attempt to create more fair conditions and increase the competition on the market. As a consequence, the public procurement process became restricted regarding aspects such as informal relationship-based selections of suppliers (Sporrong, 2011). Before the implementation of the laws, procurement of consultancy services occurred with low formal demands and the selection of supplier was often based on trust and previous relationships (Bröchner et al., 2006). The laws resulted in clients having to evaluate all tenders fairly and be able to declare and motivate their selection of suppliers. As a consequence, procurement today is more based on measurable and formal aspects such as price than on informal relationships between clients and consultants.

New Public Management, or NPM, entered and affected the public market around the time of the implementation of regulating laws. The management strategy NPM is a combination on different theoretical frameworks, there among the public choice theory and principal agent theory (den Heyer, 2010). It focuses on increasing the flexibility in public practices and reducing the role of the government. With the implementation of NPM, many administrations in the public sector have become more competitive. Also, NPM has led to a global trend towards liberalisation and privatisation of utilities, such as infrastructures (Altamirano, 2010). As a consequence of NPM, public clients have undergone a decentralisation and have increased their competitive tendering, result oriented planning and outsourcing of services (Pollitt et al., 2007). Increased use of outsourcing has transformed public clients into service organisers, which has led to a need of new competence regarding how to acquire the necessary resources (Ranatanen and Haho, n.y.). Since technical consultancy services can have a significant impact of the performance of the organisation it is important that the client understand the procurement process and its effects.

#### **3.1 General procurement of services**

According to Schiele and McCue (2006), consultancy services are provided to organisations by trained individuals who help their client with identifying, analysing and solving certain problems. In some cases, the service provider can also contribute in the execution of the proposed solution. Public clients use consulting services for different types of assignments, such as environmental assessment, engineering and architectural planning. Therefore, the performance of technical consultants influence the quality and costs of built facilities (Sporrong, 2011). Defining and specifying the range consultants' performance is of great importance but is complicated since services include features that make it difficult to separate it from its context. Bryntse (1996) define services as intangible activities that are difficult to measure and are often performed in multi-unit organisations where other activities are on-going simultaneously. Also, services often are executed by human resources, which lead to problems when it comes to defining and reviewing the performance (Roodhooft & Van den Abbeele, 2006).

Another difficulty when it comes to procuring services is that the satisfactory outcome of the service delivery depends on the purchaser. It is the responsibility of the purchaser to specify the service to be provided, which is normally done in a contract document. Schiele and McCue (2006) claim that it is the purchasers' job to ensure that the client's needs are communicated and specified in a clear and comprehensive manner so that others can act upon the request and fulfil the specific need. However, Mitchell (1994) state that it is a known fact that some purchasers do not execute contract documents carefully which, in most cases, affects the end result negatively. Its formulation is of great importance for the final outcome of the project. However, cases occur where consultancy firms bid on the same job but with different interpretation of the contract and the scope of the work (Day, 1998). The result of such scenario is variations in both cost estimates and quality level. Smeltzer and Odgen (2002) also stress the importance of clear formulations in the contract document. Their research show that professional purchasers perceive that the complexity of acquiring material or services depends on the clarity and preciseness of the specification or statement of work.

The process of procuring is restricted and competition has increased due to many laws and regulations. However, Hoxely (2000) claims that competition can lead to decreased service quality. His theory was based from a quote by the Monopolies Commission. *"Price Competition might create serious dangers in relation to quality of services of a particularly personal nature or of whose quality the public are generally incapable of judging. Some clients might accept incompetent service at a lower price without appreciating the risk involved."* (Monopolies Commission, 1970, referred in Hoxely, 2000) Bryntse (1996) stated that the procurement of services has become more important due to the regulation of public services sectors and the trend towards outsourcing technical competence.

### **3.2 Procurement criteria**

The National Cooperative Highway Research Program, NCHRP, performed in 2006 an investigation where it was stated that most contracts within highway construction are awarded on a low price basis. This has led to consequences such as low value for money and reduced performances of service and work providers. As a solution, the NCHRP strives to increase best-value procurement, or BVP, within the industry. BVP considers price and other key factors in the evaluation and selection process, with focus on enhancing the long-term performance and value of constructions. Through a case study, the NCHRP identified the parameters of BVP as cost, schedule, qualifications, quality and design. The conclusion of the study was that the best value could be calculated by sufficiently weighting the parameters against each other.

As previously mentioned, selecting suitable consultants is of high importance of the outcome. Sporrang (2011) has carried out a research on public procurement of architectural and engineering consultants with focus on the selection criteria. She argues that it is complicated to find criteria for selecting consultant that does not refer to lowest price. Different researchers (Ang et al., 2005; Roodhooft & Van den Abbeele, 2006) support her theory and have advocated that laws and regulations restrain the public clients to only focus on the tenders with the lowest prices. Sporrang stresses in her study that the public sector has a significant focus on price and only measure the non-price criteria casually when it comes to evaluating the tenders. Technical consultants' competence is of great importance for the outcome of any

construction project. However, Sporrong's study indicates that public purchasers are restricted by the laws when evaluating the consultant's competence with particularly focus on design and execution of projects.

The success of a service provider's contribution in a project relies on many different aspects. Competence of the consultants is important but cannot be useful if the relationship between the supplier and the purchaser is inadequate. A successful end result depends of the collaboration between all actors involved and aspects such as ability to communicate and trust are therefore of great importance (Sporrong, 2011). Taking this in consideration, the selection of service providers within the private sector is often based on experience from previous projects or recommendations from other purchasers. However, in the public sector, procuring consultants by these criteria is restricted by laws and regulations such as LOU and LUF.

According to Day (1998), qualifications-based selection should be applied when procuring professional services rather than awarding the lowest priced tender. He claimed that selections based on lowest price often result in the service providers focusing on cost rather than on the service itself. This can be avoided by applying qualifications-based selection, where the four elements to include are

- technical qualifications;
- experience from similar projects;
- current workload; and
- compatibility.

Sturts and Giffis (2005) claim that quality-based selections of consulting services are becoming more common on the market. They stress that improved quality can be gained by not awarding lowest priced bids. Sturts and Griffis also bring forward that different clients are developing new contracting strategies that includes different selection criteria in order to maximise the value of services. As an example, the researchers mentioned a contract regarding a bridge design, where a selection committee rated each tender proposal with a technical proposal. A price per technical point was calculated by dividing the lump-sum with the technical score, and the proposal which offered the most per service dollar was awarded the contract. Sporrong (2011) researched the most common selection criteria used by municipalities when procuring consultancy services. The result showed that tender price is the dominating criterion used. Commonly used non-price criteria related to the key project personnel and aspects such as their individual experience, education and personality. Other criteria that were included in less than 15 per cent of the studied cases were technical aspects of design, creative solution, project execution plan, aesthetic aspects of design and life-cycle costs.

### **3.3 Service pricing and purchasing**

Price and costs is, and always has been, a hot topic within all type of producing sectors. However, there is a significant difference when it comes to the difficulty of pricing since purchasing services is a more complex process than purchasing standardized products (Bryntse, 1996; Smeltzer & Ogden, 2002). Sturts and Griffis (2005) have studied the subject of pricing engineering services and claim there is a need to review current pricing strategies. In their research, two aspects were presented as problem areas. Firstly, there is a difficulty of determining and justifying prices for

professional consultancy services. Secondly, consultants are not always seen as service providers but rather as commodities.

In a study from 1996, Bryntse indicates that the characteristics of service delivery contribute to the difficulty of pricing services. The service delivery process is a more dominant part of the purchasing process compared with the purchasing of goods and products. Also, interaction with the purchaser and coordination with other involved actors adds further complexity when it comes to tracing costs (Bryntse, 1996). Since services are often included in a co-produced project where many actors are involved, the costs have to be shared. In a study from 2002, Smeltzer and Ogden examine differences between the process of purchasing services and materials. In their study it is concluded that procurement professionals experienced that the complexity of the processes differed. 63 per cent of the respondents claimed that purchasing services was more complex, compared to 17 per cent who believed that purchasing materials was more complex.

The pricing of consultancy services is difficult since it requires the problematic task of quantifying expertise, creativity and quality. There is a current standard method on the market where the price for technical services is based on amount of labour hours (Sturts & Griffis, 2005). However, the pricing method is criticised for not considering the expertise and creativity of the consultants at the same time as it weakens the industry's profitability (Parks & McBride, 1987). Another pricing method mentioned in Sturts and Griffis' research from 2005 is basing consultants' fees on a percentage of the construction cost. The fees for services are often based on more measurable aspects such as the total cost of the project. The downside with the method is that the pricing is not set by the value of the services and might not reflect the complexity of the project. The third presented method is value-based pricing which determines the price based on the market value of the service. An additional method is the use of incentive pricing strategies but these are rarely seen in service contracts (Sturts & Griffis, 2005). Even if consultants take pride in their profession and strive towards high quality and safety they are not providing financial incentives for optimising their services. Therefore, incentive pricing can be used as reward when well-performed services that could benefit the project as a whole.

The selection process of service providers often becomes long and costly. The selection should first and foremost be based on qualifications and competence and not on the price of the service when striving towards achieving the lowest total cost possible. Day (1998) states that *"The cost for professional services (i.e. educational consultant, construction manager, architect, engineer, financial advisor or lawyer) usually represents one per cent of the total lifetime cost of planning, designing, constructing, maintaining and operating a facility. However, the selection process for these professionals can have a major impact on all other costs related to the project."* According to Sturts and Griffis (2005), engineers have been accepting low labour rates and tight budgets, which have reduced the profitability of the industry. As solution to the problem, the researchers claimed that technical consultants must determine

- what clients consider valuable;
- what aspects of services clients are willing to pay for;
- how valuable these aspects are perceived by clients; and
- then charge their services accordingly.

Sturts and Griffis (2005) also state that it is necessary that all actors within the industry work together to bring pricing around and increase the profitability for all involved. They claim that consultants are currently giving value away for free and keep on low-balling their services by offering it at a lower price than is actually intended to be charged. Therefore, Sturts and Griffis believe that consultants should take initiative and propose alternative and more profitable strategies for their clients in order to create a more profitable industry.

### **3.4 Conditions for creativity and innovation**

For many years, the construction industry has been portrayed as non-innovative, low tech and old fashioned (Abbott et al, 2007). Dulaimi et al. (2002) stress in their research that serious deficiencies and inefficiencies are often highlighted in reviews of construction industries worldwide. They also state that the existing low levels of research-and-development activities and innovation are significant barriers that restrict the development of the industry.

In a research from 2006, Blindenbach-Driessen and van den Ende present different success factors needed for innovation in construction projects. They claim that suppliers and service providers should be involved as early as possible in development projects to improve the quality of the outcome and to prevent delays. Abbot and his fellow authors (2007) advocate that the construction industry is in need of a broader view, where all involved actors understand when and where innovation occurs in construction. They state that innovation can be achieved during the design phase of a project if all involved consultants could work closely together and build up their respective knowledge and experience. Daymon (2000) argues that one of the biggest obstacles for creativity in project organisations is the consultants focus on granting the client wishes. If the client expectations regarding quality and innovation differ from the consultants, the team will compromise their own idea of creativity. It is also important that the client understand the role of the consultants, is clear about the goals he or she wishes to achieve and understand the scope of the project. Otherwise, it is likely that the client will not approve new ideas suggested from the consultants.

