SHARING YOUR OBJECTIVES WITHOUT TELLING WHAT TO DO

A STUDY INTO CAUSES OF A MISMATCH IN INTENDED AND INTERPRETED OBJECTIVES BETWEEN HOUSING ASSOCIATIONS AND CONTRACTORS IN EMAT PROCUREMENT

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Sharing your objectives, without telling what to do

A study into causes of a mismatch in intended and interpreted objectives between housing associations and contractors in EMAT procurement

MSc Thesis Report
Preface

This thesis is the final result of my graduation thesis as part of the Msc programme Construction Management & Engineering at the faculty of Civil Engineering & Geosciences. During a period of 8 months I worked hard to finish this thesis on time. I would like to take this moment to thank some of the people that helped me in the process and got me where I am today.

First I would like to thank my graduation committee. The subject of EMAT procurement is relatively new and there are many different aspects and problems concerning EMAT that are worth researching. Finding a solution to all of these problems was my ambition at the start of the thesis. Luckily I had Hans Wamelink as chair of my committee to temper my, sometimes unfeasible and over-ambitious, objectives and helped me develop a realistic scope for a graduation research. Secondly I would like to thank Ruben Vrijhof my first supervisor. Ruben provided sometimes-overwhelming amounts of comments and ideas but was always available to help me process these comments and integrate them in the report. Thanks to Ruben the methodology and the structure of the report improved considerably compared to the beginning. My second supervisor is Leon Hombergen who in the spare number of contact moments that we had, introduced a number of relevant new perspectives on problem. This helped me to obtain a complete overview of the problems to solve and the available solution space.

Furthermore I would like to thank Marius Heijn from ERA Contour. From the first moment in the office I was treated as an equal employee instead of an intern. Marius involved me in a number of projects from ERA Contour, allowing me to put the theory from my research into practice. The work environment that ERA Contour creates for graduation students made the period of almost 10 months at ERA Contour very interesting and valuable for me.

Next I would like to thank all my graduation buddies, both at the TU Delft and ERA Contour. Sometimes we had helpful discussions about each other research but most of the time we would complain as a group of grumpy old man about that one chapter that needed to be rewritten for the third time. Special thanks to Arjan, Wout, Simone and Pim who helped me improved the level of English which would not bee furry good without them.

Last but not least I would like to thank my family, friends and girlfriend Sharinda, who were fed up with me spending so much time behind my laptop and not with them. During the next weeks I am going to make up for that!

Rudger de Jong, 26-02-2016
Executive summary

This research, *Sharing your objectives without telling what to do*, focuses on the causes of a potential mismatch between intended and interpreted objectives of housing associations and housing contractors in EMAT procurement. A mismatch between two parties can come from two sides, therefore both the perspective of the housing association and that of the housing contractors are taken into account.

Introduction

In 2002, an investigation committed by the Dutch government, revealed that many big construction firms committed fraud. Within cartels price agreements were made, which resulted in questionable and unfair competition where little profit was to be made. (Tweede kamer, 2003)

One of the solutions to solve this problem was the introduction of new procurement methods. One of these new procurement methods is EMAT procurement, introduced by Rijkswaterstaat in 2008. With EMAT procurement, the winner is not selected solely on price, but also on a number of quality criteria (CROW, 2007). Although EMAT procurement theoretically solves a lot of the problems caused by traditional procurement, it brings a new problem along with it.

Lowest-bid procurement

Until 2008 lowest-bid procurement was the standard procurement method in the housing sector. This procurement method specifies minimal requirements and selects only on price.

A negative effect of this method is that contractors will almost never exceed the minimal requirement because that will have negative impact on the price and reduces the chance they will win the tender. This phenomenon is called the minimal standard paradox. Another negative effect is the opportunism which lowest-bid procurement causes by contractors. To win projects, contractors hand in project plans, which are close to, or similar to the cost price. To still make a reasonable profit, contractors are forced to seek for loopholes in the specifications or contract to perform additional work. This effect is strengthened by the financial crisis.

Economical most advantageous tender (EMAT)

In 2005 Rijkswaterstaat introduced the EMAT philosophy in the Netherlands in their program, *Gunnen op waarde*. They include other quality-based criteria besides the price for the selection of the winning plan. In a score matrix EMAT criteria are formulated and (relative) weights are assigned to them.

Unlike traditional procurement, where the housing associations do most of the design work, with EMAT procurement the contractors come up with plan based on the information they receive. Housing associations translate their objectives into the tender document, which is handed over to the contractors. The housing contractors make a perception of the objectives and preferences of the associations based on the limited information they receive. With this input they need to determine the optimal approach for the project. Although they have the expertise to design and build a qualitative project, there are still many different approaches possible. Does the association want to focus on quality or money? How much extra are they willing to pay for innovation or sustainability?

Problem definition and research question

One indicator of a mismatch is the lack of transparency in EMAT processes. Data from the Dutch Economical Institute for Construction (EIB) points out that, in more than halve the EMAT tenders the weights of the criteria and weighing mechanisms are not clear. Transparency and room for manipulation are two communicative vessels, the higher the transparency, the smaller the room for manipulation and visa versa. This means that
apparently housing associations leave room for manipulation in the outcome of the tender, possibly because previous outcomes did not reflect their intended objectives.

Other research states that it has to do with the new role of the housing association in which they are less responsible for the design and the process but instead need to focus on transmitting their needs and objectives.

When one or both sides of the double translation of objectives is done incorrectly this will result in a mismatch between the intended and interpret objectives. In the current EMAT practise there are indicators that this mismatch is occurring and therefore it indicates that parties still have trouble with the translation. This research will focus on finding the causes of that mismatch by answering the following research question:

"Which factors influence the potential mismatch in intended and interpreted objectives between housing associations and contractors in EMAT procurement?"

Research setup

First, potential causes of a mismatch are identified in literature. In the figure below, a simplified process of an EMAT tender is illustrated. It shows that there are three different perspective of looking at a mismatch.

- The first perspective is a cultural perspective. This perspective focuses on aspects that can play a part in the rightful interpretation of objectives but are not mentioned in the tender documents.
- The second perceptive is the process perspective. Here the focus is on the translation of the objectives into the tender setup from the housing association and the interpretation of this setup by the housing contractors.
- The third perspective is the product perceptive. In the product perspective the technical setup of the EMAT tender is analysed and the relation of it with the project approach that the housing contractors need to determine.

In the literature review nine themes are identified that potentially play a role in the mismatch in intended and interpret objectives. Based on the gained insights of each theme a proposition is formulated. These nine propositions, complimented with sub-questions, form the input for the empirical phase of the research.

To collect empirical data cases from four housing associations and the housing contractor ERA Contour are analysed and interviews are conducted. After the case study analysis the outcome is discussed with four experts in the field of EMAT procurement both from the housing associations and housing contractors perspective. The interviews are conducted and processed following a narrative research method.

With narrative research ‘the story’ is very important. It gives insight in how people experience practise and give it meaning. For this research ‘the story’ of both the housing associations and
the housing contractors have been gathered during a series of interviews and many quotes are used to reflect these stories in the case study processing and analyses.

Furthermore, the software tool Atlas.TI is used to transcript and code the interviews. This analysis is used for the structured processing of the empirical data but not to conduct quantitative analysis of the data.

Potential causes of a mismatch

The following section is a summary of the case study analysis of the research. In the empirical phase is tested whether the nine themes identified in theory are also recognized in practise as a potential cause of the mismatch. In the case study analysis the results of theory and practise are compared and conclusions per theme are drawn up.

1. **The profile of a housing association**
   The housing associations stated that to win the tender discovering the essence of the project, or the question behind the question, is very important. Aspects that might help deducting this information are the DNA and the profile of an association. The interviews pointed out that this information is important, but that the profile the associations can change over time due to various factors.

2. **Individual perception**
   The interviewees acknowledged that the involved employees influence the focus of the tender through the set-up and the awarding process. Jury members discuss the scores before they become final. This gives dominant persons in the jury the possibility to influence the scores of the other jury members. Therefore, it is important that the jury determines together the focus of the tender in order to reduce the chance that they outcome does not reflect their objectives.

3. **EMAT criteria formulation**
   The interviews with housing associations revealed that in many cases the criteria are (partly) copied from a previous project and therefore do not always reflect the needs, or the attitude from the association towards this specific project. This can be confusing for housing contractors that try to discover the essence of the tender.

4. **Integral procurement process**
   Following the steps of the procurement process in the right order is a method to ensure that other processes like the specification of the project, the determination of the needs and the technical set-up are made in a well considered manner and with support from internal and external stakeholders.

5. **Project specification**
   During the literature review multiple theories were found that state that clients tend to over-specify projects in tenders. However during the empirical phase, housing associations stated that they consider most housing projects to be very simple and think that there is very little room for distinction in the design. The added value in EMAT procurement is more found by the associations in the processes. Housing contractors stated that it is frustrating when an association asks contractors to think about certain criterion while they already quite clearly know what they desire.

6. **Score calculation**
   The technical set-up of an EMAT tender with a score matrix can be interpreted in multiple ways. For example, contractors can analyse the criteria to find out on which criteria they can gain the most points or on which criteria they can distinguish the most from their competitors. This can be analysed with a sensitivity analysis, which can change the relative weights significantly.
A factor that potentially causes a mismatch is that associations and contractors do not know from each other how they intend the technical set-up from EMAT tenders, whether the relative weight are intended before or after an analysis of the scores.

7. **Weighing mechanisms**

Among the analysed cases in the practical comparison three out of four were examples where certain criteria became of increased importance as a result of the applied weighing mechanisms. Especially a combination of multiple weighing mechanisms for different criteria can have influence on the relative weights and thus the focus of the tender.

Several interviewees from the housing associations stated that they were surprised by the outcome of the tender because the focus shifted due to applied weighing mechanisms. And thus, a lack of expertise and experience leads to a potential cause of a mismatch.

8. **Financial incentive**

For housing associations it is hard to determine the right height of the fictional discount or the right number of points for the EMAT criteria. In the case of fictional discount there is a difference between ‘hard’, quantifiable criteria such as energy label and ‘soft’ criteria such as communication. In the first case a cost/benefit analysis between the cost of reaching of a certain energy label and the awarded fictional discount can be made to make a rational decision about the optimal approach. In the case of a ‘soft’ criterion the fictional discount does not stand in direct relation with the available budget but reflects the value.

9. **Price/Quality graph**

The price/quality diagram is a method that can be used by tendering parties to illustrate their preferred price/quality ratio. In practise the graph was not recognized as a useful method neither by the associations as ERA Contour, despite the fact that contractors do think that information about the desired price/quality balance is useful. The biggest concern is the fact that comparing the p/q line of contractors with the desired p/q line of contractors is an exact analytical method way of finding the optimal approach. The graph itself however is not exact because the scale for the quality axis is hard to define in an objective way. As a result it gives the impression of a very precise method, whereas in fact it is not.

**Conclusions**

Now that the conclusions for the different themes and their interrelations are clear it can be concluded that there are three main causes of a potential mismatch, which are:

**The difficulty of deducting the question behind the question.**

There is information, which is important to define the optimal project approach, but cannot always be found in the set-up of the tender. The strategic profiles of housing association are analysed as potential tool to predict the behaviour of the association. The outcome was that multiple fluctuating internal and external factors influence the behaviour and profile. Moreover, information about these factors can in some cases be sensitive for the association because it can affect their reputation.

In conclusion there is information, which is important to define the optimal project approach, which is not formulated in the tender document, fluctuating and something sensitive. These three factors increase the complexity of defining the optimal project approach and are a potential cause of a mismatch in the intended and interpret objectives.
Wrong reflection of the objectives from the housing association.
To make sure the information in the tender documents reflects the objectives from the housing association or at least the objectives from the persons who assess the plans, a number of processes exist, gathered under one central process; the integral procurement process. One of the first steps of the integral procurement process is the formulation of the EMAT criteria that will be used for the assessment of the projects. It is important that the defining of the ‘needs’ and objectives of the project is done with sufficient support from stakeholders within the housing association; the internal client. Practise showed that the set-up of most of the tenders is based on old tenders and more or less the same criteria are used over and over again. As main reason for this housing associations stated that the projects within the housing sector become more and more standardized and therefore housing association also work with standardized EMAT tender setup.

In current practise a limited group of employees of the housing association is responsible for the set-up and focus of the tender, in most cases the project leader. As a result, contractors answers to the jury on questions that are not asked by them but by the project leader. The jury, who also assess the projects, should determine the focus.

Wrong reflection of the focus from the housing association.
For contractors there are two ways of looking at the technical set-up of a tender. The first way is to look exactly how it is presented in the tender documents where the relative weighs in percentages give an idea about the preferences and focus of the housing association. A well-executed project approach, based on these relative weights will most likely result in a good score.

An alternative way of looking at the technical setup is to look for those criteria that offer room to distinguish from the competition. This room for distinction can be found by conducting a sensitivity analysis on the technical setup of the tender. The analyzed cases during the empirical phase showed significant differences in the relative weights of the tenders before and after a sensitivity analysis. When the housing contractor defines a project approach based on the outcome of the sensitivity analysis he is not just focusing on achieving a good score but he is focusing on achieving a better score that his opponent, a winning score.

Although striving at a good score seems inherent for striving at a winning score the relative weights of the criteria are significantly different. A lack of knowledge, both at the associations as contractors side, about of the consequences of certain weighing mechanisms and other aspects of the technical setup of an EMAT tender can cause a mismatch between intended and interpreted objectives.

Recommendations for housing association

Look for the unique aspects of the project
Housing association should look for unique aspects where the expertise of the market can provide added value for the project.

Define the focus of the tender in collaboration with the jury
The relative weights of the criterion and thus the focus of the tender should be determined by the same persons who will assess the plans.

Extend knowledge about the technical setup
The project leader should have sufficient knowledge about the consequences of the technical setup, to ensure that the setup is a right reflection of the discussed preferences and focus.

Conduct a market consultation
Inviting only contractors that fit the character of the project is a first step of a preventing a mismatch.

Introduce an early dialogue round
When the assumptions of the contractors based on the tender documents can be validated in an early phase, this will help them to define the best project approach.
Refrain from discussion between jury members
When jury members discuss the scores this reduces the transparency of the process and can result in a shifted focus of the tender.

Always evaluate the process
Evaluating projects will help both associations to reduce the chance of a mismatch and create more quality projects in the future.

Recommendations for housing contractors

Search for project specific factors
Look for factor that influence the behaviour of the association but are not mentioned in the tender document.

Look for the unique aspects of the tender
Contractors should find the unique elements in the tender documents to discover the essence of the tender.

Collect data for improving the sensitivity analysis
Save data of completed tender to make better estimations of the score spread which results in more accurate results from a sensitive analysis.

Keep the price/quality ratio in mind
Realize that the financial incentive given by housing association might not reflect their true objectives. Therefore keep in mind the price/quality of the project with every decision.

Utilize knowledge about cultural profiles
An assumption of the perception of jury member can be made based on their profile. A review jury can be composed to learn more about how the plans will be perceived by the jury.

Dare to protest or say no
Contractors need to communicate to associations when the process is not transparent or unfair.
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Phase 0

Introduction
1. Introduction

In 2002, an investigation committed by the Dutch government, revealed that many big construction firms committed fraud. Within cartels price agreements were made, which resulted in questionable and unfair competition where little profit was to be made. (Tweede kamer, 2003)

One of the solutions to solve this problem was the introduction of new procurement methods. One of these new procurement methods is EMAT procurement, introduced by Rijkswaterstaat in 2008. With EMAT procurement, the winner is not selected solely on price, but also on a number of quality criteria (CROW, 2007). Although EMAT procurement theoretically solves a lot of the problems caused by traditional procurement, it brings a new problem along with it.