Aouad et al. (2010) claim that clients are catalysts for innovation. A client can improve the overall performance for the involved actors by demanding high standards of work and identifying specific requirement for a project. Another important aspect is that the involved actors need to understand the clients' requirements and work collaborative throughout the project for innovation to happen. Ozorhorn et al. (2010) stress in their research "*the importance of clients as a key driver of innovation and client satisfaction as a key result*". The authors also claim that clients play significant roles in both creating the right project conditions for innovation, and understanding and communicating the end-users wishes to the project team. This can be achieved through long term relationships and the increased collaboration between the involved actors.

### **3.5 Client-consultant interaction**

Client-consultant interaction and relationship is, according to Nikolova et al. (2009), the most important factor for the success of consulting projects. There are three different models of client-consultant interaction, see in Table 3. The expert model express that the consultant has the dominating role in the relationship and possess

abstract knowledge that is superior to the client's specific knowledge. The critical model is based on a belief that knowledge is socially constructed and not based on scientific objectivity. In this model, clients are described as passive actors that focus on managing their insecurities and fears. The social learning model claims that both clients and consultants are active players in the process of identifying and solving problems. Nikolova and her fellow authors describe the interaction as a participative learning process, in which both clients and consultants contribute valuable knowledge and ideas to the project. A successful interaction between client and consultants requires that clients and consultants work collaboratively in identifying the problem and developing its necessary solution. Thereby, it is important with a balanced relationship where neither party is dominating.

*Table 3: A summary of the three models of client-consultant interaction (Nikolova et al., 2009)*

	<b>The expert model</b>	<b>The critical model</b>	<b>The social learning model</b>
<b>Consultant's role</b>	The expert; responsible for diagnosis and problem-solving	Impression manager; storyteller; creator of myths	Facilitator of diagnosis and problem-solving; coach
<b>Client's role</b>	Provider of information; implementer	Audience; passive actor	Problem solver; coach; implementer
<b>Power relation</b>	Consultant's abstract knowledge superior to client's specific knowledge; consultant dominant actor	Consultant's rhetorical/argumentation skills superior; dominant actor	Consultant's and client's knowledge and contributions equally important; balanced relationship
<b>Relevance</b>	In all types of projects	In cases of high quality uncertainty	In cases of innovative and highly relevant projects

Chelliah (2010) has studied the psychodynamics of the client-consultant relationship and states that clients often have unspoken expectations of the consultants. If these expectations can be identified and managed by the consultant, successful outcomes can be gained for both clients and consultants. It is also important that the different actors understand each other. As an example, clients must know their consultants' preferences to be able to motivate them. Chelliah and Davis (referred in Chelliah, 2010) stated the consultants will put extra effort in their work if they can

- secure additional future work from the client;
- gain a competitive advantage over other consultants in future projects; or
- achieve self-satisfaction as an indicator of a job well done.

In their study, Nikolova et al. (2009) express that clients and consultants speak different languages and have difficulties in communicating with each other. Therefore, it is important to set as mutual language and a common set of expectations. They also claim that clients and consultants can only make sense of each other's actions and work successfully together if they have similar expectations of the outcome.

### **3.6 Trends in procurement of services**

All around the world transportation agencies have realised that the current traditional infrastructure contracts and project delivery methods does not meet the demands on the market (Altamirano, 2007). Therefore, new innovative forms of contracting are being tested in order to find better suited methods. One acknowledged trend is that clients tend to grant increased freedom to the contractors and consultants.

Lam et al. (2004) believes that successful procurement methods can be found by looking at benchmarking projects. In that same study the authors claim that the success of a project depends on a combination of the projects characteristics, environment, work atmosphere, procedures and management strategies as well as project-related participants. Contractual arrangement and tendering system were illuminated as the most important issues included in project procedures. Raymond (2008) state that value for money, VFM, as the most important principle of procurement but also as a factor that is difficult to benchmark. A reason behind this is the fact that the concept is quite complex and the translation of the term often varies, making it difficult to compare.

Several studies have been made comparing the public and private sector in different countries (Murray, 2007; Ang et al. 2005). Cheung, Chan and Kajewski performed a survey in 2010 which showed that the general opinion was that the private sector is more effective and innovative than the public. Roodhooft and Van den Abbeele (2006) looked at another perspective and performed a comparison study between procuring consulting services in the public and private sector. They argue that the private sector paid more attention to carefully defining the need for a consultant project. In addition, Roodhooft and Van den Abbeele found that there is a considerable difference in market knowledge between the sectors and that the private side has a better understanding of the consulting market and acceptable prices for consulting services. As a result of this, clients within the private sector are often more satisfied with the performance of the consultant then those on the public side. Some researchers claim that a comparison between public and private procurement is not fair due to its different conditions (Murray, 2005). Laws and political decisions often restrict public procurement more than private. However in the Netherlands, the politicians are working together with the actors from the construction industry in order to create better conditions to construct (Ang et al., 2005; van Herk et al., 2006). Emphasis of the collaboration lies on deregulating and focusing on performance-based approaches in order to become more efficient and innovative in the construction process.

## 4 Research methodology

A qualitative research method was used in order to fulfil the purpose of this master thesis and to answer the research questions. Qualitative research aims to observe social phenomena from the viewpoint of chosen respondents (Jha, 2008). Therefore, a qualitative researcher seeks to gain insight in the respondents' behaviour and the factors that govern such behaviour (Silverman, 2008). The research in this thesis comprises two parts based on interviews with practitioners and a multiple case study of best practise procurement. Together, these provide a deeper understanding of how the procuring strategies are applied in practise.

### 4.1 Interview study

A major part of this research consists of information gathered from interviews. The interviewees include technical consultants, clients and one contractor, active within different fields, see Table 4. The collected information is based on the respondents experience and opinions within the subject of procurement.

*Table 4: The roles and fields of work of the interviewees*

Field	Consultants	Clients	Contractors
Infrastructure	5	1	1
Building Construction	3	1	
Industry and Energy Production	1		
Total	9	2	1

In this research nine interviews were conducted with consultants from three different fields. All of the selected respondents were at the time of the interviews employed for technical consulting firms and active within the Gothenburg region in Sweden. In 2011, these firms had a range between 800 and 3,000 employees and a turnover between approximately 750 million SEK and 6.7 billion SEK. The respondents have much experience regarding procurement and have been active between eight and forty years. Each interview was approximately two hours long and was held at the interviewee's office. In addition, interviews were held with two public clients, representing Infrastructure and Building Construction, as well as a contractor active within Infrastructure and with experience of design-build projects. In 2011, the clients procured roughly 80-1,200 projects for the total value between 0.2 and 4.5 billion SEK. In contrast, the contractor had a turnover of 1.3 billion SEK.

Interview guidelines, see Appendices, were used in order to ensure that the same general areas of information were collected from each interview. The interviews were conducted in a semi-structured manner which allowed a possibility to bring up new questions based on the responses of the interviewees. This method is according to Grix (2004) the most popular interview technique, much due to its flexibility. In addition, the interviews were qualitative and therefore included both the factual information and its interpretation based on context. Also, the interviewees were informed that their participation would be anonymous with the aim of creating a more

open and trustworthy atmosphere. The interviews were recorded which gave the possibility for the authors to go back and clarify any misinterpretations. In addition, field notes were conducted during the interviews which were subsequently coded in systematic order to enable a common frame for analysis of the collected data.

## 4.2 Multiple case study

A case study with examples of best practise procurement was conducted with the purpose of complementing the information gathered from the interviews. The case study was carried out through a comparison of four projects from two fields and can be described as a multiple-case design study which, according to Yin (2003), is more reliable than a single-one study. Grix (2004) defines a case study as a way of limiting the focus to one or more research objects which then can be studied in detail, providing a deeper insight and understanding for the subject of the research. In this case, Project A, B, and C were provided from the field Infrastructure while project D was from the field Building Construction. All projects were carried out in the Gothenburg region and all of the projects were in progress at the time of the interviews. The value of the contracts lied roughly between 3 and 10 million SEK.

Miles and Huberman (1994) claim that the selection of cases is an important aspect when forming fact based on case studies. In this research, the interviewed consultants were responsible for choosing the best practise cases because of their experience and knowledge about the subject of procurement. This strategy is supported by Miles and Huberman's (1994) theoretical sampling purpose, which states that it is important to choose cases which are likely to replicate or extend the emergent theory. However, the strategy contradicts traditional methods where the researchers select cases randomly with the purpose of obtaining accurate statistical evidence of variables.

## 4.3 Research process

The data collection from the interviews and the case study was carried out during March to April in 2012 and was divided into a primary and a secondary part. Primary data was collected from interviews and observations with the aim to answer the research questions. In contrast, secondary data was retrieved based on previous work of other researchers and institutions within the subject. The data collected from the interviews was analysed by the content analysis technique which, according to Wilkinson and Birmingham (2003), identifies patterns in the text and brings meaning to the information that has been collected in the research. In a content analysis the researcher establish a set of categories and sort the collected data by subject (Silverman, 2008). Wilkinson and Birmingham (2003) describe this technique through a flowchart model, seen in Figure 2.



Figure 2: Content analysis flowchart (Wilkinson & Birmingham, 2003)

For this research the headlines from the interview guidelines (see Appendices) were used as a base for creating a set of categories. A qualitative content analysis was chosen which, according to Silverman (2008), simplifies and reduce large amount of

data into organised segments. The collected data from the interviews, which is presented in the chapter Research findings, is in a systematic order according to the chosen categories to ensure that the reader easily can follow the analysis and be able to see the foundation for the result of this research.

Yin (2003) presents three general strategies for analysing case study data. These are

- relying on theoretical propositions;
- rival explanation; and
- developing a case description.

For this research the strategy of relying on theoretical propositions was used. The strategy aimed to focus attention on certain data, while data which was not relevant for the subject was ignored. This analytic strategy helped organising the entire case study and bringing forward parts that were applicable in the conclusion of the thesis.

## 5 Research findings

This chapter presents the research findings from the interviews and the case study. The first section consists of findings from the twelve interviews and presents the perspective from the technical consultants as well as the clients and the contractor. The second section brings forward the best practise procurement from the case study.

### 5.1 Interviews with technical consultants

The findings from the interviews with the technical consultants are structured based on the headlines from the interview guideline, seen in Appendix I, and brings forward the most important aspects from each area of focus.

#### 5.1.1 Early phases

According to seven of nine interviewees it is possible to find clear indications of a successful end result by only looking at the conditions presented in the contract document. One interviewee, representing Building Construction, stated that it is the definition and formulation of the task at hand that is the most revealing factor of the project's outcome. Another important aspect presented by several interviewees is the time scheduled for the project. It is common that the client does not see the magnitude of the project and therefore underestimate its complexity. All interviewees claimed that it is possible to determine the client's level of insight of the effort needed to solve the presented problem by simply reading the contract document. One interviewee, active within Infrastructure, added that there is a strong relation between the client's level of understanding and experience.

Most of the interviewed consultants would prefer to be involved in earlier stages than they are at the present. Several interviewees brought forward the fact that the later the consultants enter a project the less possibility they have to affect the end result. By involving technical consultants in an earlier stage the end quality of the project can increase while expensive obstacles can be foreseen and avoided. Therefore, the overall cost of the project can be reduced even if there will be additional expenses in the early phases.

The interviewees had different views on how involvement of technical consultants could benefit the end result. According to three respondents there are several advantages with using the same technical consultants throughout the whole project. For example, a loss of important information could occur during the knowledge transfer when changing consultants. In contrast, two interviewees stated that it could be beneficial for the outcome of the project to involve another consultant. The VFM will increase by having another consultant reviewing the material even if it means extra consulting hours.