This thesis will focus on the problems of EMAT procurement between housing associations and housing contractors. But before we go more into depth in the problem definition first a closer look is taken at background information about housing association and the procurement methods.

1.1 Dutch housing associations

In this research the current practice of EMAT procurement will be analysed with housing associations in the role of tendering party. According to the Central Bureau of Statistics, the Dutch housing associations are granted 17% of the building permits in the housing sector ([CBS], 2013).

Housing associations are institutions that develop and maintain the social housing sector in the Netherlands. The Dutch government leaves the corporations to operate individually and limits its role to that of financer, policymaker and controller. Because housing associations are semi-public institutions, the question can be raised whether the Dutch procurement law applies to them or not (Kempen, 2002).

Article 1.1 of the procurement law and EU directive 2004/18 art.1 section 9 states that the following criteria determine whether institutions need to act according to public procurement law:

A. The institution is established with the specific cause to fulfil the need of public need, not being on industrial or commercial ground.
B. The institution has an incorporation
C. The institution’s:
   • Activities are for the major part executed by the central government, province, municipality or water board
   • Performance is controlled by the central government, province, municipality or water board
   • Members of the board, management and/or a controlling organ consist for more than half of resources supplied by a central government, province, municipality or water board.

(Dutch Government, 2012)

Housing associations meet criteria A and B but do not fully meet criteria C. The central government lets the corporations operate autonomous and therefore housing associations are part of the grey area (Kempen, 2002).

In 2011 the former minister of the Interior and Kingdom Relations, Donner, wrote in a letter to the parliament that housing associations have procurement duty are not strictly obliged to use European nor national procurement (Donner, 2011). His statement is an important guideline but does not have legal force until it is determined by court.
The legal and social obligations of housing associations have frequently been a point of political discussion. They have the intention and social obligation to apply EMAT procurement in a good way. Altogether it is assumable that EMAT procurement will become increasingly important for the corporations and more knowledge about the good application of EMAT procurement is desirable.

A brief history of the housing association in the Netherlands

1850-1945: The emerging of the housing association

The first housing association in the Netherlands is founded in Amsterdam in 1852. A group of wealthy citizens founded the association to counteract against the housing shortage and the bad conditions of many houses in the city at that time. In other cities similar initiatives are executed but it is not until the housing law in 1901 that there is an extreme rise in the number of housing associations (Wolters & Verhage, 2001). With the housing law 1901 the Dutch government took responsibility for the housing of the lower class of the Dutch population.

Housing associations could apply for subsidy and operational contribution from the government for new housing projects (Ekkers & Helderman, 2010). The associations had to meet strict conditions to qualify for the subsidies and contribution. An example is that associations only needed to operate for the sake of providing affordable houses for the lowest class of the population. Thus their responsibility in that time was limited to the construction and maintenance of houses (Cate, 1998).

In 1934 a change in housing law caused that the government does not give subsidies to associations anymore, but loans. In the role of financer the government had much more say in the actions of the housing associations (Cate, 1998).

From 1945 to 1980's: Constructing rise and the start of independent associations

After the Second World War the housing associations played an important role in the fighting of the shortage of houses. Municipalities also founded their own associations, which were part of the administration. A consequence of this was that housing associations came even more under the control of the (local) government. There was a commercial focus on the construction of houses that resulted in estrangement of the associations and renters (Cate, 1998).

In 1964 committee De Roos published a report about the role of the housing associations. The committee stated that the associations should receive a bigger and more central role in the solving of the housing problems, and that the government should not take tasks that can be done by social enterprises like housing associations (Heemskerk, 2013).

Until 1970 the focus of the associations was on the construction of new houses, which led to neglect of the existing housing stock. Therefore new urban renewal programs were developed to upgrade the comfort of the houses and the public spaces in the cities (Cate, 1998).

In 1989 the nota ‘Volkshuisvesting in de jaren negentig’ is presented, and focuses on the decentralization of the housing responsibility and the shift in focus from constructing to maintaining the social housing portfolio (VROM, 1989).

1990 – present: Towards independent associations

In 1993 the decision about the management of social housing (BBSH) is introduced. With that, the associations stand under formal supervision of the minister. More important is the ‘bruteringsakkoord’, which causes a financial cut between associations and government. Also
the legal form of associations chances from a foundation form where the member (renters) have much say, into a corporation form where the board can act much more independent.

In that period many smaller associations merge into bigger, more powerful associations with larger portfolios. The government does not have any important influence except for the fact that it writes the legislation about rent, salaries of board members and the demand about the income of the renters.

1.2 Traditional procurement

A traditional procurement process starts with an initiative from the client-side. A detailed plan is designed by the client, or, if the client has insufficient time or experience, an architect can be hired to make the plan and design. (De Ridder, 2011a).

When the architectural design is ready, contract drawings are made in which every light switch and power plug is already drawn in. In addition to the contract drawings, a set of minimal requirements is formulated (van de Rijt & Santema, 2013). In traditional procurement this would be the moment that the client goes to the market and issues a tender (Duren & Doree, 2008).

Contractors who apply for the tender do not have to make significant design decisions. They only need to calculate the cost and, based on that, determine the price. The margin between the construction cost and the price for which the contractor is going to tender the project is composed of budget items (Heiden & Valk, 2013):

1. General cost, which is a percentage of the total sum and is needed to cover for resources that are needed for the preparation of the plans
2. Risk and profit. Contractors estimate how controllable project risks are and for which profit margin they are willing to build (De Ridder, 2011a)

Because the client has the responsibility over the design, contractors can only distinguish themselves through price. And of course, the lowest price wins the contract. This is an incentive for contractors to reduce the price as much as possible, especially when the contractor has a high need for new projects (Heiden & Valk, 2013). Until 2012 more than halve of the tenders were awarded solely based on lowest-bid price. In 2012 this number reduced to less than 25%, as a result of new legislation stating that EMAT needs to be applied unless there are strong reasons why lowest-bid is more appropriate (Hardeman, 2014).

Effect of the financial crisis on construction prices

Before the start of the crisis in 2008, usually general cost would be around 6% of the total sum and profit and risk budget between 2-3% (Heiden & Valk, 2013). During the years of crisis, the market competition has become much higher. Contractors are fighting against bankruptcy and need to lower their prices to win projects, keep producing and avoid firing many employees (De Ridder, 2013).
As a result, the general cost went down to rates of 3% and profit and risks to 1% or sometimes even zero (Heiden & Valk, 2013). This means that as soon as project risks occurs, the contractor has very small margins to cover these additional cost and projects can end up with a negative profit (Duren & Doree, 2008).

**Opportunism caused by competition**

With traditional procurement, the client/contractor-relationship has more to do with competition than cooperation. This comes from the fact that contractors are forced to reduce their price if they want to win the tender (de Ridder, 2011b). This highly competitive environment provokes opportunism with contractors. Opportunism which, in many cases, leads to time and budget overruns (Duren & Doree, 2008). They will squeeze their cost and those of their sub-contractors to an absolute minimum in order to win the tender (De Ridder, 2013).

As a result, especially during the economic crisis, contractors compete in tenders with projects close to, or similar to the cost price. Contractors are now forced to seek for loopholes in the specifications or contract to perform additional work, which is necessary to provide a reasonable profit (Duren van & Dorée, 2008). This way of procurement leads to opportunism, strict budget management and short term vision instead of sustainability, quality and innovation (Duren & Doree, 2008).

**‘Minimum standard paradox’**

With ‘lowest bid’ tenders, contractors need competitive prices in order to win tenders. Since the design is pre-set by the contractor, the variables that remain and effect the price are the performance and the risk management of the project (O’Conner, 2009).

To prevent that contractors go too far in lowering the performance and accepting high risks, the client formulates minimal requirements (Doree, 2001). By formulating minimum requirements the client tends to ensure a certain performance (van de Rijt & Santema, 2013). They believe that minimum requirements are necessary to protect themselves to what van de Rijt & Santema (2013) call the ‘non performer’.

Instead the requirements have a paradoxical effect; the minimum standard becomes the maximum standard. The client describes what performance the project needs to have and how risks need to be handled. When contractors exceed the performance of the project beyond the minimum requirements this will most likely raise the price (van de Rijt & Santema, 2012). When the contractor mitigates or reduces more risks than stated in the minimum requirements this will also raise the price. Since the only variable that determines the winner in lowest bid tenders is the price, contractors will aim for the minimal standard and not for the best price/quality ratio (Bossink & Crucq, 2011).

Even the inexperienced contractors (who do not have the knowledge to design the project plan themselves) can compete because the client has specified the project with all its required performance and a risk management plan. So instead of filtering out the ‘non-performance’ it actually makes it easier for ‘non-performers’ to compete in the tender (van de Rijt & Santerma, 2013).

Figure 2: minimal requirement become project the aim. Source: own illustration based on (van de Rijt & Santerma, 2013)
1.3 From the clients as director to the contractor as expert

By designing the plan and formulating all the required specifications, the clients forces contractors to make almost all project decisions prior to the start of the project, the phase where the least information is known (De Ridder, 2011a). The contractor is the party with experience in the execution of construction projects. He is familiar with problems and risk that occur during construction. Therefore to increase the performance of a project, avoid overspending, time-waste and achieve improved performance it is preferable that the contractor has more influence in the design (van de Rijt & Santema, 2013).

With the application of integrated contract forms, contractors are involved in the design phase of the project. They get room use their expertise and experience to design solutions that best fit the client’s objectives (Lenferink, Tillema, & Arts, 2013). Although the contractor is capable of improving the design and the project planning, the client remains the expert on the desired functionality of the project (O’Conner, 2009). The client does not want to lose full control of the project, but wants the project quality to meet their core values and objectives (Gelderman & Albronda, 2013). When the winner of an integrated project tender will be awarded solely based on the lowest-bid, the client cannot express his qualitative preference. Therefore quality based selection is needed to reduce the gap between expected and actual performance (O’Conner, 2009). Basically the goal for the client is getting a better design then they could have made themselves, which still meets all their objectives (Chan, Scott, & Lam, 2002).

![shift client/contractor responsibility](image)

Figure 3: shift client/contractor responsibility. Source: Own illustration based on (Otto, 2009)

1.4 EMAT Procurement

In 2005 Rijkswaterstaat introduced the EMAT-philosophy in the Netherlands in their program ‘Gunnen op waarde’ (roughly translated: value-based awarding). Next to purely price-based criteria, Rijkswaterstaat also included other, quality based, criteria for the selection of the winning plan (CROW, 2007). In a score matrix, criteria are formulated, both on price and quality, and (relative) weights are assigned. This procurement method will be further elaborated in chapter 5.

Santema and van der Rijt (2013) describe EMAT procurement as a combination of price and quality, in which the quality is measured in pre-set criteria to find the economically most advantageous tender (van de Rijt & Santema, 2013). European Directives 2014/25/EU states that EMAT procurement can be an incentive for more innovation.

In many articles and reports about EMAT procurement the terms innovation and quality are used. This raises the question: what is defined as quality or innovation?
In a report of the Dutch economical institute for construction (EIB) in commissioned by the Dutch institute BouwendNL, EMAT is defined as: every tender where there is any other criterion then price. With this clear and fairly simple definition, terms like quality or innovation are not included (Hardeman, 2014). This research will use that same definition and the discussion about the definition of the terms quality and innovation is left outside of the scope.

The double translation of objectives
Unlike as with traditional procurement, where the Housing associations did most of the design work, with EMAT they only have to formulate what they want in the tender document. Housing associations have to ‘translate’ their objectives into the tender document which they hand over to the contractors. This is the left side in figure 5.

On the right side of figure 5 are the housing contractors. They need to make a perception of the objectives and preferences of the housing associations based on the limited information they receive. With that input they need to determine the best approach for the project. Although they have the expertise to design and build a qualitative project, there are still many different approaches that are possible (van Weele, 2005). Does the association want to focus on quality or money? How much extra are they willing to pay for innovation or sustainability?

![Figure 4: Double translation](image)

What is the added value of EMAT procurement?
Practice shows that a well set-up EMAT procurement can create added value on many aspects for example: improved or innovative solutions, shorter turnaround, lower maintenance cost, less surrounding nuisance, more functionalities and higher level of sustainability (Gelderman & Albronda, 2013). Data from the EIB revealed that, on average, EMAT tenders are 3% more expensive for contractors to participate but the added value of the projects is 7% (Hardeman, 2014). This indicates that contractors only encounter disadvantages from the switch from lowest-bid procurement to EMAT procurement.

EMAT in legislation
An important development for EMAT procurement is the new Dutch procurement law 2012, in which is stated that EMAT procurement needs to be applied unless the client can clearly motivate why lowest-price procurement is still more suitable. (Hardeman, 2013). In the new European Directive 23/24/24/EU is even stricter and make EMAT obligatory as a procurement method. This European Directive needs to be included in Dutch law before April 2016 (J. Telgen, 2014).
2. Research set-up

2.1 Problem definition

Although EMAT is introduced in 2008 as the solution for the problems of traditional procurement, it is still far from perfect. In literature, much is to be found about the flaws of the current application of EMAT and the congress ‘de toekomst van EMVI’ (translated: the future of EMAT) was almost completely dedicated to the problems of EMAT (Fijnemans, 2015). The fact that guidelines and legislation concerning EMAT procurement are updated almost every year is an indication that the current practice of EMAT procurement is far from ideal.

Both corporations and contractors experience difficulties with the new procurement method (Jan Telgen & Schotanus, 2010). This research will include both the associations and the contractors and focus on both their problems.

The association’s fear of giving it out of hands

With EMAT procurement, housing associations can integrate more of their corporate objectives in a tender than with a lowest-bid tender. Even better, they can use the expertise from the market to help them realize their objectives (van de Rijt & Santema, 2013). But it all starts is with good understanding about, how to set-up the tender in such a way that their project objectives are clear for the contractors but without telling them literally what to do.

Hennes de Ridder describes that they need to adjust to their ‘new role’ in which they are not responsible anymore for the design the new project (De Ridder, 2013). To maintain a certain level of control about the outcome of the project, associations apply the following things:

- A non-transparent awarding process
- A vague tender set-up
- Over-specification of requirements

(de Ridder, 2011b) (Hardeman, 2014)

Ruud Binnekamp (2010) states that room for manipulation and transparency are communicating vessels. The more transparent the tender process, the less room for manipulating the client has during the awarding. When the associations formulated the set-up of the EMAT tender incorrectly, it is likely that the outcome will not reflect the objectives they had for the project. The associations will not gain trust in the fact that an EMAT tender will always result in the best match (Fijnemans, 2015). To retain the possibility to manipulate the outcome of the EMAT tender, the awarding process is vague and not transparent (Binnekamp, 2010).

In the current practise of EMAT procurement often the prices of the contractors are first assessed before the EMAT criteria are appreciated. By first looking at the prices of the plans...
and then appreciating the qualitative plans, the clients will have a biased look (Hardeman, 2013). Research from the EIB indicates that to date, in more than half of the EMAT tenders, the weights; score mechanisms and the criteria are not clearly explained in the tender documents (Hardeman, 2013), and experience from ERA Contour is that with some tenders no feedback about the score is given at all.