#### 5.1.2 Procurement strategies

All interviewees agreed that clients often award the most economically advantageous tender but the lowest price is the deciding factor. Even if clients include other parameters, such as competence and previous works, the impact is minimal and negligible to the overall judgment of the tender. One respondent claimed that *"The client does not have the courage to weight competence and thereby differentiate consultancy firms from each other. As an effect, price has too high impact"*. According to the interviewees, one reason why the clients tend to avoid weighting

other criteria than price is the many costly appeals of winning tenders that have occurred lately. The evaluation of non-price criteria differs between clients and award decisions are often considered to be based on vague parameters. The consultant's impression is that risks of appeals are avoided by the clients through simply awarding the lowest bid tenders.

The interviewee representing Industry and Energy Production described that the procurement process in their field of work often starts by the clients contacting the consultants they prefer to work with. The request is often based on previous experience or good reputation within the industry. However, the selected consultants are still weighted against each other based on both price and presented solution, where most focus lies on price.

The majority of the respondents remarked that clients often do not consider the overall picture when procuring technical consultancy services. The argument was that clients solely focus on how to acquire the cheapest services possible for carrying out the task. However, by doing so the long-term perspective is lost and aspects, such as maintenance and economic lifetime of the project, are forgotten. According to an interviewee, some clients working with medical centres put significant resources in the early phases of a project with the result of reduced operation and maintenance costs. Examples of solutions that technical consultants have contributed with are lowering the energy consumption and increasing the efficiency of the medical staff by improving logistics in and around the hospital. In these cases, the new solutions have led to decreased operation and maintenance costs.

### **5.1.3 Payment principles**

Clients compensate technical consultants through fixed or cost reimbursement contract but there exist variations of these payment principles. One example mentioned during several interviews is guaranteed maximum price contract, or GMP. This payment principle allows the consultant to be compensated for their costs up to certain level, set in the original budget. Another payment principle is incentives which can be connected to both cost reimbursement and fixed price contract but is based on measurable parameters.

Regarding the choice between fixed price and cost reimbursement contracts, one respondent representing Infrastructure stressed that *"It is important to match the type of assignment with the right payment principle. Therefore the client should be selective when deciding on forms of compensation."* Another consultant explained that it is common that clients procure technical consultants based on cost reimbursement contracts while contractors tend to prefer fixed price contracts. Compared to clients, contractors often have a clearer picture of what is needed by the consultants, which makes it easier to set a fixed price on the task at hand. A client is active in the early stages where it is difficult to define the scope of the problem as well as the cost for its solution. Therefore, the interviewees recommend clients to procure technical consultancy services through cost reimbursement contracts. When enough conditions are known, the procured consultant and the client could set a mutual fixed price budget.

The STA is striving towards procuring more projects on fixed price. According to the interviewed consultants this payment principle is suitable if the project is clearly defined. However, several respondents expressed reservations regarding fixed price contracts. One interviewee stated that there were noticeable possibilities for the

consultants to gain profit but the risk for the project to exceed budget is greater than the opposite. One factor is that the market is competitive and consultancy firms have to reduce their prices in order to win tenders. As a result, the margin for the firms is minimal, which increases the risk of exceeding budget. One interviewee stated that a consequence of the competitive market is that consultants strive towards finding the cheapest solution instead of the best.

Another strategy applied by consultancy firms is to find inadequacies in contract documents to be able to lower the price of their tenders. Several interviewees acknowledged that their task is to only price what the client specifies, even if the consultants are aware that additional work must be executed. As an example, one interviewee claimed that a consultancy firm can give a very low fixed price that will win the contract. At the same time, the firm set high prices on variables for additional work that must be included in the project. Thus, the consultants can regulate their fixed price and still earn a satisfying profit. Four different respondents emphasised that fixed price contracts could become expensive for the client in the long term and that contracts based on hourly rates will probably provide greater VFM.

Both clients and technical consultants are aware of the loopholes with fixed price contract. Therefore, the interviewed respondents experience that such contracts have negative effects on the collaboration and level of trust between the different actors. A recommendation made during the interviews is that clients should look at how the contractors procure and work with their technical consultants. They believe that much can be gained by working more towards partnering. A partnering atmosphere is created with open books that show how much each unit cost and how much that is earned. With such working conditions, both parties strive together towards reaching the best possible solution.

The interviewee representing Industry and Energy Production explained that different kinds of incentive agreements are commonly used within the field. A fixed price is set and possible deficits or surpluses are shared between the client and the consultant, where the ratio is decided in the contract. By arranging such contract agreement both the client and the supplier strive towards the same goal and the given conditions have a unifying effect for the different actors involved in a project.

According to the interviewees representing Infrastructure incentives are seldom used within the field. They advocate that bonuses can be more frequently applied in order to increase motivation among technical consultants. An important aspect to consider before implementing this principle within infrastructure is to find applicable and measurable parameters to base the incentives on. Some given suggestions on possible parameters are completion time and using the same technical consultants through the project. Another suggestion was basing the incentives on level of maintenance and the life-time of the product.

#### **5.1.4 Requirements and level of specifications**

The client has the opportunity to specify certain demands in the contract document that must be included in the consultant's tender. According to the majority of the interviewees the client often demands resumes of the consultants that will be involved in the project. This is a relevant way of securing previous experiences of similar tasks as well as other qualities that can be useful. Another common demand requested from clients is reference projects. Several interviewees stated that the process of retrieving such projects is time consuming for both the consultant and the client or contractor

that was responsible for the project. However, they agreed that is a relevant way of making sure that the consultant is capable of performing similar tasks with high standard. One consultant within infrastructure suggested that a database should be created where reference object are collected with comments from the clients. This could especially be suitable for larger procuring authorities, such as the STA.

Another common demand from the client is a description of planned execution, but the respondents had split views regarding its relevance. Some believed that it does not contribute anything to the tenders and writing it is time consuming. However, others thought it was an appropriate method for differentiating consultancy firms from each other. One respondent claimed that *“All consultancy firms have competence and experience. What distinguishes them is the way they execute projects and this is shown in an execution plan”*. Even though some of the interviewed consultants considered it a relevant criterion they see a trend towards the clients leaving it out since it is difficult to evaluate. Another interviewee expressed that it is difficult for the consultants to know what different clients prefer in the execution plan. He claimed that a certain formulation and structure can give top score in one procurement and low score in another. Therefore, it is important that the client clearly defines what they expect the execution plan to include. Another interviewee, representing Infrastructure, confessed that his firm uses standard formulations in most execution plans they create, without adapting them much after the project itself or its client. He also stated that he believes that consultants are bad on describing in the execution plan what type of added value that the client would gain by awarding their specific way of executing the project.

According to the interviewees, the use of so-called shall-requirements is another indication of the fact that clients attempt to avoid difficult evaluations. Instead of having to grade different factors, such as experience and competence, the client expresses requirements of different qualities in the form of yes-or-no questions. If the consultant does not meet the requirements they are not suitable for the task. By using shall-requirements the client avoid insecurities regarding how to evaluate such qualities and the risk of appeal is reduced.

Several interviewees expressed that there sometimes are irrelevant demands requested by the client, such as experience from numerous similar projects. In some scenarios, only few consultants have this type of experience but this does not indicate that other consultants lack the capacity to execute a high standard performance. This could occur when the project is quite uncommon, such as hospitals or parking decks. As an example, one interviewee mentioned that the framework in a hospital does not differ much from any other building. Therefore, previous experience from constructing frameworks for other similar buildings could be as valuable as experiences from constructing a framework for a hospital. Another aspect that is supported by this example is that some clients lack understanding of the project's scope and complexity. As a consequence, clients often set higher demands than necessary for the project. Several interviewees stated that clients often request the same type of demands for all sorts of projects. A given example from an interview was that the same amount of experience can be requested in a small standard project as in a highly complex construction. One interviewee suggested that clients should use between three to five different standard templates for procuring technical consultancy services. These templates should be based on the size and complexity of the project and adapted thereby.

### 5.1.5 Competence and creativity

There are several different factors that affect which consultants that are assigned to a specific project. However, the deciding factor is often price. All interviewees illuminated the fact that they cannot offer their best consultants to certain project because their high costs will increase the tender price too much. A consulting firm will not be able to compete against their rivals if they offer their best consultants since most projects are won by the lowest priced tender. Therefore, clients must value the consultants' competence and weight it sufficiently against the price. In those cases when competence is valued, the ratio between price and competence is disproportionate and still leans towards price.

In the contract document clients usually set demands on consultants' competence. Such competence is in most cases described in terms of years of experience as well as previous reference projects. Several respondents stated that the clients should be aware that the consultants with longest experience is not always the best suited for a specific project. One interviewee stressed that the most competent consultants with long experience often have managerial positions and are not available as technical advisers. By limiting themselves to consultants with long experiences clients risk being offered less preferable technical consultants. An interviewee representing Infrastructure claimed that *“young and driven technical consultants can often contribute more to a project than unmotivated consultants with long experience”*.

The interviewees mentioned the fact that there is a lack of consultants with enough experience to be able to assist all projects. One respondent within Infrastructure shared that their most experienced consultants are often involved several project teams simultaneously. Therefore, they spend limited time on each project and work more as quality assurers. In addition, some interviewees claimed that their most competent consultants often are assigned the calculation and formulation of tenders, which is very time-consuming. Another interviewee stressed the importance of allowing less experienced consultants to participate in projects since it will benefit the market, including the client, in the long term.

### 5.1.6 Client-consultant interaction

According to an interviewee, there are two types of clients active on the market today. One type of client promotes rational construction and focus on building standard facilities that meet the requirements. Such clients often govern their consultants by strictly following the set time and budget. The other type of clients is those who focus on building facilities for the long-term and are usually responsible for the operation and maintenance of the facility. The respondents claim that such clients are more open for suggested changes that could benefit the project in the long-term.

The technical consultants work closely with the project manager from the clients' organisation during a project. Therefore, the project manager's personal qualities are significant for the success of the collaboration and the end result. All respondents described a good project manager as a person that is

- involved;
- committed;
- experienced;
- skilled and knowledgeable;
- confident to make decisions;

- responsive; and
- has a good overview of the project.

All the interviewees advocated that the probability of a successful end result increases if the client is involved in the project and active in terms of making decisions. A respondents representing Infrastructure claimed that the role of the client will change due to the generational shift within the industry. He believes that clients, such as the STA, will rely more on the consultants' expertise in the future and focus on coordinating the project more than managing it. The interviewee mentioned Denmark as an example, where a similar change already has occurred and where consultants now work with increased responsibility.

As previously mentioned, several interviewees claimed that it is important that the project manager is involved in the project. However, one respondent from Infrastructure stressed that the project manager should be excluded from the procurement of the technical services. His opinion was that a contract document becomes unprofessional when the project manager is involved since they have a tendency to include personal preferences. Another interviewee, also active within Infrastructure, stated that there is a noticeable lack of procurers on the market. As a consequence, project managers are often left responsible for procuring service for standard project. The respondent believed that such contract documents are less professional than those where a procurer is included in the process.

### **5.1.7 Contractual adherence**

The respondents claimed that the original conditions formulated in the contract documents regarding time, cost and workload always change. An interviewee representing Building Construction estimated that the workload increases approximately 10-15 per cent during a standard project due to unforeseen problems. The respondent from Industry and Energy Production find it difficult to avoid these changes since each project is unique. In addition, a respondent representing Infrastructure defined a project as a living process, and claims it is impossible to foresee all the necessary conditions for the entire process.

Furthermore, one interviewee stressed the importance of having open communication between the parties throughout project to avoid disputes regarding additional work, time and costs. Several respondents illuminated that overruns in budget and schedule can be avoided even though the workload in most cases will increase. One way of avoid overruns is to procure consultants on cost reimbursement contracts and then set a mutual fixed price budget after more conditions are

known. One interviewee representing Infrastructure explained overruns in budgets as a consequence of *"consultants set their price to win the tender rather than estimating how much the actual work will cost"*.