These opportunities for lack of transparency, experienced in practice, are an indication that the associations have no faith in the outcome of the tenders.

Figure 6: transparency in numbers. Source: own illustration based on (Hardeman, 2014)

Detailed answers on vague questions
The idea of EMAT procurement is that contractors can use their expertise to create projects with more added value and a better price/quality ratio. However, to improve price/quality ratio, the contractor first needs to know more about the preference of the corporation. Do they prefer a cheap, simple project or are they willing to spent significantly more resources for a plan with higher quality (Bron: Hans Kuipers)?

Jan Telgen, Fredo Schotanus and Tsong ho Chen are all researchers who performance research into the effect of applied weighing mechanisms. Telgen & Schotanus emphasize on the effect of weighing mechanisms on the order of the outcome. Chen (2005) states that contractors require all information about the setup of the tender in order to make a rational decision about their optimal project approach.

EMAT tenders ask from contractors to deliver (besides the price) a quality plan in which the EMAT criteria are explained. As a result, participating in EMAT tenders requires significant more resources than participating in a lowest-bid tender (Hardeman, 2014) . It is important that contractor can judge whether the character or the focus of the tender matches their strengths. With this knowledge they can be more selective in the tenders in which they want to participate. If contractors only participate in tenders where their expertise is utilized the best way, the cost of contractors will be reduced and the housing associations will only get plans from ‘experts’ (van de Rijt & San tema, 2013).

The whispering game
EMAT procurement offers housing association the chance to utilize the expertise of the market. Therefore they want to give the housing contractors the room to use their expertise but at the same time they still want that the project to reflect their objectives and matches with their philosophy or DNA.

The way of reaching these goals is by translating their objective in a well-formulated EMAT document that reflects their objectives but leaves room for contractors to determine their own approach and use their expertise.
Housing contractors need translate this information to a perception of the objectives and preferences of the associations. When the EMAT set-up is not formulated with care, contractors need to figure out the client’s project objectives without sufficient input.

* A metaphor for the double translation process is a whispering game, which is played by little children. Children sit in a circle and the first child whispers a message in the ear of his neighbor, this child into the ear of his neighbored and so on. When the process ends at the last child in the circle, the message is in many cases completely different than the original.

As this metaphor indicates, EMAT procurement is a delicate process where it all about understanding each other. When this understanding between the housing association and the housing contractors is lacking, this may lead to a mismatch in the project outcome.

### 2.2 Research objectives and question

In the previous section, factors are addressed that contribute to the fact that EMAT procurement is still a difficult method for clients and unpredictable for contractors. Since not much research conducted on the subject, the main objective of the research is the identification of factors that influence the match or mismatch in EMAT procurement. An answer will be search on the following research question:

> “Which factors influence the potential mismatch in intended and interpreted objectives between housing associations and contractors in EMAT procurement?”

Because the research questions concerns a match or mismatch between housing associations and housing contractors, causes for failure or success can be on both sides. Therefore an objective of this research is to conduct it by looking at both perspectives. Since the housing association is the tendering party, they have more influence on the set-up of the tender, but perhaps the cause of a match or a mismatch is found to be more in the interpretation of the tender by the housing contractor.

The main research question is broken down in multiple sub-questions

1. Can information about the profile or DNA of the associations help contractors to deduce the ‘question behind the question’?
2. Which steps are done in the process of translating objectives into an EMAT tender?
3. Which factors influence the used criteria, their relative weights and the applied weighing mechanism?
4. How do contractors interpret the set-up of an EMAT tender?
5. Which information do contractors require to decide which project approach best fits the objectives of the client?

### 2.3 Methodology

**Research approach**

The research is conducted at the housing contractor ERA Contour. This enables potential use of experiences and data from ERA Contour and its contacts as input for the research. The set-up of the research is designed in a way that this potential is utilized in the most efficient way. In the next section the individual research steps are explained in figure 11 the complete research set-up is illustrated.

**Research phases**

The research exists out of 5 phases, phase zero until phase four. In the section below the function of each phase will be explained.
Phase 0: Introduction
The first phase of the research is devoted to identifying the real problems concerning EMAT procurement. The researcher has the objective to conduct a research that has practical relevance and truly reflects the problems that are faced in current EMAT application. To integrate this 'practical aspect' in the set-up of the research, 11 introduction interviews are held with employees from ERA Contour varying from cost-experts and concept-developers to top management. Simultaneous, tender documents from incoming EMAT tenders are analyzed to create an idea of how the current application of EMAT procurement in the housing sector is.

These inputs are combined with a literature review and will form the basis for defining the problem definition, research question and approach.

Phase 1: Defining
During the defining phase a literature research will be conducted to identify themes, which influence the match or mismatch between the intended and interpreted objectives. After every theme a proposition is formulated based on the insights from theory.

To structure the literature research the potential causes are investigated from three different perspectives.

The first perspective is a culture-perspective. Maarten Greorgius from Aedes said about culture: “When two parties have a completely different way of looking at the world, then that will without doubt lead to a mismatch”. To look into the influence of these cultural differences in chapter three, themes will be analysed that influence the match or mismatch from a cultural perspective.

The second perspective is the process-perspective. As mentioned in the problem definition EMAT procurement consists out of multiple ‘translation’ processes. As illustrated in figure 8 the housing association translates their objectives in the set-up of the tender and the housing contractors translate it back their perception of the objectives of the association. In chapter 4 multiple process related themes are identified that influence the match or mismatch. During the initial literature review it was discovered that in literature more is to be found on the processes on the client side than on the contractor’s side. These processes will come more to light during the empirical phase.

The third perspective is the product-perspective. Chapter 5 is focussing on the set-up of the tender and how that relates to the determination of a project approach. Different themes, mostly concerning the set-up of the tender, are analysed on how they can influence a match or mismatch between the intended and interpreted objectives.
In figure 8 the principle of EMAT procurement is illustrated in a very broad way. In chapter 6 the same figure will be expanded with the identified themes and form the theoretical framework of this research, which will function as guide for the rest of the research. Furthermore chapter 6 will summarize the conclusion of three different perspectives.

**Phase 2: Investigation**

Identified themes from the theoretical framework will form the input for the empirical phase where the causes will be tested in practice. The identified themes from the definition phase will form the structure of the investigation phase.

In this empirical research, a narrative research method will be used. The idea of narrative research is that information can never been analysed without a time depended context (Dries & Hoffman, 2008). It stated that there are different methods and different levels to look at a problem and therefore it states that there is not one single objective. This approach is suitable for this research since the objective is not to find one universal solution but instead to identify the causes that influence the match or mismatch.

Within narrative research, ‘the story’ is very important. It gives insight in how people experience practice and gives it meaning. For this research ‘the story’ of both the housing associations as the housing contractors will be gathered during a series of interviews (Biene et al., 2008). The themes that were identified during the definition phase will provide guidelines for the semi-structured interviews. Goal of these interviews is to let the interviewees elaborate on the themes without too much intervention. In chapter 8, where the outcome of the empirical research is written down, quotes of the interviewees are used to reflect their story in the best way.
Part of narrative research is to transcript all the interviews and structure them with codes. The software tool Atlas.TI is used to support in this. More information about the case study processing and the case study selection can be found in the chapter 7; case study protocol.

**Phase 3: Synthesis**

A case study analysis will be conducted to place the empirical data next to the literature findings. Again following the theme structure, an analysis will be conducted on which points the findings from practice matches the findings from literature and on which themes practice deviates from theory. For every theme a conclusion is drawn on how theory and practice relate to each other and how the themes influence the match or the mismatch between housing associations.

Since the empirical data originates from a limited pool of housing associations and housing contractors, the results will be analysed with a group of experts on how all represent a section of the process. Expert data validation and new insights will mainly serve as additional input for the conclusions but are also concisely written down in chapter 10; Expert validation.

**Phase 4: Conclusion and Recommendations**

In the case study analysis in phase 3, a comparison between theory and practice is made for every theme and conclusions are drawn on which themes influence the match or mismatch. In the conclusions the connections between the different themes will be made to come to an answer on the main research question. Network diagrams from the software tool Atlas.TI are used to analyse the interrelations and hierarchy between the themes.

After the conclusion where mainly the causes of a match or mismatch are identified, the recommendation goes one step further and gives recommendations for both housing associations and housing contractors on how the current practice can be improved. Furthermore aspects that fall outside of the scope of this research but can provide interesting results are written in recommendations for further research.

Last two chapters of phase 4 are the discussion and the reflection on the research.
Methodology schedule

Figure 12: Research setup
Phase 1
Definition
3. Culture

Causes of matches or mismatches are researched from a cultural perspective in this first chapter. In an interaction between two parties it is very important that the two parties know each other. That they know how information is intended and do not interpreted it in the wrong way. However in procurement the communication between the parties is a complex subject. When there is too much communication between the client and contractor this can lead to an unfair competition and even be an incentive for fraud (Gelderman & Albronda, 2013). When there is communication between the client and the competing contractors this is mostly done through one or two public Q&A’s or during a dialogue session. During Q&A the questions and answers from the contractors are shared with all the contractors so every party has the same information. As a result of this contractors are restrained in their questions because they contain strategic data from their analysis which they do not want to share with opponents (Masterman & Gameson, 1994).

To conclude; knowing your client can be important to learn the nature of the question but the methods to do this are limited. Therefore two themes are analysed that can help contractors to learn more about the behaviour of the housing associations. Firstly the strategic profiles of housing associations in general are analysed to see what contractors can learn about the procurement behaviour of an association based on his profile. Secondly the cultural types within a housing association are analysed to learn what the individual influence can be of the people working on the set-up or assessment of tenders.

3.1 Profile of a social housing provider

In section 2.2 the housing association is introduced with its brief history. During the 90’s a lot of housing associations started to merge, prior to that had quite distinctive profiles. To give an example there were amongst others socialistic, catholic and reformed associations. All these types of associations had a certain view on life, family and the society. Based on these ideas contractors could create a perception of the preferences of the client (Heemskerk, 2013).

In the past century, housing associations have evolved significantly. This evolution is caused by changes in society and the legal context (Ekkers & Helderman, 2010). The following section will investigate whether the strategy or approach of associations still can be deduced from their profile.

Multiple theories have recently been developed on the profiles of housing associations. Most theories form a coordinate system where the profiles of the associations can be placed in. However the theories use different variables on the axes of the system.
The Rex Group

The Rex group is an international partnership of housing associations from England, Italy, Sweden and the Netherlands. In 2006 the Rex group conducted a research on the diversity amongst housing European housing associations.

Their research revealed that providing housing to the social sector is not seen as the only responsibility of the associations anymore. Additional responsibilities are social cohesion in their active areas as well as services for the inhabitants (Brandsen, Farnell, Ribeiro, & Groep, 2006).

Associations have different ideas on how far their responsibility reaches and this is what causes diversity. Different factors that play a role in defining the profile of the associations according to (Brandsen et al., 2006) are:

• Values and ambitions of management.
• Organizational characteristics of the associations, for example recent development and financial resources.
• The structural side of the organization, which means the role of economic developments, and the causes of changes in policy changes.

The Rex group identifies, based on these factors, five profiles:

1. Traditional housing association: Sticks to the tasks of social housing provider, as much as possible.
2. Housing specialist: Uses its expertise on housing in a broad sense by extending to more special groups of clients such as day care and schools.
3. Client specialist: Combines housing and services for specific groups of society. Examples are associations that focus primarily on elderly and their specific needs.
4. District specialist: Works on improving neighbourhoods with a combination of housing and services. Examples can be building a neighbourhood house to improve the social cohesion in the area.
5. Investment group: Not solely a housing provider but also active in other markets. Is searching for the best spreading of their capital.

The researcher adds as a side note that there is overlap between the profiles, so not every association will fit one profile perfectly.

KPMG and SEV

According to the institute for social housing experiments, SEV, two factors influence the position of housing associations in the coordinate system they have designed. The first factor is the width of the orientation, with on one side of the spectrum ‘people’ and on the other ‘real-estate’. The other factor is ‘primary motivation’ with on one side ‘social return’ and on the other axis ‘financial return’. Just like the Rex group, SEV distinguishes five profiles based on the variables.

1. Emancipation machine: helps people to participate in society by facilitating housing but also healthcare, the training and guidance for people to become part of the society.
2. Service association: Invests in social real estate with qualitative neighbourhoods. Builds and maintains buildings with social functions that provide inhabitants of a good living environment.
3. Neighbourhood director: The association is on stand-by day and night for the habitants with the objective of maximal social cohesion. The associations feel responsible for both physical and social activities in their neighbourhoods.
4. Customer association: Focus is on the client, for whom fitting housing and services are facilitated. The association reacts on questions and request from the clients and client satisfaction is very important to them.

5. Real estate company: Focus is on financial return. By building and maintaining a sufficient amount of houses they become a financially stable and strong association.

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Figure 14: the five profiles of SEV

Figure 12 displays how the five profiles are positioned in the coordinate system.

The Dutch consultancy firm KPMG developed a similar coordinate system with on the horizontal axis ‘market’ and ‘public’ and on the vertical axis ‘ideology’ and ‘resources’. The coordinate system is illustrated in figure 13. The ‘market orientation’ in the coordinate system of KPMG has a lot similarity with the focus on ‘real estate’ and ‘financial return’ in the theories of SEV and Gruis. ‘Public’ on the right focuses on the social return of projects. Ideology vs. resources, on the vertical axis relates to the distinguishing between ‘can’ and ‘want’. On the resource side on the bottom of the coordinate system, associations make the actions that they do because they have the right and the ability. On the ‘ideology’ side on the top of the coordinate system the associations make certain decisions because they ‘want’ to achieve a certain quality or customer satisfaction.

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Figure 15: Coordinate system of KPMG

Strategic profiles

Vincent Gruis (2005) uses the approach of Miles & Snow, which is briefly introduced in section 1.1 to develop 4 strategic profiles for housing associations. On the vertical axis in his coordinate system he uses the two profiles from Miles & Snow; Defender and Prospector. The Defender has a narrow focus which is on improving current working methods instead of creating (innovative) new methods. The Prospector on the bottom of the coordinate system is always exploring the market for opportunities. Their objective is to use the expertise of the
market in the most effective way possible. They are not afraid for uncertainty and are looking for innovation and changes.

On the horizontal axis the Gruis, just like SEV and KPMG, placed the focus on financial benefit on one side of the axis and economical benefit on the other side. The four profiles that come forward from this are:

- Social housing manager: Focuses on the traditional role of a housing association; the housing of people with low income. They try to achieve economic benefit trough simple, clear and efficient working methods and processes.
- Social housing investor: Also focuses on the traditional role of a housing association to make financial benefit.
- Social innovator: has a broader focus; besides housing they also facilitate services. Their ambition is to continuously optimize the social return of projects.
- Social real estate agent: Invests in a broad section of real estate, not only within the social sector. The primary objective of a social real estate agent is to benefit financially.

The different classifications from the various studies look much alike. Mariette Heemskerk conducted a Phd research in 2013 which analysed the leadershiprole and the strategic profiles of housing associations in relation to their performance. Heemskerk (2013) concluded that although the different classifications from the various studies look much alike, the coordinate system of Gruis is the most appropriate because he based his profiles on a broad focus on the associations. It includes not only the people or the investments they make but a more complete package of products, people and services. Therefore the coordinate system of Gruis will be taken to the next phase where the strategic profiles of housing associations are discussed.

Conclusion
The last section clearly distinguish multiple types or profiles of housing associations. The variables that determine the profile of an association are mainly the focus on financial or social return. Knowledge about the profile may help the contractor to gain better understanding about the philosophy or the DNA of the association. Understanding the philosophy of an association is understanding the essence of the project.

**Proposition 1:**
Information about the profile of a housing association can help the contractors to understand the ‘question behind the question’.
3.2 Individual perspectives

Decision making by individuals is always depending on perception. Perception is the process where individuals interpret their sensory impressions in order to give meaning to their environment. Perception can apply to information, goals or a project plan. People can look at the same thing but still perceive it in a different way. It is not hard to imagine that diffuse perceptions of information can result in a mismatch between the intended and interpreted objectives (Robbins, Judge, Millett, & Boyle, 2013).

Robbins et al (2013) state that factors that influence perception can be divided in three categories. The first category is the perceiver, thus the individual who makes the perception. Second is the objective or the target that is to be perceived. Third is the context or the situation in which the perception is made.

As illustrated in figure 17, factors that play a part in the personal perception are attitudes, motives, interests, experiences and expectations. An example of expectations is when the perceiver expects young people to be lazy, or old people to be grumpy, then he will always perceive them accordingly. (Robbins et al., 2013)

![Figure 17: Influencing factor on individual perception. Source: (Robbins, 2013 #115)](image)

So individuals can and probably will perceive relevant information differently in an EMAT tender. But this insight still does not provide contractors with more input to help determine a project approach. The five factors that influence the perceiver are for certain groups within an organization the same can help create an idea about how decisions will be made and plan assets. This theory is called: organizational buying behaviour.

Cultural types

Research by Webster and Wind is referred as one of the first to introduce ‘buying participants’ or cultural types (Lilien, 2014). Webster and Wind (1972) look at the buying process as a special case of an organizational decisions process. In such a process the manager will almost never make a decision independent of the influence of others in the buying organization; therefore a decision becomes a network of individual perceptions.

Wind & Webster (1972) describe five different ‘types’ within a company, including their cultural differences and attitude in the procurement procedure. The profiles from Wind & Webster are based on a technical production company, for this research these profiles are ‘translated’ into specific profiles for housing associations. The following section gives examples of profiles that can be defined based on the factors that influence the individual perception.
1.) User
This group consists of people from the organization who will work with the tendered product. In the case of housing procurement this group will be defined as the future residence. Their focus will be on the users comfort of the purchase (Webster & Wind, 1972).

2.) Influencer
This group consists of people who need to work with the purchaser and have influence on the specification of the project (Weber, Current, & Benton, 1991). Technical functions like the future facility manager or even janitor can have this role in housing procurement. When the maintenance/operation is integrated in the contact, the contractor will be in the role of influencer. The influencer will focus on the functionality and maintainability of the construction and installations (O’Conner, 2009). Total Cost of Ownership (TCO) is a methods where the maintenance- and exploitation cost are intergraded into the cost calculations of the project (Lenferink et al., 2013).

3.) Purchaser
Larger organizations are more likely to have a separate purchasing department. This cultural type is characterized as overly price sensitive; people who are butting into the business of others (Gadde & Håkansson, 1993). When there is no tender, the role of the purchaser is to bargain with multiple suppliers to get the best deal. When the purchase is more routine-based and of less magnitude the purchaser has the power to operate individually (Webster & Wind, 1972).

4.) Decision makers
This group will make the definitive decision on the criteria of the tender. Whether this is the CEO, team leader or a purchaser depends on the type and size of the company (Webster & Wind, 1972).

5.) Gatekeepers
These are the people in the organization who manage the information streams. They will have limited influence in the set-up of the tender, but play an important role in creating involvement within the housing association. In most cases the gatekeeper will be the executive secretary or process leader (Webster & Wind, 1972).

Hakansson & Gadde (1993) state that purchasers are employees who stand (physically) far apart from the projects. Due to this separation between the wishes of the user and influencer in the cases of housing projects, the future inhabitants and the technical support team are neglected and purchases are dominant.

On the other hand purchasers think designers and end-users tend to pay too much for quality and that their procurement needs to be more effective (Bonoma & Zaltman, 1976).

Conclusion
Decisions concerning EMAT procurement are always depending on the perceptions of the involved individuals. This can be the perception the project leader has on the company-objectives when the set-up of the tender is made, the perception of the contractor who reviews the tender document or the perception of the jury who assesses the plans.

Research of Robbins et, al (2013) identified multiple factors that influence the individual perception. Some of these factors like attitude are strictly individual, and some are related to the position or role within an organization. Webster & Wind (1972) give examples of how different profiles within an organization can be classified based on cultural differences and attitude.

Information about the ‘cultural types’ from the housing association involved in the tender can help contractors predict the decision making processes of the organization. This can help to make more rational decisions on the optimal project approach.

**Proposition 2:**
Knowledge about the ‘cultural types’ of the tender team can help contractors to define the best project approach.
4 Process

In this chapter literature on process will be studied. Between the set-up of a tender and the final evaluation a series of processes and products take place. The outcome of each process is drawn down in a product; the tender documents, the project plan, a market consultation, the verdict of the jury and more (van Weele, 2005). In this chapter we will have a closer look on how these products are written or designed and how this can be the cause of a match or mismatch between the housing associations and the housing contractors. Since the housing associations in the role of the client have the most influence on the set-up of the tender this chapter is written from that perspective.

![Figure 18: The process perspective](Image)

4.1 EMAT criteria formulation

In the following section the processes defining the most suitable EMAT set-up are analysed. This section will focus on the formulation of the EMAT criteria. In the old procurements practice there was in most cases only one criterion, which is price. Therefore the process of formulating EMAT criteria is relatively new for housing associations. This lack of experience and clear methods can be the cause of a mismatch. In the conclusion of this section a proposition will be formulated based on the gained insights.

The theory on the term criteria, and methods for the formulation of criteria will be elaborated. An answer on the second sub-question ‘how are objectives translated into EMAT criteria’ will be sought. Information about this subject will be formulated into a proposition to be tested during the next phase.

**Client’s needs**

Prior to the establishment of objectives, the client first needs to determine their needs relative to the characteristics of the project (N.E.D.O., 1975).

Bennett and Flanagan (1983) defined a comprehensive list of clients’ needs, which includes:

- Functional building, at the right price
- Quality, at the right price
- Speedy construction
- A balance between capital expenditure and long term ownership costs
- Identification of risks and uncertainties
- Accountability in public projects
- Innovation design/high technology building
- Maximization of taxation benefits
- Flexibility to enable the design to be changed
- A building which reflects the client’s activities and image
- An involvement in and a need to keep information about the project throughout its life.
These needs do not tell anything concrete about the building yet but more about the attitude of the client towards the project (N.E.D.O., 1975). The current financial state of a company for example, may cause that their needs are more focused on a functional building at the right (read: low) price than on an innovating design (Mensch & Verwaltung, 1979).

Primary objectives
Once the clients have a clear idea about their needs, the next step is to determine the balance between the primary objectives (Masterman & Gameson, 1994). The three main objectives are time, cost and quality together called the 'Iron triangle' (Atkinson, 1999). Atkinson (1999) states that the iron triangle is the base for project success. De Ridder (2011) states that the third dimension is performance instead of just quality. Performance can for example also represent quantity instead of only quality.

The three objectives time, cost and quality/performance are interrelated and conflicting, therefore it is unpractical to fully achieve all three. A scarifies is needed on at least one of the criteria by applying certain weight/priority to each criterion (Masterman & Gameson, 1994).

The client does not have to define all the dimensions exact, but has to create certain boundaries for the contractors, which create the “project scope”. The boundaries of the performance are set by the normative performance, the boundaries of cost by the budget and those of time by a time schedule (De Ridder, 2011a). A balance needs to be made in a way that suits the client’s particular circumstances and the technical, commercial and other characteristics of the project (Walker, 1989).

Secondary objectives
When the project scope is set, the primary objectives can be broken down in secondary objectives, which describe the primary objectives in more detail (Masterman & Gameson, 1994).

The secondary objectives of clients can be project specific or broader and more long-term. These two kind of secondary objectives are called: general objectives and works objectives (Jongerius, 2014). General objectives are long-term corporate ambitions of a company, for example on sustainability or social return. It is also possible that the tender is a small part of a bigger project (Atkinson, 1999). Example is the application of safety guidelines, which need to be met in every project.

Works objectives are specific objectives for the tendered project. The association can, for example have the objective for the project to have a certain image, flexibility or it wants to focus more on an efficient planning (Webster & Wind, 1972).

In 2006 researchers in Sweden performed an empirical study on how EMAT criteria and their weights are defined in Swedish municipal procurement of construction. Table 1 shows an overview of the used criteria and their explanation (Waara & Bröchner, 2006).
<table>
<thead>
<tr>
<th>#</th>
<th>Objective category</th>
<th>Explanation</th>
</tr>
</thead>
<tbody>
<tr>
<td>1</td>
<td>Works planning</td>
<td>Achieving the planning for the specific works of the tender.</td>
</tr>
<tr>
<td>2</td>
<td>Realization planning</td>
<td>Contributing to achieving the planning for the entire realization of the project.</td>
</tr>
<tr>
<td>3</td>
<td>Works budget</td>
<td>Delivering the works within the upper set limit price, or as low as possible.</td>
</tr>
<tr>
<td>4</td>
<td>Realization budget</td>
<td>Contributing to staying within the budget of the entire realization of the project.</td>
</tr>
<tr>
<td>5</td>
<td>Quality</td>
<td>Delivering solutions with a high standard of quality.</td>
</tr>
<tr>
<td>6</td>
<td>Project specific</td>
<td>These objectives are very specifically orientated at the project/works that are requested.</td>
</tr>
<tr>
<td>7</td>
<td>Unburdening</td>
<td>Unburdening the client as much as possible by efficiently involving the client or by taking responsibility and having a proactive attitude.</td>
</tr>
<tr>
<td>8</td>
<td>Safety</td>
<td>The safety of a solution needs to be guaranteed.</td>
</tr>
<tr>
<td>9</td>
<td>Image</td>
<td>Contributing to or not damaging the client’s image.</td>
</tr>
<tr>
<td>10</td>
<td>Sustainability</td>
<td>Offering a sustainable solution.</td>
</tr>
<tr>
<td>11</td>
<td>Comply with law</td>
<td>The solution should comply with Dutch law.</td>
</tr>
<tr>
<td>12</td>
<td>Support</td>
<td>There should be strived for as much support as possible for the offered solutions.</td>
</tr>
<tr>
<td>13</td>
<td>Collaboration</td>
<td>The use of knowledge and cooperation needs to be maximized.</td>
</tr>
<tr>
<td>14</td>
<td>Client satisfaction</td>
<td>The client needs to be satisfied as much as possible</td>
</tr>
<tr>
<td>15</td>
<td>No appeal</td>
<td>The offered solution should be set-up in such a way that there is as little appeal as possible against it.</td>
</tr>
<tr>
<td>16</td>
<td>Additional work</td>
<td>Include as much extra functionalities as possible in the solution.</td>
</tr>
<tr>
<td>17</td>
<td>Nature</td>
<td>The solution that is offered should make a contribution to nature</td>
</tr>
<tr>
<td>18</td>
<td>Flexibility</td>
<td>There must be a lot of flexibility and freedom in the design of the solution.</td>
</tr>
<tr>
<td>19</td>
<td>Hindrance</td>
<td>Reducing the hindrance of the environment as much as possible.</td>
</tr>
</tbody>
</table>

Table 1: Examples of secondary objectives. Source: (Waara & Bröchner, 2006)
Conclusion

The road from objective to criteria starts with determining the specific needs for the project. This indicates that good EMAT criteria for the project, which reflect the project specific objectives, are only formulated when for every project the specific needs are analysed.

![Diagram of EMAT criteria process](image)

Figure 20: road from needs to criterion

**Proposition 3:**

Good EMAT criteria and weights for a project are only formulated by analysing what the unique needs are and translate that into primary and secondary objectives.

4.2 Integral procurement process

In the previous section specifically the process of criterion formulation is analysed. This chapter will look at the complete procurement process. Following steps of the procurement is a method to ensure that decisions are made in the right order, based on sufficient information and with the support of the right people (van Weele, 2005).

Van Weele (2005) divides the procurement process into the following six steps:

1. Specify
2. Select
3. Contracting
4. Order
5. Control
6. Aftercare/evaluation

The division of the phases of the procurement process is based on interrelation and the chronological order between the steps. The first three phases are called the tactical procurement phase and the last three the operational phase. The shift from the tactical into the operational phases is made on the moment the contract is signed (Gelderman & Albronda, 2013).

![Diagram of procurement process](image)

Figure 21: Step and phases of procurement. Source: Own illustration based on: (van Weele, 2005)

Following these steps can help clients with the tracing of causes of problems that might occur during the evaluation. For example problems with the product delivered by a sub-contractor may be caused by insufficient specification of the product in the first phase (Gelderman & Albronda, 2013).

Procurement expertise centre PIANOo describes the process in three main phases dived into multiple sub-steps being (PIANOo, 2015):
1. Preparation
2. Tender
3. Project execution

In the following paragraph the individual steps of the procurement process are elaborated.

Steps of an integral procurement

This research focuses on the match or the mismatch between the intended and interpreted objectives. Therefore only the first step of PIANOo (2015), which consists of the first two steps of van Weele (2005) will be elaborated in the following section.

1.) Determine the need
Internally the housing association has to determine the need of the project like described in chapter 5.3. In this phase no concrete EMAT criteria needs to be established, but in multiple layers of the organization questions need to be asked like: Are there corporate objectives that need to be integrated into the project? What is the financial situation in relation to the budget and is there sufficient support from top management? (van Weele, 2005).

2.) Defining the project
Once there is internal consensus about the need for the project and the long-term objectives of the associations that need to be integrated, the next step is to define the project. What important is in this phases is to make the right balance between demands and criteria (Kuiper, 2013), this will be further explained in section 6.6. The minimal performance of the project is formulated in a list of requirements (Chen, 2014b).

The demands in this list of requirements can be divided into six categories:
• Functional demands: functionality for the target group
• Technical demands: specifications of the used materials, dimensions, weight etc.
• Logistical demands: availability, delivery time, packaging etc.
• Commercial demands: contract form, warranty, answerability etc.
• Environmental demands: effect on the environment, carbon footprint, CO2 emission targets etc.
• Social aspect demands: respect for human right, creating employment etc.
    (Gelderman & Albronda, 2013)

3.) Market analysis/consultation
For a good procurement process knowledge about the market is important. The housing associations can pre-select housing associations who’s character or past-projects fits the desired outcome of the project (Gelderman & Albronda, 2013). In chapter 7 it will be further elaborated why market consultation is also important for the client to formulate a realistic reference for the project (Chen, 2006).

4.) Defining the procurement strategy
In this phase the strategic approach is determine, which is an important step for the formulation of EMAT criteria (De Jong, Bodewes, & Harkema, 2007). The early determined needs and objectives need to be translated into criteria. The balance of the “Iron triangle” (chapter 5.3) will decide what the balance will be between the quality criteria and the price criteria (Atkinson, 1999).

Telgen, Butern & Schotanus (2006), state that a common mistake among clients is to over-specify the project. They do this out of uncertainty in the contractor’s ability to come up with the desired result. The amount of information that will be given to the contractors will determine the room for the vision of the contractors (J. Telgen, Schotanus, & Buter, 2006).