### **5.1.8 Responsibility and degree of freedom**

All of the respondents noted that there is a connection between increased responsibility for technical consultants and better end result. However, one interviewee representing Infrastructure claimed that the concept of increased responsibility is used in an incorrect way by clients such as the STA. The respondent referred to ABK and claimed that the distribution of responsibility is predefined,

regardless of the project's size. Therefore, clients cannot increase the consultants' responsibility but can only affect their assigned number of tasks.

Looking at the present situation, the majority of the interviewees agreed that a higher degree of freedom for technical consultants is desirable. The respondents believed that consultancy firms would make use of increased freedom in terms of human resource planning and selection of work method. One example of how to grant technical consultants increased freedom is by assigning the whole project to one firm. Another example is to specify the demands in the contract document based on the final product rather than the consultants' execution of the project. By doing so the consultants are allowed the freedom to choose how they would prefer to execute the assignments.

### **5.1.9 General**

All of the interviewees acknowledged trends within the field of procuring technical consultancy service. One of the most noticeable trends for five of the interviewees was cost-awareness which, according to a respondent representing Industry and Energy Production, has increased significantly during the last decade. Furthermore, the respondent claimed that the trend has risen due to changes of ownership within the field. Today, companies are owned by venture capitalists that with short-term ownership strive to gain profit. Another trend brought up during some interviews was the fact that contract documents tend to get more extensive. A respondent active within Infrastructure blamed this fact partly on the technical consultants. According to the respondent, consultants search for loopholes in the contract documents to be able to set as low tender price as possible. As a consequence, clients attempt to close the loopholes by adding more text and making the contract document more extensive. Therefore, the standard formulation in ABK is seldom used since the clients add and expand clauses in order to protect themselves. Another consequence of the extended contract document is that some requirements are easily missed by the technical consultants. Several interviewees shared experiences where their tenders had been disqualified because of administrative mistakes. All respondents expressed a positive trend towards increased collaboration between the parties in a project. They also stated that it is important to gain more knowledge and understanding about each entity's tasks and responsibility. Increasing the collaboration and level of understanding between different parties and stages in a project could lead to benefits such as lower overall costs. According to the interviewees, contractors are more experienced than clients when it comes to collaboration with their technical consultants.

The most apparent difference between being procured by a public client compared to a private is the governing by laws and regulations. The majority of the interviewees expressed the fact that private clients focus on personal relationship and previous experience of the technical consultants. Therefore, consultants put extra effort on nursing their relationship with their private clients compared to public actors. According to the interviewed respondents, their biggest private clients are contractors. Contractors are often very cost-aware since they are already bound by a price which they have been procured on. Another difference compared to public clients is that contractors procure their consultants using less complex contract documents.

All respondents claimed that the biggest mistake made by clients is putting too much focus on price. Also, clients tend to set higher demands on consultants' competence than necessary in contract documents. As an example, clients often request technical consultants with several years of experience, even though some small standard projects do not need it. A respondent active within Building Construction stressed that clients should be more open for a dialogue with their consultants and be flexible for changes. Another interviewee representing Infrastructure claimed that the time to send in tenders is too short and that contract documents are too comprehensive. In contrary, the most common mistake made by technical consultants is setting too low price on their services. Another mistake brought up during the interviews was that consultancy firms do not plan for additional work when assigning their consultants to projects. Therefore, many consultants are forced to work overtime when changes occur in a project. Lastly, the consultants also admitted that they sometimes postpone reading the contract documents and therefore do not have time to immerse themselves in the project.

The interviewees advocated that an area in need of development within procurement is the competence of clients, where three aspects were brought forward. First, clients must possess an overall picture, both when procuring and carrying out projects. This means not only considering costs for investments but also seeing the possible future benefits it brings. Secondly, clients must have knowledge regarding the scope and aim of the project and the services it requires. They must also be able to separate what they want in a project from what they need, and adapt requirements thereby. Lastly, clients must handle and interpret the laws and regulations within procurement in a more efficient way. Several interviewed consultants are under the impression that some clients are unaware of what the regulations allow and therefore chose to play it safe. By doing so, clients procure services through standardised and restricted methods which stand in the way of innovative thinking. Another aspect in need of development is the formulations of contract documents. Several interviewees believed much can be gained by creating templates for procurement. These should consider the size and complexity of the project and act as a foundation for the procuring unit when formulating contract documents.

## 5.2 Interviews with clients

Interviews with two clients and a contractor have been held. The findings are structured based on the headlines from the interview guidelines, seen in Appendix II and III, and presents the most important aspects.

### 5.2.1 Procurement strategies

According to the interviewed client representing Building Construction, costs for technical consultancy services reaches maximum ten per cent of the total project cost. Conditions for the whole the project are set in the design phase, which can be described as the most flexible stage in a project's life cycle. In proportion to the other activities in a project life cycle, the costs of the pre-study and design phase are low, which can be seen in Figure 3. Therefore, the respondent claimed that alternative solutions can be found and the total cost can be reduced by investing resources in the early stages. During the interview, the respondent expressed critique regarding the fact that many clients only see the investments they are currently making and do not acknowledge future costs and possible savings. It is important to look at the whole lifetime of the product to be able to reduce total costs for projects.



Figure 3: Illustration showing the life cycle of a project. The numbers in brackets show the cost proportion between the different activities (Client Building Construction, Interview 7<sup>th</sup> May, 2012).

The interviewed contractor agreed that costs of the technical consultancy services are small compared to the production cost. Therefore, the contractor only contacts one consultancy firm, without making use of the competition on the market. He claimed that *“The price of the service is not as important as the collaboration between the parties”*. As a result, the contractor has selected a limited number of consultancy firms that they have a well-working relationship with and that they normally choose to work with.

The client within Building Construction stated that his firm normally procures its technical consultants through a selective procedure if the value of the total construction contract exceeds 50 million SEK. An advantage with this strategy is that both the client and the consultants' efforts are reduced by using a pre-qualification stage. According to the interviewee, developing an application to participate in the procurement process is not as time and cost consuming as developing a tender. Therefore, consultancy firms which are not as qualified as others can save money. However, the client admitted that the same firms often qualify to participate in the evaluation stage since they know the clients preferences. This is not beneficial for the competition on the market, which is something that the client is aware of and tries to avoid. Smaller and less complex projects are procured through open procedures or handled under framework agreements.

Another type of strategy used when procuring technical consultancy services was presented by the client representing Infrastructure. The client focused on procuring the services based on a number of service hours instead of specifying the services

needed for the project. The strategy is common when dealing with framework agreements and is a way to avoid costly additional work. It is the client's responsibility to specify the number of hours needed in the project, for which the consultants set hourly rates for all individuals involved. Thereby, all tenders comprise the same workload, which make them comparable. In accordance with the client from Infrastructure, the respondent active within Building Construction strives towards choosing the most economical advantageous tender. However, he admitted that the lowest priced tenders are still awarded the contracts in some cases. The client's strategy is to increase the importance of the added value for non-price criteria by rating the tender price so that it only reflects 25 per cent of the total score. The remaining 75 per cent is based on project organisation, execution plan and interviews, and can provide added value for the tender.

An aspect brought forward by the client representing Infrastructure was the formulation of the contract document. He stated that he has experienced projects where none of the participating tenderers were able to pass the shall-requirements which lead to them all being disqualified. Therefore, the client put extra effort when formulating requirements in contract documents so that it is easily understood. However, he also stated that it is important for clients not to create too simple contract documents since it can affect the end result. There is a risk that the project's quality will suffer if not enough requirements are stated in the contract document.

### **5.2.2 Payment principles**

The client representing Building Construction uses cost reimbursement contract as payment principle in most cases. Fixed price contracts are seldom used and only occur if the project is small and well-defined. According to the client, fixed price restricts technical consultants' creativity and innovative thinking in a project. The interviewee believed that consultants who work under a fixed price contract do not share their ideas and alternative solutions with their client. If the consultants were to share their ideas they might have to redo their work, which can become costly. Therefore, cost-reimbursement contracts benefit the client by creating an open atmosphere where the technical consultants are allowed to think innovative.

According to the respondent from Infrastructure, fixed price contract can also become expensive for the client. He claimed that such contracts put high responsibility on the client to specify all details regarding the project in advance. This is difficult to achieve, especially in investigation assignments such as pre-studies. The client stated that added work in such projects is common. The consultants then have the possibility to set a low fixed price and high prices on additional work, which can become costly for the client in the long term.

The interviewed contractor believed that the technical consultants prefer to be compensated through cost reimbursement contracts. However, contractors tend to choose to work with fixed price contracts with their consultants if the necessary conditions are known. In contrary, conditions in projects that include ground work are often uncertain and the risk of procuring such projects on fixed price is high. Therefore, the interviewee stated that they tend to choose cost reimbursement contract when procuring geotechnical consultancy services.

As an addition to the payment principle some clients and contractors use incentives, bonuses and penalties in their contracts. The client active within Building Construction claimed that incentives and bonuses are ways to motivate technical

consultants and to create a positive work environment. By connecting the incentives to the client's vision a common goal is created for the involved parties. The interviewee also explained that financial penalties are used by clients as a protection against delays and damages but are rarely claimed. The contractor contended that it is important to connect the technical consultants to the incentives that exist in their contract with the client. Then, both parties can earn money by striving towards the same goal.

### **5.2.3 Requirements and level of specification**

There are differences in the way the clients and contractors specify their demands on the project and the technical consultants. The interviewed contractor tends to use non-performance-based requirements when governing consultants, which describes 'how' the consultants should deliver their services. In contrast, the client representing Building Construction stated that they use performance-based requirements, which describes 'what' the consultants should deliver. The purpose with this initiative is to allow the consultants to think freely regarding how to achieve the result in the best way possible. The client active within Infrastructure put high demands on the capacity of the consultancy firm and the years of experience of its technical consultants. The client's organisation does not possess the ability to handle large and complex projects. Therefore, the client relies on the competence of the procured consultants and trusts them to work independently.

According to the client representing Building Construction it is important to formulate requirements so that the right conditions are set for a successful outcome. A desirable result for a client is achieving the right quality on the product for the right amount of money. The respondent claimed that is important to assess each project separately so that the quality level is correct. Too low quality will cause a negative effect on the product's economic life span and too high quality is a waste of tax payers' money.

### **5.2.4 Competence and creativity**

In order to acquire the right competence for a specific project the client representing Building Construction allocate added value to a tender if the project organisation is suitable for the task at hand. According to the respondent, competence can be measured through previous reference projects or years of experience. It is important to find consultants with a combination of both these aspects. However, the most significant quality criterion for a technical consultant is previous experience from working with similar projects. He stated that years of experience does not indicate that the consultant know how to deal with the task at hand. The other respondent, active within Infrastructure, stated that clients tend to measure competence in terms of years of experience because it is easy and fast. Using other methods, such as collecting references from previous projects, is time consuming.

The interviewed contractor stressed that they do not normally encourage the technical consultants to think innovative since it usually means more expensive solutions. Contractors are usually responsible and compensated for the production and not for operation and maintenance. Alternative solutions often affect the operational phase more than the production, which does not benefit the contractor. However, the interviewee believed that by assigning operation and maintenance to the contractor they would encourage more innovative thinking in projects.