5.) Validation with the tender board
The tender board consists of people with different roles in the organization. The composition of the tender board may influence the outcome of the tender board (Masterman & Gameson,
In the next section the ‘typical behaviour’ of different employees will be further elaborated.

6.) Project plan
In this phase the tender needs to become more concrete. An approximation needs to be made of the desired outcome of the project on the following points (Chan et al., 2002):

• Cost, in terms of an estimation of the required budget
• Organization, how a general organization of the project should look like
• Time, an estimation of the project schedule
• Quality, a reference of desired quality features
• Information, a reference on how the communication and information flows in the project should be.

7.) Procurement plan
In this phase the details of the tender will be worked out. The weights of the criteria need to be determined and an award mechanism needs to be chosen. Furthermore the award committee is formed and the final tender document is formulated (Bossink & Crucq, 2011).

After this step, the housing association will go to the market and tender the project (PIANOo, 2015).

8.) Evaluation
To improve the application of EMAT criteria and weights and weighing mechanisms, the evaluation of tender and projects is critical. Standard evaluation points of projects are: price, planning, approach of the contractor (van de Rijt & Santema, 2013). But this evaluation needs to be focused on the set-up of the tender linked to the tendered plans. Did the plans meet or exceed the expectations of the client? What was the effect of the application of EMAT criteria? Did the contractors come up with distinctive, innovative plans? What was the feedback from the competing contractors (PIANOo, 2015)?

Conclusion
The procurement process is a structured method to ensure the steps of the previous section are taken with care and that all decisions about the setup are made based on sufficient information on the context and with support of multiple layers in the organization. This last point results in a set-up of a tender that reflects the objectives of the housing associations instead of a small group of individuals who design the tender.

Proposition 4:
Following the steps of the procurement process is necessary to define a tender set-up that reflects the objectives of the organization.

4.3 Project specification
The previous two subjects were clearly the responsibility of the contractor, but for the following section it is not completely clear whose responsibility it is. In the traditional procurement method the housing associations were responsible of design and the contractor of realisation (Otto, 2009). Like mentioned in the introduction of this report, there is a shift from the client as director towards the contractor as expert. However the housing associations do not want to lose full control on the design because based on their experience they also know which product is good for the future inhabitants of the houses. So the question is how far does the association needs to go in the specification of the projects and on which points do they need to use the expertise of the market?

Over-specification
One of the oldest known examples of project specification is the specification of Noah’s Ark (Kalin, Weygant, Rosen, & Regener, 2011).
"The ark is to be 450 feet long, 75 feet wide and 45 feet high. Make a roof for it and finish the ark to within 18 inches of the tip. Put a door in the side of the ark and make lower, middle and upper decks." Genesis, Chapter 6, Verses 14-16 (The holy bible, New International Versions, 1978)

What’s striking is that the description does not contain any drawing and that apparently simple specifications were sufficient. In modern times the method of specification has evolved much from then. In high detail, the functional and technical requirements are described with additional requirements of the contractual relationship (Kalin et al., 2011). With the shift from lowest-bid procurement to EMAT procurement the specification level shifts from describing the demand into the wishes, and instead of strict specification towards an solution space (Kuiper, 2014)

One of the theories about project specification comes from Hennes de Ridder (2010); he pleads for an approach where buildings are a set of systems and sub-systems. Standardized universal building blocks, like Lego, from which suppliers can design supplier specific products (de Ridder, 2011b). Figure 22 illustrates the changes in approach between the current practise and the living building concept. Left the current practise where first a design is made and then components and element are designed to fit the unique design. On the right the approach suggested by de Ridder is illustrated, where the standardized elements form the base for the final design (de Ridder, 2011b).

![Image](image-url)

Figure 22: chance in design approach. Source: own illustration based on (de Ridder, 2011b)

Procurement strategy principles

To implement the living building concept the way projects are tendered also need to be changed. Table 2 shows the difference between the consumer market and the construction market.

The bottom-up organized approach force contractors to get more in touch with the market and the continuous changing perception of value. To ‘push’ the product to the market at the right time activities like marketing, branding and intensive research and development is needed.

<table>
<thead>
<tr>
<th>Construction market</th>
<th>Consumer market</th>
</tr>
</thead>
<tbody>
<tr>
<td>Demander set ‘solution space’</td>
<td>Demander specifies final solution</td>
</tr>
<tr>
<td>Wishes, few requirements</td>
<td>Only requirements</td>
</tr>
<tr>
<td>Supply driven demand</td>
<td>Demand-driven supply</td>
</tr>
<tr>
<td>Creative and proactive suppliers</td>
<td>Reactive suppliers</td>
</tr>
<tr>
<td>Demanders are surprised by supply pleasantly</td>
<td>Suppliers are surprised by demand unpleasantly</td>
</tr>
</tbody>
</table>

Table 2: Difference between construction and consumer market. Source: (De Ridder, 2007)

In the housing sector this methods is not directly applicable because the client will in most cases remain the initiator who goes to the market to tender a project (Gelderman & Albronda, 2013). With the top-down approach the client would hire engineers, architects and other advisors to specific their ‘wishes’ in high detail (De Ridder, 2013), see Figure 23.
With the bottom-up approach, suppliers will get the change to use their own (fully developed) products in their plans. This way the quality will improve and the cost will be reduced significantly (De Ridder, 2007). With the standardized systems as basis, contractors can fine-tune their project to the specific wishes of the client (Gelderman & Albronda, 2013).

To make this possible, the client needs to adjust their demand on the supply and not the other way around. The outcome of the project does not need to be fixed, but a solution space needs to be created in which contractors can choose their own strategy/approach as illustrated in Figure 24 (De Ridder & Vrijhoef, 2007).

Conclusion

Hennes de Ridder compares over-specification of a project with going to a Michelin-star restaurant and telling the chef how he should prepare the food. On other words when a housing association wants to utilize the expertise of contractors as much as possible they have to ask what they want instead of already deciding what the best solution is.

**Proposition 5:**

Housing associations have to focus on the ‘what’ instead of the ‘how’ in the specification of the tender.
5 Product

This chapter focuses on the information in the tender documents and how this relates to the project approach of the housing contractors. Are there different ways of interpreting the information in the tender document and which information is critical for contractors to make a rational decision on the optimal project approach?

To prepare their bids, the contractors need to make decisions on price vs. quality. They need to create an idea of the goals and objectives of the client and their definition of project success based on the limited information they find in the tender document (Telgen & Schotanus, 2010).

The technical set-up in the tender document, which consists out of the EMAT criteria, their weights and the weighing mechanism, forms important input for the contractors. Based on that input they need to determine their project strategy (Chen, 2006). Analysing the technical set-up of the tender is important for contractors to:

- Learn the preferences of the client and thus focus of the tender
- Finding criteria that offer room for distinction
- Having the ability to calculate their own score
- Knowing the desired price of (additional) quality

These factors are important for contractors to make a rational decision on the optimal project approach and project plan. In other words; the products they need to deliver (Chen, 2005).

5.1 Score calculation

When a contractor receives the tender there are two ways of looking at the criteria. The first way is to look which criteria have (relatively) high weights and therefore are important focus point to reach a high score. The second is to look at the criteria, which offer room for distinction and are important when you want to beat your opponents.

Tsong Ho Chen (2014) states in a report for PIANOo that the weight of criteria is also depending on the expected spread between the scores of the different contractors. According to Chen it is less important how big the share of a criteria is on the final score, but more on the ability to distinguish from other contractors.

Chen (2014) uses an example of a Belgian Jurisprudent (R.v.S. 13th may 2008) where the price/quality ratio was set on 50/50.

The following result where delivered by the seven competing suppliers:

<table>
<thead>
<tr>
<th>Supplier</th>
<th>Price</th>
<th>Points for Price</th>
<th>Points for Quality</th>
<th>Points total</th>
</tr>
</thead>
<tbody>
<tr>
<td>Supplier 1</td>
<td>12,968,792</td>
<td>49,304</td>
<td>44,286</td>
<td>93,590</td>
</tr>
</tbody>
</table>
During this tender the prices of all the seven competitors were very close to each other with a spread of just 5.8%. The result is that the share of the final score is built up for 50% out of points for price, but the actual selection of the winner happens predominantly based on the points of quality. The spread in points for quality is namely almost 32, which result in a ‘new’ price/quality ratio of 8/92 instead of 50/50 (Chen, 2014b).

**ERA Contour example**

ERA Contour competed in an EMAT Tender with the following EMAT criteria and relative weights:

<table>
<thead>
<tr>
<th>Criterion</th>
<th>Points</th>
<th>Percentage</th>
</tr>
</thead>
<tbody>
<tr>
<td>Price/Apartment</td>
<td>150</td>
<td>53%</td>
</tr>
<tr>
<td>Number of apartments</td>
<td>35</td>
<td>12%</td>
</tr>
<tr>
<td>Architecture</td>
<td>60</td>
<td>24%</td>
</tr>
<tr>
<td>Innovation</td>
<td>20</td>
<td>7%</td>
</tr>
<tr>
<td>Urban Integration</td>
<td>10</td>
<td>4%</td>
</tr>
<tr>
<td>Planning</td>
<td>10</td>
<td>4%</td>
</tr>
<tr>
<td>Total</td>
<td>285</td>
<td>100%</td>
</tr>
</tbody>
</table>

Based on these criteria and their weight, ERA Contour as a contractor needs to create an idea of the preference of the housing association (Telgen & Schotanus, 2010). A logical conclusion would be to focus on the price of the building. The number of apartments plays a significant role, while planning, innovation and urban integration have limited influence on the outcome of the tender.

During the Q&A of the tender (Nota van Inlichtingen) the contractors ask how the score for every criteria will be calculated, these answers can be used to analyse the score again according to the vision of Tsong Ho Chen.

<table>
<thead>
<tr>
<th>Criterion</th>
<th>Weighing mechanism</th>
</tr>
</thead>
<tbody>
<tr>
<td>Price/Apartment</td>
<td>Best price gets 150 point, the rest according to ratio (%)</td>
</tr>
<tr>
<td>Number of apartments</td>
<td>Highest number gets 35 points, the rest according to ratio (%)</td>
</tr>
<tr>
<td>Architecture</td>
<td>Is divided into 6 sub-criteria with 10 points each. Contractors are ranked 1 to 5, where first gets 10 points and last 2 points.</td>
</tr>
<tr>
<td>Innovation</td>
<td>Comes in the form of a bonus. All or nothing</td>
</tr>
<tr>
<td>Urban Integration</td>
<td>When one demand about the shape of the building is followed the points are assigned</td>
</tr>
<tr>
<td>Planning</td>
<td>Best planning gets 10 points, the rest according to ratio (%)</td>
</tr>
</tbody>
</table>

Based on experience of the cost- and planning experts of ERA Contour the following assumptions are made:

- The prices for simple apartment buildings will not fluctuate more than 10%.
- On a development and construction planning of 14 months, maximum 3 months can be saved.
• A min. & max. boundary on the number of apartments is set by the housing associations on 68 and 90 apartments; the estimation of the range of the contractors will be limited between 75 and 90.
• The demand for urban integration is very strict; therefore all contactors will follow this.

The spread of the score, so the room for distinction, determines the ‘real’ share of every criterion (Chen, 2014a). Based on information of the award mechanisms and the assumptions of the experts from ERA Contour the following analysis about the score-spread can be made:

<table>
<thead>
<tr>
<th>Criterion</th>
<th>Score spread</th>
<th>Percentage</th>
</tr>
</thead>
<tbody>
<tr>
<td>Price/Apartment</td>
<td>15</td>
<td>27%</td>
</tr>
<tr>
<td>Number of apartments</td>
<td>3.85</td>
<td>7%</td>
</tr>
<tr>
<td>Architecture</td>
<td>24</td>
<td>44%</td>
</tr>
<tr>
<td>Innovation</td>
<td>10</td>
<td>18%</td>
</tr>
<tr>
<td>Urban Integration</td>
<td>0</td>
<td>0%</td>
</tr>
<tr>
<td>Planning</td>
<td>2.14</td>
<td>4%</td>
</tr>
<tr>
<td>Total</td>
<td>67.85</td>
<td>100%</td>
</tr>
</tbody>
</table>

Table 6: Room for distinction

In this analysis the impact of the price on the final score has reduced significantly and architecture and innovation have become of more importance. With this insight the strategy of ERA Contour was changed, more budget was reserved for architecture and innovation. In many cases, the client is not aware of this shift in criteria division and can be surprised by the choices that the contractors made based on the tender document (Boer, Linthorst, Schotanus, & Telgen, 2006).

Sensitivity analysis

The Dutch procurement law 2012 states that tenders need to be transparent, non-discriminating and proportional (Hardeman, 2013). Proportionality means that the weights assigned to the criteria are in balance and in proportion with the cost. If the weights are too low, the contractors do not get an incentive to integrate the criteria in their plan because the benefits are lower than the profits. If the weights are too high, every contractor will follow and the criteria loses its distinctive value (Chen, 2014b).

The proportionality of criteria can be tested with the use of sensitivity and uncertainty analysis. These two techniques can reveal and quantify uncertainties in the outcome of the tender (Jansen, Slob, & Rotman, 1990). The corporation makes an estimated guess (with expert advice) of the outcome of the tender. In this way the costs and benefits of every criterion can be estimated and compared. A score graph, like in Figure 26, can give insight in the sensitivity of the outcome. By analysis different scenarios, including some extreme scenarios, the outcome of the tender can be predicted and adjustments made if necessary (Chen, 2014b).

Example sensitivity analysis

Four criteria have weight of respectively 5, 4, 6 and 10. The cost to integrate the criteria in the plan is estimated on €1000, €200, €1800 and €2500. A simple cost/benefit analysis reveals that criteria B needs relatively little investment for 4 points, compared to criteria C that needs six times as much.

<table>
<thead>
<tr>
<th>Criteria</th>
<th>Investment cost</th>
<th>Criteria Weight</th>
<th>Ratio (€/Point)</th>
</tr>
</thead>
<tbody>
<tr>
<td>Criteria A</td>
<td>€ 1000</td>
<td>5</td>
<td>200</td>
</tr>
<tr>
<td>Criteria B</td>
<td>€ 200</td>
<td>4</td>
<td>50</td>
</tr>
<tr>
<td>Criteria C</td>
<td>€ 1800</td>
<td>6</td>
<td>300</td>
</tr>
<tr>
<td>Criteria D</td>
<td>€ 2500</td>
<td>10</td>
<td>250</td>
</tr>
</tbody>
</table>

Table 7: Example of a sensitivity analysis. Source (Chen, 2014b)
Conclusion

The relative weights of the criteria say something about the preference of the client and the focus of the project. A sensitivity analysis is a method for contractors to discover the criteria where the most difference can be made on the competition. After a sensitivity analysis the relative weights between the criteria can be different than the weights in the tender document.

These analyses are important for the contractors to decide on the optimal project approach. Questionable however is whether the outcome of these analyses still reflects the preferences and focus that the housing associations had in mind.

**Proposition 6:**
An EMAT matrix with relative weights can be literally used as a calculation model by contractors to determine the optimal project approach.

5.2 Weighing mechanisms

Contractors face difficult choices in preparing their bids “Do we need additional budget for more innovative plans, promise longer guarantee for a higher price or work overtime during the execution-phase in order to reduce the construction time?” (Chen, 2006). Based on the criteria, their weights and the weighing mechanism, the contractor can decompose what the client prefers (Telgen & Schotanus, 2010). The weighing mechanisms that are used to determine the score will eventually decide the final score and the winner of the tender. Weighing mechanisms play an important role in the ability of the contractors to make an estimation of how their plan will score and whether it is sufficient to win the tender.