### **5.2.5 Client-consultant interaction**

An important aspect brought up during the interview with the client representing Building Construction was the involvement of project managers. It is essential to know the personal preferences of each individual project manager and connect them to projects where they can be motivated. As an example, a client cannot force a project manager to work with non-price criteria if there is a lack of motivation to do so. In addition, the interviewee also stated that it is important that the project manager is involved throughout the procurement process. The risk of buying unnecessary services is reduced since the project manager has an urge to keep the budget.

The client active within Infrastructure believed that how closely clients monitor their consultants depends on the capacity of the organisation. As previously mentioned, this client sets high demands on the technical consultants' competence and ability to work independently. The level of control is therefore quite low since the consultants are expected to carry out their assignment without strong support from their client. However, regular project meetings are held each month and the client has daily contact with the key individuals from the assigned consultancy group.

### **5.2.6 General**

The client representing Building Construction claimed that LOU restricts public clients' ways of procuring technical consultancy services. He said that before the implementation of LOU, his organisation procured in a professional and businesslike way where they followed a clear and fair procurement strategy. Today, the client experienced that the consequence of LOU is that projects are assigned to be distributed after non-businesslike clauses. Therefore, it is the responsibility of public clients to dare and try to find alternative procurement strategies within the framework of LOU. The interviewee stated that it is possible to interpret LOU in a positive way and that his organisation's procurement strategy is an indication of this.

The statement regarding LOU's restricting effect on public procurement was supported by the other interviewed client. He stated that the legislation fulfils its purpose of increasing the competition on the market. However, his opinion is that the legislation does not lead to well spent public funding since it has resulted in long and costly procurement processes. A benefit with the implementation of LOU and LUF is that the award decision of tenders is based on fair and suitable conditions. The client expressed that an unfortunate consequence of the implementation is that lowest price is the deciding factor when awarding a tender.

According to the client active within Building Construction, his organisation's way of procuring technical consultancy services by mainly focusing on non-price criteria is quite unique on the market. He also acknowledged a trend that many other clients show interest in their procurement strategy and the way they include and evaluate non-price criteria. This indicates that there is an interest on the market to find new alternative procurement strategies. He believed that many clients are afraid to evaluate non-price criteria due to the risk of court appeals. However, the respondent expressed that no award decision using this strategy has been appealed. The client saw this as a successful example that alternative procurement can be performed within the framework of LOU. A similar trend was acknowledged by the client representing Infrastructure. He stated that his firm has begun to use interviews as a part of the evaluation of tenders. The respondents believed that an interview is a suitable way of determine if the consultant is the right person for the job.

Both interviewed clients claimed that the biggest mistake made by the technical consultants is that they do not read the contract documents thoroughly. The consequence is that they miss important information needed to participate in the tender evaluation. Another risk is that the consultants misunderstand the client's wishes and expectations. The most common mistake made by clients, on the other hand, is that they choose technical consultants based on lowest price and do not value the consultant's qualities. Also, assigning consultants based on fixed price contracts reduces the economic life span of the constructed facility. The interviewee representing Building Construction stated that *"Clients get what they deserve and ask for. You do not get more quality than you pay for"*.

### 5.3 Case study of best practice projects

In the case study, four research objects were compared from two fields, Infrastructure and Building Construction, in order to identify characteristics for formulating successful contract documents. Additional aspects regarding the procurement processes were also brought forward. Project A, B, and C is from the field Infrastructure and Project D is from Building Construction.

Project A is a bridge connection development in Gothenburg. The contract document regards the procurement of technical consultancy services for the creation of the design development documents and the planning for surrounding areas, such as roads and bus-stops. Project B is a pre-study where conditions for a tunnel system in Gothenburg is investigated. The purpose of the assignment is to provide the client with a solid foundation for procuring services and work needed for the production of the tunnel. Furthermore, Project C is another pre-study and aims to define the scope of a road construction. The procured technical consultants are responsible for formulating a contract document for a design-build contract. Project D consists of creating a design plan for reconstructing a hospital. All of these projects were procured according to LOU or LUF. Information regarding each project can be seen in Table 5.

*Table 5: Information about each case project.*

Project	Assignment	Procurement procedure	Payment principle
A	Bridge	Open procedure	Cost reimbursement contract
B	Tunnel	Negotiation procedure	Cost reimbursement contract with bonuses and penalties
C	Road	Open procedure	Cost reimbursement contract
D	Hospital	Selective procedure	Cost reimbursement contract with incentives

At the time of this thesis, all of these projects are in progress. All interviewees were asked to present a case project that could be described as an example of a successful procurement of technical consultancy services. The four cases were provided by the technical consultants that won the tenders. However, Project B was mentioned several times during the interviews as an example of a well-executed contract document. In addition to interviews with the technical consultants, the client for each project was contacted. Two interviews were held with the client for Project A and D, while email conversations were performed with the clients for Project B and C. The presented findings from the case study focus on

- procurement strategies;
- payment principles;
- demands;
- procurement criteria; and
- award decisions.

### 5.3.1 Project A: Bridge

The aim of Project A was to create design development documents for a bridge connection in the city centre of Gothenburg. The procurement was handled through an open procedure where the economically most advantageous tender was awarded the contract. The contract has an expected value of around 15 million SEK, and its big size was uncommon for the client. The client chose to organise the tender evaluation in two steps. First, the shall-requirements needed to be fulfilled, which were divided into financial and technical capability. In the latter category, requirements of key individuals' previous experiences were defined, and can be seen in Table 6.

Table 6: Shall-requirements of key individuals' previous experiences.

Role in project organisation	Reference projects	Years of experience	Additional demands of experiences
Project manager	3	>10	3 similar projects/last 10 years
Railway engineer	3	>10	3 similar projects/last 10 years
Traffic engineer	3	>10	3 similar projects/last 10 years
Quality auditor	1	>5	1 similar project/last 5 years
Structural engineer	3	>15	3 similar projects/last 10 years
Environmental consultant	2	>5	3 similar projects/last 10 years
Geotechnical engineer	3	>15	3 similar projects/last 10 years
Water and waste-water engineer	3	>10	3 similar projects/last 10 years
Construction technician	3	>15	3 similar projects/last 10 years
Building technician	3	>10	3 similar projects/last 10 years

In the second step of the process, the tenders were weighted by evaluating the selection criteria. The criteria mentioned in the contract document were

- average hourly rate of the involved consultants; and
- execution plan for the assignment, including resource plan.

The average hourly rate was calculated through four levels of competence set by the client. The different levels were based on the number of years the technical consultants had been active. The client specified an estimated number of hours which made all tenders comparable. An important request from the client was that the

consultants that had multiple roles in the project had one hourly rate, in spite of differences regarding the complexity of the tasks. Added value was gained through the execution plan, which provided the client with an idea of the quality of the services. The plan was evaluated, graded and converted into a sum that could decrease the average hourly rate of the tender. A maximum of three points could be gained through a well formulated execution and resource plan. The added value of the tender was calculated through the formula below.

$$\text{Added value} = (\text{received points}/3) \times 100 \text{ SEK/hour}$$

Three of five sent in tenders passed the shall-requirements and therefore qualified to participate in the selection process. The winning tender had the second highest average hourly rate but was assigned 2.75 of 3 points for the execution plan which affected the weighted sum. The difference between the winner and the second placed tender was less than 1 SEK per hour. However, no appeal was raised regarding the grading or the award decision.

The responsible client expressed that the creation of the contract document took around six month, which is an unusual long time. A reason was that the client was not used to the size and the complexity of the project. Another reason was that the client worked hard to avoid court appeals and collaborated closely with a lawyer when creating the contract document. An interesting fact presented during the interview was that the procurement of the project had been out twice since no tender passed the shall-requirements during the first round. The aspect that all contenders failed was that an individual had to be assigned the same hourly rate if the consultant occurred under multiple roles in the tender. During the second round, three of five sent in tenders passed this requirement, which was written out several times in the revised contract document for clarification.

The client requested highly competent consultants to the project. A reason for this request was that the client lacked experience regarding similar projects and instead wished the consultants to possess this. Also mentioned during the interview was that the client expected the technical consultants to work independently without much governing. The client expressed that trusting the competence of the assigned consultants can improve the conditions for good collaboration. According to the consultant that brought forward the project, the contract document was simple and clearly formulated. The respondent could easily understand the scope of the project and what was requested by the client. Another positive aspect with this project was the suitable balance between price and competence. Since the project was complex, the consultants' competences were important and affected the overall evaluation of the tenders. Therefore, the payment principle was appropriate for this type of advanced assignment. The respondent also praised the collaboration between the parties in the project. As an example, the client and the awarded consultant decided on a mutual budget for the project. The project was within budget at the time of the interview.

### **5.3.2 Project B: Tunnel**

Project B regards a pre-study of a major railway tunnel and is one of several parts in a big infrastructure investment in Gothenburg. The chosen procurement method was negotiated procedure and the most economically advantageous tender was awarded. The procurement consisted of a qualification round and an award phase. The qualification round considered the financial, technical and professional capacity of the

consultants. Regarding the professional capacity, specific demands and references were only required for the two key individuals in the project organisation, which were the project manager and quality assurer. During the award phase tenders were evaluated by grading the execution plan and opinions from previous references. Through the feedback, the key individuals were grade within six areas, each on a scale of one to five where five is the highest. The areas of references were

- skills;
- efficiency;
- creativity;
- ability to collaborate;
- availability; and
- organisational and administrative skills.

The requested execution plan was based on five questions formulated in the contract document. The questions were:

- Describe how the project manager and the quality assurer will collaborate and divide the work between them.
- During the planning phase, the goals of the project will be specified based on time, cost, content and working method. Describe how the project manager will lead the work and manage the project's resources in order to reach the set goals?
- How will the consultancy firm and the project organisation take advantage of previous experiences?
- Specify the three greatest risks with the project and provide applicable measures that can avoid these risks.
- Describe the three greatest success factors for a well-executed project.

The grades from the execution plan and the previous references were converted into sums that were deducted from the overall tender price. The tender with the lowest weighted sum was awarded, which considered both average hourly rate where the added value.

*Weighted sum = tender price (average hourly rate) – added value*

The average hourly rate was calculated according to Table 7, where four different functions were weighted according to a given percentage of each functions contribution to the project.

Table 7. Calculation of average hourly rate. The contribution of each function were fixed but the hourly rates were set by the tenderers.

Function	Name	Hourly rate, SEK	Contribution in project, %	Weighted rate, SEK
Project Manager		1,200	25%	300
Quality assurer		1,000	15%	150
Database administrator		800	20%	160
Technical consultants		900	40%	360
<b>Average hourly rate</b>			100%	970

The chosen payment principle was cost reimbursement and the consultants were compensated for their contributed time based on a predetermined hourly rate set mutually by the client and consultants. Bonuses and penalties were included in the contract document and bonuses were awarded if the key individuals in the project organization remained throughout the project. Penalties could be issued if the principle of non-discrimination was violated or if the consultants caused a delay of the project, which had not occurred at the time of this thesis.

In total, three consultancy firms sent in tenders regarding the project. All tenders passed the shall-requirements and were awarded added value for their execution plans and previous references. The maximum added value was 415 SEK, which the client assumed would equal 50 per cent of the tender price. However, the range of the tender prices was wide and while all tenders were granted similar added values. This resulted in the lowest priced tender being awarded the contract. In the end, the weighted hourly sums of the first and second placed tenders differed around 30 SEK.

According to the respondent that provided Project B, the contract documents clearly indicate that the client understood the scope of the project. An example of this is the client's choice to divide the entire project into twelve separate consultancy assignments in order to achieve the best possible result. Another positive aspect with this contract is the fact that the client only required references from two key individuals. They trusted these individuals to put together an adequate project team. Also, a fair comparison between different execution plans could be made by the client due to the five asked questions. The respondent also expressed satisfaction with the awarding of the tender with the lowest weighted sum. It was apparent that the client wanted highly competent key individuals in the project since the added value had a great affect on the weighted sum.

According to the client, the procurement strategy used in this project was also used for the remaining 11 projects in the infrastructure investment. In all projects, the qualified consultancy firms have been awarded high added value. This has resulted in that the lowest priced tenders have been awarded most contracts. For Project B, the client used a group of six experienced individuals to evaluate the tenders and grade added value. However, the client experienced that using such a large group evened out the grading. Therefore, the client chose to reduce the number of evaluating individuals to three

persons in the later procurements. The clients also expressed that no court appeals had occurred in any of the procurements.

### 5.3.3 Project C: Road

Project C regards a road section of a highway in the west of Sweden. The assignment was a pre-study where the technical consultants were responsible for specifying the conditions for the road construction and formulating a contract document for a design-build contract. Tenders were collected through an open procedure and the most economically advantageous tender was awarded the contract.

The contract document for Project C is similar to the document for Project B with the exception of the award phase where other aspects are evaluated. The evaluation focused on the project organisation and their experiences from previous similar projects and can be seen in Table 8. Main focus when evaluating the project organisation lied on the project manager who needed three different reference projects. One reference project needed to have a contract value over 100 million SEK and had to be carried out during the last three years. For the other two projects, the referents were to answer four yes-or-no questions regarding the project managers

- reliability;
- effectiveness;
- creativity; and
- ability to collaborate.

*Table 8: Demands of references for each role in the project organization.*

<b>Role in project organisation</b>	<b>Reference projects</b>	<b>Years of experience</b>	<b>Additional demands of experiences</b>
<b>Project manager</b>	3	>5	1 project > 100 million SEK
<b>Road engineer</b>	2	>5	2 similar projects/ last 3 years
<b>Structural engineer</b>	2	>10	2 similar projects/ last 3 years
<b>Environmental consultant</b>	2	>5	2 similar projects/ last 3 years
<b>Geotechnical engineer</b>	2	>5	2 similar projects/ last 3 years
<b>Water and waste-water engineer</b>	2	-	2 similar projects/ last 3 years
<b>Surveyor technician</b>	2	>5	2 similar projects/ last 3 years

Two aspects contributed to added value of the tender by 30 SEK per hour each. Firstly, evidence of a similar reference project where the key individuals in the organisation had worked together previously. Secondly, the consultancy firm had to show evidence of experience regarding the formulation of contract documents for design-build projects. As for Project B, the tender with the lowest weighted sum won

the project and the sum was calculated with the same formula as for Project B. However, the types of functions and their contributions in percentage differed in the calculation of the average hourly rate.

The technical consultant that provided Project C praised the client's responsible purchaser and stated that the contract document was clearly formulated. Also, the use of a weighted average hourly rate for all functions involved was seen as a positive strategy. It contributes to a fair evaluation of tenders at the same time as it reduces the risk of consultancy firms taking advantage of economical loopholes. According to the client, not enough evidence was provided for any of the tenderers to gain the maximum added value, which resulted in that the lowest priced tender won the contract. However, the second placed tender had not been the economically most advantageous even if it had been assigned maximum added value. The added value could not have affected the award decision since the spread of the tender price was wide. The client pointed out that it is important to be able to estimate the possible spread in advance in order to set suitable added value. Unfortunately, this was not the case for project C.

The client of this project pointed out that it was important that the assignment was executed within a short time. Therefore, it was necessary that the technical consultants assigned to the project could start working immediately. The interviewed consultant claimed that the focus could easily be seen in the contract document since both bonuses and penalties were time related. As an example, a bonus was given if the assigned technical consultants could participate in a start-up meeting the day after the contract had been signed.

#### **5.3.4 Project D: Hospital**

Project D regards the creation of design plan documents for the reconstruction of a hospital. The reconstruction is complex and covers 20,000 m<sup>2</sup>. As for the other cases in this thesis, the most economically advantageous tender was awarded the project. The procurement was handled through a selective procedure that consisted of two steps. Firstly, consultancy firms applied to take part in the tender evaluation in the so-called pre-qualification. Shall-requirements that the firms were obligated to fulfil regarded their financial stability, insurances and certificates for environmental management. If fulfilling the shall-requirements, consultancy firms were evaluated through a pre-qualification model, see Table 9..

Table 9: Evaluation model for the pre-qualification of tenders.

<b>Tender number</b>	<b>1</b>	<b>2</b>	<b>3</b>	<b>4</b>	<b>5</b>	<b>Max</b>
<b>The consultancy firm, max 40p</b>						
Organisation						10p
- Employees						
- Management						
Competence						20p
- Technical						
- Functional						
Aids of assistance						10p
- Technical aids						
<b>Reference projects, max 30p</b>						
Project 1						15p
Project 2						15p
<b>References and reviews, max 30p</b>						
Target achievements						5p
Ability to collaborate						5p
Creativity						5p
Quality of drafts						5p
Project finances						5p
Ability to deliver within set time frame						5p
<b>TOTAL</b>						100p

The three firms with highest score were selected by the client to participate in the second step. The qualified tenders were evaluated through a model based on aspects regarding the specific project, see Table 10. The maximum grade for each area was awarded to the top consultancy firm and the others were graded proportionally. As an example, the firm with the lowest tender price was awarded 25 point under the category Economy. If another firm had a tender with 15 per cent higher price, its grade was worth 15 per cent less points. As seen in Table 10, a fourth of the total score was based on an interview. The client held interviews with two key actors from each submitted tender with the aim of assessing their knowledge, participation and commitment to the assignment. Another important aspect of the interviews was to investigate if the technical consultants' suggested budget for the project was realistic and applicable.

Table 10: Evaluation model for the selection of tender.

Tender number	1	2	3	4	5	Max
<b>Project organisation, max 25p</b>						
Staffing						10p
Resumes						5p
Previous experience of similar projects						5p
Previous experience of partnering projects						5p
<b>Execution plan, max 25p</b>						
Organisation and structure						10p
Collaboration between entities						5p
Life Cycle Costing (LCC)						5p
Realism/Practicability						5p
<b>Result of interview, max 25p</b>						
General impression						
How to collaborate with other entities						
How to work with LCC						
Aims and execution						
Reflection of the project budget						
Innovative solutions						
Ideas of future improvements for hospitals						
<b>Economy, max 25p</b>						
Tender price						25p
<b>TOTAL</b>						100p

The chosen payment principle in this project was cost reimbursement with budget responsibility. Bonuses were distributed if the consultants fulfilled set goals regarding project quality, LCC and collaboration. An incentive was also included in the contract and was received if the whole project went under budget. The possible profit was to be divided between the client and the consultants with the proportion 80/20. Penalties were not included in the contract but could be demanded by the client according to the clauses regarding delays and quality damages in ABK.

The consultant that brought forward the contract document of Project D expressed that this way of procuring is typical for this specific client. The respondent believed that the client strives for high quality products and therefore evaluates and rewards other factors than price. As an example, the interview consultant had been awarded the contract by the client despite the fact that the tender was the most expensive. Another positive aspect with this procurement was that the client knew what they wanted and therefore put high and specific demands on the technical consultants. The respondent's overall impression is that the procurement and the contract document were professional.

The client responsible for Project D emphasised the importance of creating a mutual vision for all actors involved in the project. Therefore, the client chose to have a start-up meeting with the three qualified consultancy firms where all necessary information was shared. Another benefit with using start-up meetings before the award decision is that all candidates get a thorough walkthrough of the project and its scope. As a result, the client experiences that the probability that all consultants provide specific and realistic tenders increases. The client believes that his organisation's evaluation model is a suitable method of considering both price and non-price criteria in the tender

selection. It was also stated that the interviews are the most telling of the consultants' engagement and the credibility of their tenders. During the interviews it is also clarified which tender that will offer the highest value for money. However, the client expressed that price is the category where tenders differ the most and it can therefore have a great effect on the overall grade.

The interviewed consultant agreed that the client's evaluation model and use of interviews is a positive and suitable method of selecting tender. The respondent also expressed that the interviews can emphasise the knowledge and dedication of the technical consultants that are assigned in each tender. When the evaluation of all tenders is complete the client shows each contender's grades. The client avoids mistrust through this openness and the award decision for this project was not questioned.

## 6 Analysis and discussion

This chapter analyses and discusses the research findings, from both interviews and case study, in relation to the theoretical frame of reference. The analysis is guided by the research questions and structured thereafter.

### 6.1 Research question 1

*Which are the most important success factors in a contract document?*

A contract document consists of a description of the project and the technical consultancy services needed to execute it. The presented theory from Sporrang (2011) show that the performance of technical consultants influences the quality and costs of built facilities. Therefore it is of great importance the right conditions for the consultants are set in the contract document. Based on the findings from the performed interviews, four different aspects were highlighted as important success factors. These were

- clear formulation of contract documents;
- relevant demands;
- conditions for collaboration; and
- balanced procurement criteria.

The performed interviews showed that the formulation of the contract document is of great importance for the success of both the procurement and the production process. All respondents claimed that a contract document can show indications of the success of the end-product's outcome. In addition, some interviewees claimed that finding indications that the project process will be difficult which will affect the end result negatively is easier than finding the opposite. One of the interviewed consultants stated that it is easy to complain on the clients' way of procuring but it is difficult to come up with suggestions for how to do it better. The major indications of the projects' end result are the client's way of defining the project, its scope and demands. This is supported by the case study, where the formulations by the clients were simple and clear in all provided examples of successful contract documents. Since it is easy for the technical consultants to read what the client is requesting it is also easy to develop a tender. The importance of the formulation of contract documents was emphasised by Day (1998) and Mitchell (1994). However, the interviewed consultants claimed that many clients make mistakes regarding the formulation of contract documents. The clients' biggest mistake is to not know what they want, which becomes obvious to the consultants by the clients' way of structuring contract documents. The respondents clearly stated that they, as technical consultants, provide the clients with what they request. Therefore, it is important that clients have the ability to specify their projects and the services required. A successful example of this is Project D, where the client had specified the project well and the focus on high quality was obvious in the contract document. As a result, the client could set high demands on the consultants and the organisation with the greatest ability to deliver a high quality product was awarded the contract.

Another success factor brought forward in the research is the use of relevant demands. The respondents claimed that clients do not often show the purpose of the set demands. This leads to the technical consultants questioning the client's choice and

thinking that the requested demands are irrelevant. Proven by some of the cases, clients can put high demands on their consultants if they specify why. However, demanding technical consultants with high competence in a small standard project makes the consultants believe that the client is not aware of the project's scope. It is important that the client shows signs that they understand differences between a standard and a complex project, and that they adjust the demands based on these differences.

According to the interviewees, the collaboration between the parties in a project has a major effect on the end result. This is supported by Sporrang (2011) who claimed that the success of a project depends on the relationship between all involved actors. A well thought out contract document set clear conditions for all involved and is an important aspect of a well-working collaboration within the project organisation. It can contribute by setting clear areas of responsibility and defining the common goal which all parties strive towards. Another aspect that could benefit the collaboration is the use of bonuses and incentives for when consultants meet or exceed the client's demands. However, the use of penalties can, according to some respondents, cause a negative stamp on the relationship.

A common success factor of all case projects is that the technical consultants with the most economically advantageous tenders were awarded the contracts. In these cases the consultants' competence and planned execution of the project were weighted higher than price. The fact that all examples of successful cases included this strategy indicates that awarding the most economically advantageous tender is a winning concept. This is coherent with theory from both Sturts and Griffis, and Sporrang, which claim that benefits such as increased project quality can be gained by not awarding lowest priced tenders. According to the performed interviews, clients often claim to award the economically most advantageous tender. However, when the added value for non-price criteria is not graded highly enough it does not affect the overall sum of the tender. As a consequence, the lowest priced tender is awarded the contract. This occurred in three of four case projects. Therefore, it is important to balance the procurement criteria so that non-price criteria can affect the evaluation of tenders.