Jan Telgen, Fredo Schotanus and Tsong Ho Chen are Dutch academics who conducted a lot of research on award mechanisms and plead for complete transparency of the applied weighing mechanisms (Jan Telgen & Schotanus, 2010). They state that the outcome of the scores is heavily depending on the methods of assigning the score. This can influence the order in the score of contractors, the spread of the scores and when relative weighing mechanisms are applied. The outcome is a compete lottery and the contractors can only guess which project approach will score best (Chen, 2005) (Boer et al., 2006). In many cases the client does not fully understand the consequences of the applied mechanism and is surprised by the outcome of the scores (Chen, 2005). So to enhance objectivity and non-discrimination, housing associations need to publish (1) the EMAT criteria (2) their relative importance (3) the weighing mechanisms (Jan Telgen & Schotanus, 2010).

The effect on the order of the outcome

The consequence of the application of different formulas in the award procedure is best explained with the use of an example. To reduce the complexity of the example there is just one EMAT criteria besides price, which is delivery time (Di). Price (Pi) has a relative weight of 40% and delivery time 60%. There are three contractors competing in this tender and they deliver plans with the following features:

<table>
<thead>
<tr>
<th>Contractor</th>
<th>Price (Pi) (40%)</th>
<th>Delivery time (Di)</th>
</tr>
</thead>
<tbody>
<tr>
<td>Contractor 1</td>
<td>€ 4,200</td>
<td>18 weeks</td>
</tr>
<tr>
<td>Contractor 2</td>
<td>€ 4,500</td>
<td>15 weeks</td>
</tr>
<tr>
<td>Contractor 3</td>
<td>€ 4,750</td>
<td>13 weeks</td>
</tr>
</tbody>
</table>

Table 8: fictional variables of tendered plans

For this example the weight factor scale (WFS) is applied, which means that the criteria scores are translated into points in order to combine them into a final score (Dreschler, 2009). The score can be calculated absolute or relative and with the linear or curved line (Telgen & Schotanus, 2010).
The score for the delivery time (Di) will be zero for a delivery time of 60 weeks and maximum (60 points) for 0 weeks delivery time. This results in scores of 42, 45 and 47 for respectively contractors 1, 2 and 3.

For this example we assume that the score for the price will range from 0 to 40. Four different formulas will be used to calculate the outcome of the tender. The difference between the formulas is that they are relative or absolute and linear or curved (see Figure 26).

- **Absolute linear score** (red line): \( ALi(p) = 40 - 0.002 \times Pi \)
- **Absolute curved score** (blue line): \( ACi(p) = 40 \times \sqrt{\frac{5000-Pi}{5000}} \)
- **Relative linear score** (green line): \( RLi(p) = 75 - \frac{35 \times \text{score best contractor}}{\text{score best contractor}} \times Pi \)
- **Relative curve score** (orange line): \( RCi(p) = 40 - \frac{35 \times \text{score best contractor}}{\text{score best contractor}} \times Pi \)

![Figure 26: Score graph. Source: own illustration](image)

<table>
<thead>
<tr>
<th>Contractor</th>
<th>ALi(p)</th>
<th>End Score</th>
<th>ACi(p)</th>
<th>End Score</th>
<th>RLi(p)</th>
<th>End Score</th>
<th>RCi(p)</th>
<th>End Score</th>
</tr>
</thead>
<tbody>
<tr>
<td>Contractor 1</td>
<td>31.6</td>
<td>73.6</td>
<td>16.0</td>
<td>58.0</td>
<td>40.0</td>
<td>82.0</td>
<td>40.0</td>
<td>82.0</td>
</tr>
<tr>
<td>Contractor 2</td>
<td>31.0</td>
<td>76.0</td>
<td>12.6</td>
<td>57.6</td>
<td>37.5</td>
<td>82.5</td>
<td>37.3</td>
<td>82.3</td>
</tr>
<tr>
<td>Contractor 3</td>
<td>30.5</td>
<td>77.5</td>
<td>8.9</td>
<td>55.9</td>
<td>35.4</td>
<td>82.4</td>
<td>35.4</td>
<td>82.4</td>
</tr>
</tbody>
</table>

Table 9: Outcome of the example GREY=Winner

The outcome shows that the application of different formulas leads to different winners. The difference between the linear and curved score lines is mainly noticeable with ‘extreme’ score. The curved score line \( RCi(p) \) for example, gives very high scores for plans under the €6,000 but when the price goes over €14,000 there is very little impact on the score. When the information about these score graphs is available to the contractors they can adjust their strategy to it (Chen, 2007).

**Conclusion**

The research of Telgen, Schotanus and Chen (2014) show that the applied score mechanisms can change the complete order of the best contractors. This proofs that information about the
Weighing mechanisms is important for contractors when they want to calculate their own score to decide whether their project approach is optimal. In line with the new European directives Telgen and Schotanus plead for more transparency of the weighing mechanism that will be applied. By drawing a score graph the effect of different scenarios can be analysed.

**Proposition 7:**
Applied weighing mechanisms have significant influence on the score and should therefore always be described in the tender document.

5.4 Financial incentive

In many publications the objective of EMAT procurement for clients is formulated as: achieving the best price/quality ratio. But what is the ‘best’ price/quality? Is minimal quality for a minimal price as good as maximal quality for the maximum price?

Numbers of the Dutch institute of construction economics show that the most commonly used award mechanisms are the point system (weighing factor scale) and the price-correction system (Gunnen op Waarde) (Hardeman, 2014). The math behind both systems is comparable, however does it affect the incentive that it is given?

The following section will focus on the financial appreciation of criteria by the contractor; the price of quality. Existing methods and theories about financial incentives and financial appreciation will be collected and analysed. To find an answer on the question why this information is necessary for contractors to derive the preferences of the contractors and determine their optimal project approach.

Firstly an example of ERA Contour is given where the formulated value in the tender documents does not reflect the objectives of the client.

**ERA Contour example**

For a tender of a renovation project, the housing associations formulated 4 EMAT criteria being:

1. Planning
2. Communication towards inhabitant
3. Approach (including innovation and sustainability)
4. Presentation

The used award mechanism was the price correction system. The following fictional discounts were assigned to each criterion:

<table>
<thead>
<tr>
<th>Criteria</th>
<th>Fictional discount</th>
</tr>
</thead>
<tbody>
<tr>
<td>Planning</td>
<td>€ 400.000</td>
</tr>
<tr>
<td>Communication</td>
<td>€ 250.000</td>
</tr>
<tr>
<td>Approach</td>
<td>€ 400.000</td>
</tr>
<tr>
<td>Presentation</td>
<td>€ 150.000</td>
</tr>
</tbody>
</table>

Table 10: EMAT criteria and their weights

As a result of these fictional discounts, ERA Contour took another approach then it would have done with a lowest price tender. An example is that ERA took extra measurement to unburden the inhabitant of the building during the renovation. ERA contour decided to include a two-night stay in a hotel during the period that asbestos would be removed from the houses and the inhabitants needed to leave their houses. The additional cost could easily weigh up against the fictional discount that could be earned by unburdening the inhabitants.
The outcome of the tender was that the housing association decided to select none of the contractors because all of the plans turned out to be way over their budget. ERA contour even got as feedback that they overdid it by including the hotel visit for the inhabitants. This situation gives the impression that the tendering association had no clear idea how the assigned fictional discount would affect the prices of the tenders.

Financial incentive

Fictional discount, which is used in the price correction system ‘Gunnen op Waarde’ is a form of financial incentive. ‘Gunnen op Waarde’ is the most commonly used award mechanism in the Netherlands (Hardeman, 2013).

The definition of an incentive varies between different writers. Hazeu (2000) describes it as: “a performance-stimulant”. Wesel describes it as: “a changed approach through which the other party will show desired behaviour” (Wesel, 2006), Meng & Gallagher state: “a mechanism that is used to align objectives from parties to achieve project performance” (Meng & Gallagher, 2012). Lastly Rose and Manley state that: “Incentives that need to assure that the project becomes cheaper, better or faster and that the minimum specifications are exceeded voluntarily” (Rose & Manley, 2011).

The definitions have in common that incentives can be used to synchronise the objectives from the client and the contractors. Moreover Rose and Manley (2011) state that the incentive needs to make the project cheaper, better or faster. In other words the incentive needs to create added value for the project.

Bonus/malus system

In 2009 Marco Dreschler finished his PhD research into award mechanisms for EMAT procurement in the Dutch construction industry. He concludes a price-correction system is the most appropriate system in tenders where price and quality are compared (Dreschler, 2009). The price-correction system is the most applied system in the Netherlands and the application is increasing (Hardeman, 2014). The award mechanism works with fictional discount that can be earned by achieving higher quality scores than the reference quality. This fictional discount is abstracted from prices of the contractor’s plans and determines the evaluation price. The contractors with the lowest evaluation price wins the tender (CROW, 2007).

A method that has a lot of similarities with the price-correction system is the bonus/malus method. In the bonus/malus method the client grants a project to a contractor based on a standard fee for the required specifications (Wesel, 2006). Besides that, the client and the contractor also make an agreement on additional or lesser funds in case the quality is above or under the required specifications. This bonus or malus is assigned after the execution phase of the project (Rose & Manley, 2011).

Figure 27: A bonus/malus diagram. Source: own illustration based on (Dekens, 2013)
The bonus/malus system gives an incentive to the contractors to aspire high quality of the end product. The height of the bonus/malus influences how big the incentive is for the contractors. There are also examples where the client and the contractor agree to share the additional value made by the increased performance of the project (Hughes, Yohannes, & Hillig, 2007).

A critical element of the bonus/malus system is performance measurement (Bourne, Neely, Mills, & Platts, 2003). Bourne et al. (2003) describe performance measurement as the process of quantifying the efficiency and effectiveness of an action. During construction and after completion the performance is measured and the degree in which the project objectives are achieved can be determined. The bonus/malus for the contractors is deducted from the outcome of this process (Wesel, 2006).

In architecture many decisions are based on personal preference and therefore impossible to quantify in an unambiguous way (Binnekamp, 2010). Therefore the bonus/malus system is difficult to implement because it can easily result in disagreement about the performance of the project between the client and the contractor (Rose & Manley, 2011).

To make performance measurement possible the project objectives need to be quantifiable and measurable (van de Rijt & Santema, 2013). Therefore the objectives need to be formulated in a SMART-manner. The abbreviation SMART stands for:
- Specific
- Measurable
- Ambitious
- Realistic
- Time Bound
The performance of the project can be measured and expressed into quantified performance information (QPI) and compared with the SMART project objectives (van de Rijt & Santema, 2013).

Conclusion
The difference between the price correction system and the bonus/malus system is that the financial incentive in the price correction system is fictional. However the effect for contractors is similar; they can apply a cost/benefit analysis for the design decisions based on the cost and the earnable discount.

Even though in fictional discounts only the outcome of the tender and not the actual price of the project is determined, it will most likely result in more expensive plans.

**Proposition 8:**
EMAT weighing mechanisms such as WFS and fictional discount are (indirect) financial incentives and will affect the prices of the tendered plans.

5.5 Price/Quality ratio
In traditional procurement the client specifies a desired outcome or value for a specific budget, which is the project’s aim (De Ridder, 2011a). With ‘the Living Building Concept’ de Ridder pleads for a solution space with boundaries, which forms a square in a Price/Quality diagram as illustrated in figure 28 (de Ridder, 2011b). The contractor that comes up with the best Price/Quality ratio, which is the steepest line in Figure 28, wins the tender.
According to Hans Kuiper (2013) price/quality graphs that are based on this simple formula: $EMAT \text{\textsc{score}} = \frac{\text{\textsc{price}(p)}}{\text{\textsc{quality}(q)}}$, contains defects, namely that is assumes that the client has no preference for low or high quality. The left price/quality graph in Figure 29 implies that the client has no preference for cost or quality; they are of mutual importance.

![Price/Quality graph](image)

Figure 28: Price/Quality graph. Source: own illustration based on (de Reddar, 2011b)

The diagonal lines are called indifference curves or isonut curves. All the points in these lines are in the same score range (Chen, 2006). In the middle graph of Figure 29 the indifference curves are steeper, which implies the client is willing to pay extra but only when the quality or value increases linear in a factor $>1$. The added value needs to surpass the additional requirement investment (Kuiper, 2013). In the right graph of Figure 29 the indifference curves are less steep than the other two graphs. This implies that the client has set a reference price/quality but is willing to invest relatively much money to create relatively little additional quality. An example is the renovation of a row house from the post-war period. Upgrading these houses to an energy label C or D can be done for a reasonably good price/quality ratio, to upgrade it to a B or even an A-label costs an exponential amount of money. It could be the corporation has sustainability objectives and considers making additional investments to achieve these energy-labels (Bosch, van Kalmthout, & van Timmeren).

In a tender with only demands and no wishes, everything will be specified, what will result in a lowest-bid tender since there is no room for distinction. In a tender where there are only wishes and no demands the best price/quality ratio will win (which can be of a very low quality). In practise the desired outcome is a combination of wishes and demands. $Q=Q_{\text{wishes}}+Q_{\text{demand}}$. (Kuipers, 2014).

The indifference curves in figure 29 are all linear lines. According to Kuiper (2009) this gives not a correct reflection of the objectives. On the bottom left side of the graph the quality of the minimal requirements need to be achieved. The quality dominates the price; this is the case in section 5 until 3 of figure 30. When the reference quality is achieved the client is willing to
make an additional investment but only when this has exponential influence on the quality. Therefore in figure 30 the price is dominant over the quality in section 2 and 1 (Kuiper, 2009).

1. Weight Price \( (p) \) is dominant
2. Price \( (p) \) has more weight than Quality \( (q) \)
3. Quality \( (q) \) and Price \( (p) \) are about equal
4. Quality \( (q) \) has more weight than Price \( (p) \)
5. Weight Quality is dominant

Figure 30: changes in P/Q preference. Source: own illustration based on (Kuiper, 2009)

Required information for strategy determination

In an article on economical dimensions of EMAT procurement, Tsong Ho Chen (2014) gives an example of two possible approaches for an EMAT tender. A housing contractor competes in an EMAT tender and must determine his approach for the project. Approach A is a simple but efficient plan; the minimal requirements are met for a low price, no extra efforts will be made. In approach B the contractor takes the opportunities to add extra quality to the plan but this obviously requires additional investments. Because the indifference curves where not provided by the client, the contractor cannot make a rational decision which strategy is the most appropriate for this project (Chen, 2006). In case of the indifference curves from the left graph in Figure 31, approach A would be preferable. If the preference of the client would result in indifference curves as illustrated in the right graph of Figure 31, approach B would be the best.

Figure 31: Quality/Price graphs with indifference curves. Source: own illustration based on: (Chen, 2006)

Drafting a price/quality graph

To draft a price/quality graph, the client needs to determine a quality reference \( (Q_{\text{ref}}) \) with a matching price reference \( (P_{\text{ref}}) \) (Kuiper, 2013). With the help of an architect and a cost-expert, a corporation creates a simple reference project and calculate the price. A reference solution is characterized by a quality score of a 7 and price of 100% (Kuiper, 2009). A quality score of a 6 is the minimal accepted score and is achieved by a plan the only meets the minimal requirements and nothing more. A maximum budget can be set on 110, 120 or more,
depending on the additional budget that the client has available (Kuiper, 2009). To draw the indifference curves the client needs to answer two questions:

- What minimum quality is demanded for the maximum budget?
- What maximum price do they want to pay for a quality score of a 6?