## **6.2 Research question 2**

*How should a public client procure technical consultancy services in order to acquire the right competence for a specific project?*

The main purpose of LOU and LUF is to increase the competition on the market and encourage fair tender selections. However, Hoxely (2000) argued that increased competition on the market will result in decreased service quality. Some public clients, such as the STA, experience that it is difficult to procure technical consultants with the right competence for a specific project. During the interviews it was stated that the award decision is in most cases granted the tender with the lowest price due to the restrictions in the procurement acts. Although quality and other non-price criteria often is included and adds value to the tender, it is not rated high enough. Therefore, the added value has a minimal effect on the tender evaluation compared to the price. As a result, the lowest priced tender is in most cases awarded the contract, even if the procurement decision is granted to the economically most advantageous. This shows that awarding the lowest price tender and cutting costs may require a sacrifice of quality, which is coherent with Hoxely's theory.

There were many different opinions regarding LOU and LUF presented during the interviews. Some consultants claimed that the laws are too strict and do not benefit the market. Others claimed that clients misinterpret the laws and that they are afraid to challenge the legal framework and thereby choose to play it safe. As a consequence, some clients have come to adopt a routinized way of procuring services. They tend to avoid non-price criteria in the evaluation of tenders due to the risk of violating the legislation. This fact is supported in Sporrøng's (2011) research where she claims that it is difficult to find selection criteria that do not refer to price. However, clients limit the amount and quality of available consultants by using only price related criteria. All interviewed consultants stated that they cannot offer their best employees since it would result in high tender prices, which most likely will not win the contract.

There are different requirements needed for a consultancy firm to be able to offer their top technical consultants in a tender. A fundamental condition is that the economically most advantageous tender is awarded the contract and that performance regarding non-price criteria will have significant impact compared to price. One of the most important criteria to include is competence of the technical consultants. This is coherent with Sporrøng's statement that competence is of great importance for the outcome of any construction project. According to the interviewed consultants, when clients request competence in the contract documents, requirements are often expressed in terms of years of experience. However, the consultants also stated that years of experience is not always a suitable way of measuring competence. An observation made by the authors is that all case projects from the field Infrastructure included demands regarding years of experience. The client responsible for project D, from the field Building Construction, only requested previous experience of two or three similar projects. However, a technical consultant that has been involved in two projects of that type has to have been active for at least five years. In Project D, the client also specified that the experience from the reference projects had to be similar to the role that the consultants planned to have in the project. Thereby, a guarantee regarding years of experience is included at the same time as the consultants show they possess the competence to conduct that type of work.

Another non-price related aspect that could grant a tender added value is an execution plan. As mentioned by one of the interviewees, an execution plan is a suitable way for the client to control that the consultants understand the assignment correctly and that they plan for a high-quality execution. Some interviewees showed a negative attitude towards the use of execution plan as a non-price criterion. Arguments stated against execution plans were that it was time-consuming to create and that it is difficult to know what the client values. However, an execution plan can be a useful indicator of competence if it is applied correctly by the client and it is clearly stated in the contract document what it should include. As an example, the execution plan requested in Project B had to be based on five questions, which made all applied execution plans comparable. References from previous experience can show what the consultants have done in the past while an execution plan can show how the consultants plan to use their competence in the specific project.

Choosing a suitable way of measuring competence is not the only necessary condition for a client to be able to acquire the right technical consultants. It is essential that the competence and other non-price criteria are evaluated as a part of the tender and that it is sufficiently weighted against the tender price. When deciding non-price criteria and possible added value it is important that the client has the ability to estimate the

outcome of the procurement. Firstly, the client has to estimate the expected tender price and then assign the added value to a suitable proportion of this sum. This was successfully executed in Project A which resulted in the second most expensive tender price won the contract. Secondly, the client must also consider the possible range of tender prices to be able to set an added value that can affect the result. This lacked in Project B where the great price range of the tenders rendered the granted added value without influence. Thirdly, the client has to estimate the possible range of added value and define suitable grade levels thereafter. As an example, the tenders in Project C were granted the same added value which resulted in it not affecting the weighted sum. Thereby, the lowest prices tender won the contract. The probability of weighting price and non-price criteria proportionately increases if the client has the ability to estimate these aspects realistically. If done so, the provided added value could affect which tender that will be economically most advantageous. This provides technical consultancy firms with the opportunity to offer their most experienced consultants.

Even if execution plans and references projects are suitable ways of measuring non-price criteria in tenders it should not be included in all types of project. It is important to realise that non-price criteria provide different amounts of added value to different projects. For example, creating an execution plan for a small standard project could cost more than it could gain. Therefore, it is not a suitable option for such projects. However, it does provide great added value in larger projects. It is important that the client understand the scope and complexity of the project and adapt aspect such as demands and added value thereafter. Mentioned during several interviews was the fact that clients often request higher demands than necessary. However, requesting higher competence than needed does not necessarily indicate a higher quality of the project. As one interviewed public client mentioned, requesting too high competence in a project is a waste of public funding and tax payers' money.

### **6.3 Research question 3**

*How can the STA improve its procurement strategy by looking at the performance of other clients and considering technical consultants preferences?*

The existing laws and regulations regarding procurement control and govern public clients in Sweden. As a consequence, public procurement has become routinized and clients, such as the STA, seem to find it difficult to develop and implement new strategies. The interviewed clients claimed that the only way for the current procurement strategies to change for the better is by challenging the legislation. The fact that clients interpret the legislation differently is a sign that its frames are not crystal-clear. The different interpretations cause uncertainties among both clients and their consultants. It is the clients' responsibility to prevent such uncertainties and create a common understanding of the legislation which then can be the foundation for future procurement strategies. According to the interviewed consultants, the STA is the client with the most cautious interpretation of LOU and LUF. As a consequence, its procurements are often being based on safe and measurable parameters such as price. Proven by the case study in this thesis, clients can procure technical consultancy services using untraditional methods that still lie within the frames of LOU and LUF. As a successful example, 75 per cent of the evaluation in Project D was based on non-price criteria but the client did not face any court appeals or criticism regarding the selection decision. This indicates that the service providers are welcoming towards new procurement strategies, which is supported by all the

interviewed consultants in this thesis. As the largest client on the market, it is important that the STA does not limit themselves by its interpretation of the legislation. Also mentioned during several interviews was that many municipalities follow in the footsteps of STA and adapt their procurements based on previous procurements made by the authority and other bigger clients. Therefore, much responsibility lies on the STA when it comes to finding and implementing new procurement strategies within the industry.

An observation made from the case study is that all presented examples of successful procurement are large and quite complex projects. The responsible clients admitted that the projects were unique and that extra time and resources were put in order to make the projects successful. Procurement of services for small standard projects is not as highly prioritised among clients. Some consultants believed that project managers are left alone with the procurement process in the smaller projects, without the support from experienced purchasers. Also noticed is that those responsible for the procurement in smaller projects tend copy previous successful contract documents without considering possible differences of the projects such as scope, size and complexity. This has resulted in extensive contract documents for standard projects, which often contains much higher demands than necessary. Clients, there among the STA, must acknowledge the range of projects and adapt their procurement strategies thereafter. Several of the interviewed consultants suggested that clients should create a couple of standard templates for procuring technical services. These templates should be based on different project conditions such as complexity, size and other relevant aspects. Based on the findings from the case study, clients have come further in developing successful procurement strategies for large and complex projects than they have for small standard ones.

The STA and other clients must find the balance and know when to standardise and when not to, which is a difficult task. As mentioned by several researchers (Altamirano, 2010; Abbott et al, 2007), the industry is often criticised for being standardised. Also, the interviewed consultants criticise clients for standardising procurement methods and not differentiating projects from each other. At the same time, the consultants advocate standard templates for procurement and a common interpretation of the legislation among clients on the market. It is important not to generalise all projects since much can differ between them. What the consultants seek is templates that could simplify contract documents and make them more understandable. As mentioned in the interviews, a big mistake made by clients, there among the STA, is formulating too comprehensive and ambiguous contract documents. Also, the interviewed clients expressed that consultants often miss important aspects of the contract documents which could lead to them being disqualified from the tender evaluation. Another risk with ambiguous contract documents is that consultants bidding on the same project have different interpretations of its scope, which was described by Day (1998). Using standard templates for procurement of technical services could be a way of avoiding such scenarios. However, it is important that the clients using the templates still understand the scope of the project and adapt the contract documents thereafter. The contract document should be used to create a common language for the involved parties in a specific project, which Nikolova et al. (2009) stated is crucial for the success of the project. An example of successfully creating a mutual understanding between the client and the consultants is Project D. Even though the procurement strategy used in Project D differs much from traditional procurement the consultants found it easy to

interpret the client's expectations. This is because the contract document was clearly formulated and the client chose to have a meeting with all qualified consultants where possible questions could be answered. The result of these initiatives was that the client and the consultants shared the same vision and the same expectations of the project. Thereby, a common language and a level of understanding were created between the actors. Allowing communication between the client and tenderers could be a way of avoiding misunderstandings that can become costly later on in the project.

Another lesson that the STA could learn from the clients responsible for the case study projects regards selection criteria and evaluation of tenders. In the case study, all examples of successful procurement included evaluation of non-price criteria. In some cases the weighting between price and non-price criteria was uneven and the lowest priced tenders were awarded the contracts. Sporrang (2011) stated in her research that clients who do include non-price criteria put little weight on them, and therefore these criteria have no effect on the final grading of the tenders. The STA wishes to acquire higher competence among the procured consultants. In order to do so, it is important to weight price and non-price criteria correctly, as mentioned in Research Question 2. The non-price criteria must be related to the client's expectations of the outcome. As an example, the interviewed client representing Building Construction value high quality products with low operation and maintenance costs. Thereby, the client includes non-price criteria relating to these aspects and its value could represent up to 75 per cent of the total tender evaluation. There are many different non-price criteria that can be included in the contract documents to make sure that the clients expectations are understood and met by the consultants. One method applied in Project D was the use of interviews in the evaluation of tenders, which received positive feedback from both the client and the procured consultant. The use of interviews is an attempt by the client to make sure the execution plan and suggested budget are realistic and relevant for the project. In addition, the consultant believes that they have the possibility to show commitment and drive for the task. This indicates that both sides find advantages with allowing different ways of communication between the parties during the procurement process. Through this successful example, those who believe that using interviews as an evaluation method is inappropriate and a violation of the legislation can be challenged. The evaluation technique was praised by both the client and the consultants, and the fact that no questioning of the award decision or appeal occurred indicates that the technique is considered by the tenderers to fall within the frames of LOU and LUF.

The STA has expressed a goal to procure at least 30 per cent of all projects on fixed price contracts. However, the interviewed consultants were not enthusiastic about their services being procured and compensated based on fixed price. The interviewees stated that fixed price contracts are suitable when the project is clearly defined and when no additional work will be added, which rarely occurs within construction. Previous research discusses the many difficulties involved in pricing services (Bryntse, 1998; Smeltzer & Odgen, 2002), there among the problematic task of quantifying expertise, creativity and quality. Also discussed is that clients must be aware that purchasing services is different than procuring standard materials. Bryntse (1996) argues that the selection of service should primarily be based on qualifications and not on the price of the service. One interviewed client believes that fixed price restricts the procured consultants' creativity and that their innovative ideas will not be shared with the client in order to avoid costly additional work. Another risk when

procuring based on fixed price is that the consultants strive towards finding the cheapest solution in term of consultancy costs, which could result in decreased project quality. One respondent claimed that fixed price contract could become expensive for the client and put a huge responsibility on the client to specify all conditions in advance. It is important that the STA considers these risks and are aware that the choice of payment principle could affect the end result and the cost in the long term. Fixed price contract may still be suitable for small standard projects where all conditions are known. For other projects, the recommended payment principle based on the interviews and the case study is cost-reimbursement with incentives that could motivate the consultants towards high quality performance.