![Image](image.png)

**Figure 32:** steps of drawing a price/quality graph. Source: own illustration

**Example:**
Housing association X tenders a project for a social housing apartment complex. The budget is limited but the association has the objective that every new building should contribute to the development of the surrounding area. Besides that the corporation has a long-term sustainability plan, which states that every new object needs to be ‘zero-energy’ by the year of 2020. So for this project it is not yet a strict demand, however desirable.

The corporation hires an architect to make a basic design for an apartment block with the demanded capacity, which meets the minimal requirements but contains only a limited number of the ‘wishes’ of the corporation. A cost-expert is asked to make a rough calculation of the design based on key figures.

This design and its price will form the Quality reference (QRef) and the Price reference (Pref); a quality score of a 7 with its price. The maximum budget is set on 110% of the reference price, for this price the corporation demand a quality score of 9. The corporation is willing to make concessions on the quality and accept a 6, but only for a price reduction of 20% of the reference price (Pref).

Now two lines (minimum quality and maximum price) and three points in the graph are known. The housing association can draw a hyperbole with the reference project as centre point, which also crosses the two other points. The a-asymptotes of the hyperbole will be around Q=5 and P=120.

**Conclusion**
An appropriate method to formulate the financial appreciation of EMAT criteria is the **price/quality graph**. Hans Kuiper revealed that the 45-degree indifference curve, in many
cases not corresponds with the preference of clients. To draw a price/quality graph the housing association should design and calculate a reference project and draw a graph based on that. The price that associations are willing to pay for additional quality or save for lesser quality can differ from project to project.

A price/quality graph can be helpful for contractors to define the point where their approach crosses the line of the desired price/quality of the housing associations. Theoretically this point represents the optimal project approach.

**Proposition 9:**
A price/quality graph is a good tool to give contractors more insight in the desired price preferences of the tendering housing association.
6 Conclusion definition phase

Culture
In the first chapter the match or mismatch between housing associations and housing contractors is analysed from a cultural perspective. Learning the ‘question behind the question’ is possible even though there is very limited contact between the client and the contractors possible. Information of the profile of a housing association can help contractors predict the preferences of the housing associations. For example based on financial or social return associations can be placed in a coordinated system and classified as a strategic profile. This information can help deducting the question behind the question. Furthermore information about the cultural profiles can help to learn more about the more individual preferences of the involved employees of the housing association, including the jury. Theory shows everyone has a different perception of reality but that the factors that influence this perception can be similar for certain groups. Based on this insight cultural profiles can be created for the involved people, based on for example the position they have within the housing association.

Process
In the second chapter of the literature study the processes are analysed. Firstly the theme formulation of criteria is researched. An important finding is the importance of the order in which the criteria are developed. Associations first need to determine in a broad way, what their needs for the project are and secondly make a compromise between the three primary objectives: time, cost and quality. When this division is made the primary criteria can be divided into more detailed secondary objectives, which will form the EMAT criteria. This approach makes sure the detailed secondary criteria are in line with the real needs of the project and are not randomly selected and do not contribute to the achievement of the needs to the client.

Following all the steps of an integral procurement process is a method to ensure that the criteria are formulated in the right order. Furthermore the steps of the procurement process make sure that the set-up of the tender reflects the preferences and objectives of the housing association and not only from a project leader or the real-estate department.

The third ‘theme’ of the process perspective is the project specification. There is not one truth on how far clients need to go with the specification of projects. However it is a fact that on every aspect they specify they let an opportunity pass of using market’s expertise.

Product
Chapter 5 focuses on the information in the EMAT documents and how this relates to the project approach of the contractor. To make a rational decision on the optimal project approach contractors need to deduct the preference of the housing association from the tender document’s EMAT criteria, weights and the weighing mechanism.

Multiple product-related themes are identified that can be analysed and help contractors to calculate their own score and determine the optimal approach for the tender.

• The first theme is about the proportionality between the applied criteria, which affects the room for distinction. The spread of the score from the applied criteria may cause that the relative weights change in an unexpressed way. This can be tested with the use of a sensitivity analysis in which the outcome of multiple (extreme) scenarios is calculated.

• The second theme is the weighing mechanism and the need of transparency of weighing mechanisms. Clients need to decide prior to the project which weighing mechanism they are going to apply and write this down in the tender document. This will avoid unexpected results and give contractors the ability to adjust their strategy. When a relative weighing mechanism is applied the outcome is a lottery and the contractor cannot make a rational decision on their strategy.
• The third theme concerns the financial incentive or financial appreciation of the criteria. Assigned points or assigned fictional discount for an EMAT criterion give an incentive to contractors to apply a cost/benefit analysis to make decisions concerning the most suitable project approach. Information on the financial appreciation of the criteria is critical for contractors to predict the preference of the client and define the optimal project approach.

A method for tendering parties to illustrate the financial appreciation of a criterion is a price/quality graph. This graph illustrates what the client has in mind about price and quality. What are they willing to pay for additional quality and how much quality are they willing to sacrifice for a lower price? In the graph contractors can draw their own price/quality line; the point where the two lines cross reflects the optimal approach.

Themes and propositions
In total there are nine themes identified in literature that influence the match or the mismatch between intended and interpreted objectives between the associations and contractors. The themes will be used as structure for the rest of the research and report. At the end of each theme the gained insights are used to formulate a proposition. These will be discussed and tested during the empirical phase of this research. More on this can be found in chapter 6.

<table>
<thead>
<tr>
<th>#</th>
<th>Theme</th>
<th>Proposition</th>
<th>Introduced in</th>
</tr>
</thead>
<tbody>
<tr>
<td>1</td>
<td>Profile of a housing association</td>
<td>Information of the profile of a housing association can help the contractors to understand the question behind the question.</td>
<td>Chapter 3.1</td>
</tr>
<tr>
<td>2</td>
<td>Individual perception</td>
<td>Knowledge of the ‘cultural types’ of the tender team can help contractors to define the best project approach.</td>
<td>Chapter 3.2</td>
</tr>
<tr>
<td>3</td>
<td>EMAT criteria formulation</td>
<td>Good EMAT criteria and weights for a project are only formulated by analysing for every project what the unique needs are and translate that into primary and secondary objectives.</td>
<td>Chapter 4.1</td>
</tr>
<tr>
<td>4</td>
<td>Integral procurement process</td>
<td>Following the steps of the procurement process is necessary to define a tender set-up that reflects the objectives of the organization.</td>
<td>Chapter 4.2</td>
</tr>
<tr>
<td>5</td>
<td>Project specification</td>
<td>Housing associations have to focus on the ‘what’ instead of the ‘how’ in the specification of the tender.</td>
<td>Chapter 4.3</td>
</tr>
<tr>
<td>6</td>
<td>Score calculation</td>
<td>An EMAT matrix with relative weights can be literally used as a calculation model by contractors to determine the optimal project approach.</td>
<td>Chapter 5.1</td>
</tr>
<tr>
<td>7</td>
<td>Weighing mechanisms</td>
<td>Applied weighing mechanisms have significant influence on the score and should therefore always be described in the tender document.</td>
<td>Chapter 5.2</td>
</tr>
<tr>
<td>8</td>
<td>Financial incentives</td>
<td>EMAT weighing mechanisms such as WFS and fictional discount are (indirect) financial incentives and will affect the prices of the tendered plans.</td>
<td>Chapter 5.3</td>
</tr>
<tr>
<td>9</td>
<td>Price/Quality ratio</td>
<td>A price/quality graph is a good tool to give contractors more insight in the desired price preferences of the tendering housing association.</td>
<td>Chapter 5.4</td>
</tr>
</tbody>
</table>
Phase 2
Investigation
Case study protocol

The objective from the case studies in the investigation phase of this research is to test whether the themes that are identified in the previous phase really influence the match or mismatch in the intended and interpret objectives between housing associations and housing contractors. To collect the empirical data, 7 completed EMAT tenders are analysed and 4 interviews are conducted with the tendering housing associations.

Case selection

For input from the housing association side the network of ERA Contour is used. ERA Contour has participated in multiple EMAT tenders in the last five years. The data from these tenders is all saved in a central data system called Digi Office. From Digi Office a long list of EMAT tender is deducted based on the following criteria:

- Project is tendered maximum 3 years before the start of the research (after May 2012)
- EMAT tender has a significant “quality share”. With this is meant that besides price, a significant amount of the awarding is done based on the EMAT criteria.
- The EMAT tender contains at least 4 EMAT criteria.

In consultation with Marius Heijn, concept developer from ERA Contour, a shortlist of seven tenders from four different housing associations is made. This selection is done based on the judgement of Marius Heijn about the best people at the associations to be of help for the research. This does not mean that only associations are included with a relatively good relation with ERA Contour or EMAT tenders that ERA Contour has won. From the seven cases that are included, ERA Contour won two.

The cooperating housing association and the cases will all be made anonymous in the report.

Document analysis

The first step of the empirical phase is a document analysis. From the selected tenders the tender document is analysed on the following aspects:

- The applied EMAT criteria
- The relative weights of the criteria
- The applied weighing mechanism
- The composition of the jury and the ‘cultural type’

Furthermore, when possible, for every tender a sensitivity analysis is conducted on the technical set-up.

The document analysis will be supportive for the interviews. The document analysis gives the researcher insight in the current EMAT practise of the association and enables him to ask more specific questions about the set-up of the tender.

Interviews

For the collection of empirical data four housing association and one housing contractors are interviewed. The nine themes are used for the semi-structured interviews and make sure that a complete set of comparable data is collected from all the interviews.

The first objective is to test which themes identified in literature are also recognized in practise as potential causes of a mismatch. This is done with the help of the proposition, which were formulated at the end of each theme. The second objective of the interviews is elaborating more on the subjects that are recognized and identifying the more detailed causes of a mismatch.

As mentioned in the methodology, a narrative method is used for the interviews in which ‘the stories’ of the interviewees play an important role. The propositions are also introduced to
‘trigger’ the interviewees and give them an incentive to elaborate on the theme in the specific context of their work environment (Biene et al., 2008). Furthermore the interviewees are encouraged to give examples how the themes influences the current practise.

For every theme besides the proposition, sub-questions are formulated. These sub-questions go more into the insights from the literature review and are asked as follow up on the proposition and let the interviewee elaborated more on the theme. The sub-question can be found at the beginning of each theme in the next chapter and a complete oversight can be found in appendix B.

Data processing methodology
To draw conclusions based on a qualitative empirical research, first the empirical data needs to be processed. To do this, three steps need to be taken 1.) Ordering 2.) Labelling/coding 3.) Determining patterns (Yin, 2013). For this research the software tool Atlas.TI is used to support the data processing. In this software tool all the recorded interviews are typed out as transcripts. Then multiple codes are introduced based on the aspects that came to attention during the interviews. The 9 themes from the previous section are inserted as families and the codes are linked to the appropriate family. It is possible that one code is connected to multiple families. A complete list with the applied families and codes can be found in appendix D.

The last step is to connect the codes to the text by encoding the transcripts. Sections from the transcript are selected and one or multiple codes are coupled to that specific section. After all these sections are couples as quotes to the codes it is easy to retrieve a oversight per code of what all the interviewees have said about that specific subject. This way the similarity ore differences in opinion of interviewees can be learned in a structured way.

To make the results of multiple cases comparable with each other, first an in-case analysis is done. In the in-case analysis the transcripts of the interviews are analysed with Atlas.ti. After all the in-case analyses are finished, cross-case analyses are conducted to compare the results of the different causes with each other. The cross-case analysis will be used are input for the next phase.

The quotes used in the text all have a number, which can be traced back in the quote book.
8 Case study results

8.1 Introduction

During the previous phase, ten themes have been identified that potentially influence the match or mismatch in the intended and interpreted objective between housing associations and housing contractor in EMAT tenders. The gained knowledge will be the input for this phase, the investigation phase. During this phase, interviews are held with four Dutch housing associations and ERA Contour to test whether the potential causes found in literature are also recognized in practice. More information about the case selection and interview techniques can be found in the case study protocol in Appendix B.

Data processing methodology

First the empirical data needs to be processed, in order to draw conclusions based on a qualitative empirical research. Therefore three steps need to be taken 1.) Ordering 2.) Labelling/coding 3.) Determining patterns (Robert YIN/YEN). For this research the software tool Atlas.TI is used to support the data processing. In this software tool all the recorded interviews are typed out as transcripts. Subsequently multiple codes are introduced based on the aspects that came to attention during the interviews. The ten themes from the previous section are inserted as families and the codes are linked to the appropriate family. It is possible that one code is connected to multiple families. A complete list with the applied families and codes can be found in Appendix D.

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To make the results of multiple cases comparable with each other, first an in-case analysis is done. In the in-case analysis the transcripts of the interviews are analysed with Atlas.TI. After all the in-case analyses are finished, cross-case analyses are conducted to compare the results of the different causes with each other. The cross-case analysis will be used as input for the next phase in this research.

The quotes used in the text all have a number, which can be traced back in the quote book in Appendix C.

8.2 Interviews analysis

Theme 1: The profile of a housing association

Proposition:
Information about the profile or DNA of a housing association can help the contractors understand the question behind the question.
Sub questions:
• Is there a strong focus on social or financial return?
• What influences the choice between a traditional approach and an innovative approach?
• Does the approach of a housing association based on the profiles change from project to project or is it part of the DNA or profile?

Association A

Both interviewee A1 and A2 agreed with the idea that housing associations can be distinguished in certain profiles, but one of the problems in procurement is that housing associations do not know their own profile.

Interviewee A1: “I think that many associations do not know their own profile and that is where is goes wrong in procurement” (Quote number 4:2).

Therefore it is important to figure out what your own DNA is. At association A they started an internal project three years ago to find out what the basis of their organization is, in order to answer the following question: What are we really all about? When the answer to this question is found and agreed upon by the whole organization, it will form a basis, a fundament for every project in the future. The outcome of the process is translated into an organizational policy report. “This report is available for everyone and contractors should look into this when they do a project for us” (Quote number 4:3).

In response to the coordinate system of Gruis (chapter 5.2) A1 stated that the vertical axis is risk acceptance and the horizontal axis is the financial situation. “All associations will prefer to focus on social return, but you need financial return to achieve social return” (Quote number 4:36). For risk acceptance it is about the same; all associations will prefer to be very innovative, but this also means taking more risks. Hence, more predictable and traditional projects are also necessary.

That is why the position in the coordinate system of Gruis will change from project to project.

Association B

Association B agreed with the idea that housing associations all have an own character. The three associations that operate in the area of B, all perform tasks in their own characteristic way. Because the question behind the question is very important, association B integrated dialogue sessions with the competing contractors during the tender; always one, and depending on the magnitude of the project sometimes even two.

Interviewee B2 added to this that it goes much further than the profile or DNA from one housing associations or one housing contractor. “A developing contractor has its own supply chain with multiple sub-contractors and suppliers, we also look at this. The same goes for associations, we have renters, a maintenance department and other partners. Thus it is not all about one ‘DNA’ from one company, but we look much wider.” (Quote number 5:4)

There is a distinction between social and financial return, but it is doubtful whether this is important information for a tender of 50 ground bounded houses. “So whether you steer on social or financial return, both aspects are in there, it is more about how you call it and how it is calculated.” (Quote number 5:5)
Association C

Association C is originated from fusions between multiple associations in the past. In the old situation there was compartmentalization based on religion, but in the current situation Association C is the only housing association in town and serves all groups of the society.