One aspect that the STA could consider when procuring technical consultancy services is the importance of having a long term perspective and looking at the entire lifetime of the project. As both Day (1998) and an interviewed client stated, the cost for technical consultants represent only a small percentage of the total lifetime cost of a project. However, the service delivered can have major impact on the quality and the other costs of the project relating to production, operation and maintenance. One interviewee claimed that clients get what they pay for, which indicates that the lowest priced consultants will most likely offer the lowest service quality. The result of poorly executed consultancy services will be high costs for production, operation and maintenance. Therefore, it is important that the STA does not procure consultants based the lowest price. Instead, they should award the economically most advantageous tender and focus on keeping the total project lifetime cost as low as possible. Based on the findings from the interviews and the case study, clients should procure technical consultancy services by awarding the lowest weighted hourly rate, which should be calculated by including both hourly rates for different consultants and added value based on non-price criteria. In order to set guidelines and help clarifying the actors' expectations, a budget can be set mutually by the client and the procured consultants after the tender process. A mutually set budget could improve the conditions for well-working interaction between the client and the consultants, which Nikolova et al. (2009) claim is the most important factor for the success of consulting projects. When setting this budget, clients should consider that spending more money in the early phases since increased service quality will most likely pay off in the long run.

## **7 Conclusion and recommendations**

The conclusion of this thesis is based on the findings from interviewees with experienced practitioners within procurement and a study of best practice cases. The findings show that both clients and consultants are unsatisfied with the currently used strategies for procuring services. Some clients, such as the STA, experience that it is difficult to acquire competence while technical consultants find that price dominates and restrict the procurement processes. A reason why this dissatisfaction has not been adjusted is because the involved actors feel constrained by the governing legislations. However, the research in this thesis indicates that there are many different interpretations of the legislation on the market. According to the interviewed consultant, the STA has a very strict interpretation of the laws, which results in routinized procurements where the lowest priced tenders are awarded. The case study in this thesis shows that public clients can have a less strict interpretation of the laws which allows non-price criteria to have a greater effect on the tender evaluation. By sufficiently weighting non-price criteria, such as competence and quality of the delivered service, lowest price becomes less important. Many smaller public clients, such as municipalities, tend to imitate the procurement strategies of bigger clients, there among the STA. Therefore, the STA has a responsibility of finding and implementing new procurement strategies within the industry.

Eight areas of focus have been studied in order to find characteristics of successful procurements. Among these, the interviewees have had most opinions regarding procurement strategies, payment principles, demands and level of specification, and competence. One characteristic of success brought forward is the formulation of contract documents. It is important that clients are clear about their expectations of projects and that contract documents are used to create a common language between the involved actors. Another illuminated characteristic is clients' use of relevant demands, which cannot exist unless the project's scope is understood. Clients should adapt the demands after their expected outcome of the project and base them on aspects such as the size, complexity and desired quality of the services. Regarding procurement criteria, clients should award the economically most advantageous tenders which require focus on non-price criteria. Such criteria must be weighted sufficiently high against price in order for them to have greater impact on tender selections than they have today. The fourth characteristic of success is correct service pricing, where an understanding of the differences between acquiring services and materials is fundamental. Clients should also acknowledge that the costs for consultancy services are minimal compared to the total project lifetime cost, at the same time as the quality of the services and what it provides can have a major effect on the outcome.

An observation made by the authors of this thesis is that similar procurement strategies are used within the different investigated fields in Sweden. Indications of different procurement methods being used internationally have been noted in the literary review and through the interviews. Therefore, further research investigating procurement strategies used in other countries within the European Union is recommended. Also, the provided cases of successful procurement are projects currently in progress. The authors recommend a follow-up of the projects after their completion, with the aim of gaining useful information which can be compared to the findings in this thesis. An additional study of the case projects may provide measurable indications on the effect of the identified characteristics of success.

### ***Recommendations to the STA***

The STA is currently undergoing comprehensive development work with the aim of improving its procurement strategies. Several of the brought forward issues are already acknowledged and initiatives towards improvements have been taken. However, the following recommendations can be used as a support for the STA in its development work.

- **Create templates for procurement of technical consultancy services.** The STA should strive towards creating easily understandable contract documents in order to avoid the risk of consultants misinterpreting its context and the client's expectations. Therefore, templates for formulation contract documents should be used within the authority. It is also important that the STA acknowledge the fact that projects can differ significantly when it comes to aspects such as size and complexity. Therefore, different templates should be created based on these aspects.
- **Value non-price criteria higher.** The STA should acknowledge a less strict interpretation of the regulating laws and implement this in its procurement strategies. Non-price criteria must be included and sufficiently weighted against price if the STA wishes to acquire high level of service quality.
- **Use alternative evaluation methods.** Different evaluation methods can be used in order for a client to procure the right consultancy services for a specific project. For example, an execution plan is a way for the client in order to make sure that the consultants understand the scope of the project. It also shows indications of how the consultants plan to use their competence to reach the set goals. Another applicable evaluation method is the use of interviews, which can confirm the credibility of the tender and dedication of the consultants.
- **Keep a long term focus.** The STA should envision the whole project lifetime when procuring consultancy service and consider that the costs for consultancy services are minimal compared to the total lifetime cost for any construction project. Also, the service delivered can have major impact on the quality and the other costs of the project relating to production, operation and maintenance. Therefore, investments made in the early phases will most likely pay off in the long run. The STA should award the economically most advantageous tender and strive to keep the total project lifetime cost as low as possible.
- **Show trust for the procured consultancy firm.** To achieve a successful end result, the STA and its consultants must have a well-working relationship, which requires trust among the involved actors. The necessary condition for successful collaboration is set during the procurement process, where one important aspect is to make sure that both parties share expectations of the outcome. Trust in the consultants can be shown by avoiding requirements that restrict how the consultants execute their work.



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### ***Project documents***

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Project C (2010) Contract document for road construction

Project D (2012) Contract document for constructing a hospital

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Client Project B, 2012 [Interview] (E-mail conversation, 15th May, 2012)

# Appendices

## Appendix I – Guideline for interviews with consultants

What is a typical project for you?

Who are your main clients?

How is your relationship with the different clients you work with?

### *Case project [Only included in some interviews]*

Why did you choose to present this project as a successful example?

What are the factors that make this contract document unique?

### *Early phases*

To be able to affect the end result, in which stage should you as a consultant be involved in a project?

Is it possible to find indications of a successful project by simply looking at the given conditions presented in the contract documents?

### *Procurement strategies*

Through which principle for evaluation are you generally awarded contracts?

How does different laws and regulation affect and govern the procurement process?

### *Payment principles*

Which payment principle is usually given by the client?

Have you ever experienced alternative payment principles? If so, what type?

For which type of project is the different payment principles suitable?

Which conditions are necessary in order for fixed price to be a suitable choice of payment principle?

### *Requirements and level of specifications*

How should clients formulate their requirements in the contract documents to provide the consultant with the best conditions for doing a good job?

What type of certificates and previous experiences etc. are usually required by the client? Which of these demands are relevant, and which are not?

### *Competence and creativity*

What controls your choice of workers in a project organisation?

What possibilities are usually given for:

    Innovating thinking?

    Studies on alternative solutions?

Is there a request from you as consultant to be provided with more resources to be able to develop these fields? Will such investments lead to a better end result?

How do procurements, contracts and payment approaches govern consultants' way of working when it comes to innovative thinking etc.?

### ***Client-consultant interaction***

Which qualities should a client possess?

In what way does the client contribute to the end result in terms of competence, involvement, communication and government?

### ***Contractual adherence***

To which level is a contract generally fulfilled in regards to time, cost and workload?

Do conflicts often occur due to disagreements regarding the contractual adherence?

### ***Responsibility***

In what degree do you feel responsible in a project when it comes to:

The planning of your work?

The selection of work method?

Choice of technical solution?

Can you see a connection between greater responsibility and a better end result?

### ***General***

Which are the biggest trends noticeable in the field of procuring technical consulting services?

What are the biggest differences when being procured by:

Public versus private clients?

Contractors versus clients?

Different public clients?

What are the biggest mistakes made by clients and consultants in the field of procurement?

How do you prefer to work to be able to use your competence in the best possible way?

Which areas within procurement are in need of improvement?

## **Appendix II – Guideline for interviews with contractor**

### ***Procurement strategies***

Through which form of contract are you generally procured?

Does the way you procure technical consultancy services differ depending on the project type?

Through which principle of evaluation do you generally award contracts to technical consultants?

How does your relationship with different clients differ?

### ***Payment principle***

Which payment principle is usually offered to the technical consultants?

What are the advantages and disadvantages with the different principles?

Are incentives commonly used when procuring technical consultancy services?

Do you have experience with alternative payment principles? If so, what type?

### ***Requirements and level of specifications***

How do you formulate requirements in the contract documents in order to provide the consultant with the best possible work conditions?

What type of certificates and previous experiences etc. do you usually require from the technical consultants?

### ***Competence, creativity and degree of freedom***

How do you control the choice of technical consultants in a project organisation?

What possibilities do you usually provide the technical consultants regarding innovating thinking/studies and alternative solutions?

To which degree do you provide the technical consultants with responsible regarding:

- The planning of their work

- The selection of work method

- Choice of technical solution

Can you see a connection between providing technical consultants with greater responsibility and a better end result of the project?

### ***General***

Which are the biggest noticeable trends in the field of procuring technical consulting services?

How does your relationship with your clients differ compared to the relationship with your consultants?

What are the biggest mistakes made by clients and technical consultants regarding procurement?

What are the biggest mistakes made by you as a contractor regarding procurement?

Looking at procurement of technical consultancy services, which areas are in need of improvement?

### ***Chosen contract document***

Why did you choose to present this contract document as a successful example on how to procure technical consultancy services?

What factors make this contract document unique?

## **Appendix III – Guideline for interviews with clients**

### ***Procurement strategies***

Through which principle of evaluation do you generally award contracts to technical consultants?

How does the way you procure technical consultancy services differ depending on the project type?

### ***Payment principle***

Which payment principle is usually offered to the technical consultants?

Are incentives commonly used when procuring technical consultancy services?

Do you have experience with alternative payment principles? If so, what type?

### ***Requirements and level of specifications***

How do you formulate requirements in the contract documents in order to provide the consultant with the best possible work conditions?

What type of certificates and previous experiences etc. do you usually request from the technical consultants?

### ***Competence and creativity***

How do you control the choice of technical consultants in a project organisation?

Which qualities of a technical consultant are preferable for you as a client? How do you procure and value these in a contract document?

What possibilities do you usually provide the technical consultants regarding innovating thinking/studies and alternative solutions?

Can you see a connection between providing technical consultants with greater responsibility and a better end result of the project?

### ***General***

Which are the biggest noticeable trends in the field of procuring technical consulting services?

What are the biggest mistakes made by technical consultants regarding procurement?

What are the biggest mistakes made by you as a client regarding procurement?

Looking at procurement of technical consultancy services, which areas are in need of improvement?