Now their social task is predominantly determined by the demographic developments. The focus of their portfolio is making accessible houses for the elderly and a share for young families.

In the coordinate system of Gruis association C would classify itself as a social innovator. Interviewee C1 added as a side note that the innovation always needs to be used to improve on a qualitative affordable house for the target group. “We are innovative because we are still in a good financial position and we still have many developments that we want to implement and we want to become more sustainable” (Quote number 6:29).

The new housing law 2012 did not affect the behaviour of association C, it had more impact on the administrative side.

Association D

In accordance with the other associations, association D also believes that each association behaves in its own characteristic way. However there are certain types that can be distinguished, an example given by Interviewee D1 is the thick dwarf. “The thick dwarf is an association with a relatively small portfolio, old fashion without innovation. But it takes good care of its houses and earns a lot of money with it. That is why it’s fat” (Quote number 2:17).

The type is mainly determined by the location, size and financial situation of the housing association. What far more important is though, is the philosophy of a housing association. “Do you want to move forward, or do you accept the current situation?” (Quote number 2:26).

Association D designed an Excel sheet in which multiple topics were included that determine the DNA of association D. By using a movable bar (Very low/Average/Very much) employees could indicate how they believed that the organization behaved on a certain topic. Every employee filled out the Excel sheet, which gave an overview of the DNA of association D. The large deviation between the answers of the employees showed how hard it is to determine the DNA of an organization. At one of the reference tenders, association D asked the competing contractors to also fill out the Excel sheet. Afterwards the completed sheets of both, the association and the contractors, were exchanged.

ERA Contour

In the direct past there have been major changes in the legislation that applies on housing associations. The entrepreneurial freedom of the corporations has been limited as a result of projects that clearly crossed a line. There are examples of projects in Amsterdam and Rotterdam, which revolved more around prestige than the objective to serve the social sector.
This legislation affects the distinctiveness of associations, but interviewee E1 does believe that there is a distinction between associations with either a financial or a social focus. This can also be affected by the history of the project; when an association is struggling with a plan for a certain location for many years, for example during the financial crisis, then they have already made much cost themselves. As a result it is assumable that they will focus on financial return to earn back their made investments.

Cross-case analysis - theme 1

All the interviewed housing associations agree with the proposition and believe that understanding the question behind the question is important in an EMAT tender.

The response of the associations to the housing associations profiles from Gruis deviated. Association B stated that the focus of an association on financial or social return is not different by itself, but just the way it is calculated. The interviewees from association A and C do position their organization on the coordinate system, but add that the position depends on multiple variables that change over time and with that the position of the association in the coordinate system and the linked behaviour changes as well. Factors that may influence the position in the coordinate system are:

- Financial position: Association A/ Association C/ Association D/ ERA Contour
- Risk acceptance: Association A
- Demographic developments: Association C
- Location: Association D/ ERA Contour
- Size: Association D/ ERA Contour
- (Financial) history of the project: ERA Contour

Association B chose to include dialogue rounds in the tenders, which offers contractors the chance to create a better image of the profile and preferences of the client. Association D designed an Excel sheet to determine their own DNA and to communicate this to contractors. The deviation in the outcome of that sheet indicates that it is very hard to summarize all the opinions of the employees in one DNA.

Theme 2: Individual perceptions

Proposition:
The composition of the ‘tender team’ has an influence on the set-up and the awarding process of an EMAT tender.

Sub questions:
• Are certain cultural profiles more dominant than others in the process?
• Are the same persons responsible for the set-up as for the awarding of the tender?
• Are all layers of the organization involved or is the tendering of projects done by ‘purchasers’ only?
Association A

Interviewee A1 stated that the applied EMAT criteria in most cases are derived from the organization’s policy, but the project leader determines the weights of these criteria, so he more or less decides the focus of the tender. Interviewee A responded to the theory of the cultural types with the statement that they try to compose the tender team with employees that give a good reflection of the organization. So not only ‘purchaser’ types from the department real estate are included, but also for instance employees from the communication and finance staff, and sometimes future inhabitants.

As regards to the inhabitants in the tender team, they had no good experience. Interviewee A2 stated that inhabitants are non-professionals, will only participate for their own benefit and are not able to recognize the ‘big picture’. Contractors knew that inhabitants had a say in the awarding and consequently came up with a ‘sales pitch’ that included all kind of promises from which the professional knew that they were almost impossible to realize. “Inhabitants remember the promises that are made, and when they are not included in the final product we, as association, are blamed for it.” (Quote number 4:19)

Association B

It is possible that there is a slight difference between project leaders, but they try to solve that as much as possible internally by presenting results to each other and discussing the scores. To make sure that complex criteria are assessed in an objective way, experts on those criteria are added to the tender team; they only assign a score on those specific criteria.

In order to avoid outliers the jury members discuss the score afterwards and adjust them when necessary.

Association C

As association C is relatively small and inexperienced in EMAT procurement, there are no internal guidelines for EMAT procurement. It is therefore possible that one project leader will use a different approach than the other project leader, as stated by interviewee C2.

The most influencing factors on the set-up are the target group and the environmental context. A question that is currently relevant is: Do we need to include the municipality, or future inhabitants in the process?

Association D

Interviewee D2 agrees with the proposition, which shows that the composition of the tender team is of extra importance. Depending on the project, it is selected how many people need to be in the jury, from which layers of the organization and which functions need to be present. This can be a board member, a project developer, a purchaser or someone with a special focus on innovation.

They always try to achieve that people who are responsible for the assessment of the tender also engage in the formulation of the set-up of the tender. Just like association B they also filter out the outliers by discussing the scores before making them final. This way they try to be as transparent as possible. “If you are not transparent as housing association, you do not have to expect that the party on the other side of the table will be transparent” (Quote number 2:27).
ERA Contour

Within ERA Contour there is a strong feeling that although the jury of the tender might be composed of persons from multiple layers of the organization, there are always some dominant persons who eventually determine the final score.

When there is a board member in the jury who has a specific subject in his portfolio, it is assumable that the focus of the project will shift towards that side.

Cross-case analysis - theme 2

All the interviewed associations agree with the proposition and the fact that the composition of the tender team influences the set-up.

Association A and D emphasized that for every project they determine what the optimal composition is of the tender team. They include multiple disciplines to avoid having a tender team with only employees of the department real-estate (with one cultural type). Association B also said that they include specialists in the tender team as advisors, but this is because they do not have the expertise to judge about these criteria themselves.

All four associations stated that they discuss the scores among the jury members before they become final in order to avoid outliers. Both interviewees from ERA Contour replied sceptical on this statement. They believe that as there are almost always dominant types in the tender-team, most likely top management or a real estate manager, that when discussing the scores the focus/preference from these individuals will become dominant.

Theme 3: EMAT criteria formulation

Proposition:
Good EMAT criteria and weights for a project are only formulated by analysing for every project what the unique needs are and by translating that into primary and secondary objectives.

Sub questions:
• How are the focus points of a project determined?
• Are EMAT criteria formulated again for every project, or is the set-up of old projects used as reference or even copied?
• Does the balance between quality, cost and time change from project to project or is this more or less standardized?

Association A

Interviewee A1: “I always plead that associations need to pay attention upfront about what they want, why they want it and what the purpose is of the things they want” (Quote number 4:35).
The used criteria depend on the character of the project and on the target group for which the new houses will be developed. The Smart-Agent method is applied to determine the profile of the future inhabitants of the project. Depending on the lifestyle profile, association A decides the degree in which they need to be involved in the construction and design process. This also affects the applied criteria.

The other criteria are themes that they as association find important. They try to add some context about the reason that they apply certain criteria. For example, they applied sustainability as a primary objective; the EPC-norm was the actual EMAT criteria, which was applied to reach that objective. What is actually behind that, is lowering the monthly cost of the inhabitants of the houses. “Because now it is all about the EPC-label, but if you have another good idea of how we can reduce energy-use and with that the monthly cost, that is of even value. That EPC-label does not interest us” (Quote number 4:23).

**Association B**

Associations B designs the tender in a way that one third of the earnable points are linked to process related criteria, another third to planning related criteria and the final third to design-related criteria. The applied criteria are about the same from project to project and are the result of fine-tuning in the last five years. Especially on the design side of reasonable standard ground bounded houses, they do not expect many innovative outcomes. “What is it what we are really talking about… the construction of small houses” (Quote number 5:6).

The added value of EMAT procurement in relation to lowest-bid tender is predominantly found in the process: the construction process, but also the communication process. This last point is of higher importance for big maintenance or renovation projects.

The criteria are formulated in a general way, but if the contractor wants to determine the association’s ‘need’ on which a criterion is based, then they can ask that during the dialogue round(s).

**Association C**

The applied EMAT criteria in the reference tender from association C were almost the same as the set-up from another association. This is caused by C being a relatively small association and by the lack of sufficient knowledge and resources for a complete procurement process. The interviewee also stated that the execution of that EMAT tender did not go as they desired. For the other reference tender, which was a Best Value Procurement Tender, they hired a procurement expert provide advice on the set-up of the tender.

**Association D**

Association D applied the EMAT criteria ‘connection’ (Dutch: klik) in one of the reference tenders. The reason that the interviewee gave for the application of this seemingly very subjective criterion, is that it is all about cooperation. The tender is for a project with a duration of multiple years in which the parties need to cooperate, so ‘a good relation’ or ‘a feeling of trust’ is the need behind this criterion. “She can be so pretty, she is smart, she is funny, but if there is no chemistry the relation will never work” (Quote number 2:32).
ERA Contour

In one of the reference tenders, the housing associations conducted a pre-selection in which the number of contractors dropped from 5 to 3. After that pre-selection the three remaining contractors and the housing associations came together to discuss the assignment and together formulated the EMAT criteria and defined the relative weights.

Although this seems like a method in which everybody has a say and goes home satisfied, interviewee E does not think that this method is the solution. The objective of the sessions is that the contractors will cooperate in the interest of the project, but practice shows that all parties display very strategic behaviour and are busy from the start to make a better impression than their competitors. “You have to ask yourself whether all the additional energy and cost that are invested in the initiation phase are gained back in the form of additional quality in the end-product. I doubt that” (Quote number 1:15).

Cross-case analysis - theme 3

Association A and D stated that in every project they look for an optimal combination of EMAT criteria, association B and C do not do this. B stated that this is because they developed the best working set of criteria, which they apply for every project. Association C copied EMAT criteria from another tender, but this had more to do with the limited internal knowledge and resources. They solved this by hiring a procurement specialist for the next tender, which was positively experienced.

Association A mentioned that the target-group for the houses determines the type of procurement and construction process they want to conduct. This influences the focus of the tender and the criteria. The analysed reference tender revealed the applied EPC-value is the secondary objective of the first objective which is sustainability, but the real ‘need’ is lower monthly cost for the inhabitants. This last ‘need’ was not mentioned in the tender documents.

Finally, association D tried to involve the competing contractors in the process to help with the set-up and the determination of the right criteria. Interviewee E1 from ERA Contour replied on this that these sessions are not very efficient due to strategic behaviour of the contractors.

Theme 3: Integral procurement process

Proposition:
It is needed to follow the steps of the procurement process in order to find the best set-up for each project.

Sub questions:
• Which steps are taken before the project is tendered?
• Are all steps of the procurement process followed for every project?
• Is the evaluation standard part of the process and for what cause?
Association A

The start-up of a process starts with the steps discussed in the previous section; determining with the Smart-Agent method which target group will live in the new project and what the characteristics of the project will be. The next step for them is to make a selection of contractors that they think are appropriate for the project. They look at the character of the project and then at the profile of different contractors. Some contractors are known as price-fighters, some others, like ERA Contour, are known for their quality, but not always for the lowest price. "We look at contractors whose profile fits the project. If there is a good selection prior to the tender, this will already reduce the chance of mismatches." (Quote number 4:3)

From the outcome of the tenders association A learns which criteria work and which not. Moreover they learn whether the (relative) weights of the criteria were correct. Between the two reference projects there was about one year and although some similar criteria were applied, the weight in the second tender was ‘updated’. Interviewee B stated that the whole EMAT procurement process is still relatively new for them and that they had only five EMAT tenders in the past.

Association B

Association B demands a professional attitude of contractors in tenders and in projects. When they have experienced in previous tenders that certain contractors cannot deliver this, they will not be invited again in the near future. This form of pre-selection can be seen as market consultation.

Just like with the dialogue, also in the evaluation association B is very focussed on the verbal communication to avoid a mismatch between the intended and interpreted objectives. Besides elaborated written feedback, they also have a two-hour during meeting with the losing contractors to answer their questions and give explanation on the scores.

Association C

Association C is a relatively small housing association with a portfolio of approximately 10,000 houses. Interviewee A made clear that procurement processes are rather intensive and require a lot of time and manpower. At association C the real-estate department has only two project leaders that have to manage multiple projects. Hence, following all the steps of the procurement process and finding the best approach and set-up for the tender is difficult. The outcome of the first reference tender was unexpected; interviewee A made clear that they were not satisfied with the result.

For the set-up of the following tender, association C hired a procurement expert to help with the set-up, but also to give training to the team.

Association D

The first step for association D, after determining the character of the project, is deciding what type of tender process they want to apply. In most cases they apply a private tender, in which they invite a limited number of contractors, but a public tender is also possible. In case of very specific innovation, sometimes they opt for the alternative of a one-on-one contract.
In the case of a private EMAT tender they choose the contractors based on the magnitude and the complexity of the project. For small or simple projects they will first look at small contractors in the direct region. In the case of larger, more complex projects they look at the bigger national contraction firms.

ERA Contour

The input of ERA Contour is irrelevant as regards to this theme.

Cross-case analysis - theme 4

The steps of the procurement process that mainly were discussed, were the pre-selection and the evaluation. All the analysed reference tenders were private tenders, where the association selects a limited number of contracts to participate. This can be considered as the ‘market analysis’ step from the procurement process, as mentioned in chapter 5.4. Association A and D stated that when they have a clear idea about the character of the project, they only invite appropriate contractors to participate. Association A made it clear that they search for the best matching DNA, as mentioned in theme one. The magnitude of the project also plays a role, it namely determines whether they tender a project to local parties or to bigger contractors, according to association D.

When discussing the topic of the evaluation step, association A and C particularly talked about internal evaluation with the objective to improve the set-up of their next tender. The focus of association B is predominantly on the external evaluation with the objective to help contractors to get to know them better.

Theme 5: Project specification

Proposition:
Housing associations have to focus on the ‘what’ instead of the ‘how’ in the formulation of the tender.

Sub questions:
• How do you determine what a wish is and what a demand?
• On which aspects do you use the expertise of the market?
• Is the room for distinction needed in the design of houses or is the market already standardized?

Association A

They came to the conclusion some years ago that they need to step back in the specifications. This is a matter of letting go. “We used to tell the bricklayers what type of solder they must use. Those things do not bother us many more” (Quote number 4:11). They do not use contract drawings anymore, but instead they have a document with their quality standard of just two A4 sheets.
The added value of letting go lies within the process and not the product. The aspects where the associations see potential added value are not so much in the products, but more in the construction process. Contractors have their own processes in which they are sometimes specialized, if they are told to work in a different way, this will reduce the efficiency.

In the recent past association A is positively surprised by contractors regarding for example the way the inhabitants are involved in the process, but also concerning the price.

**Association B**

Interviewee B1 stated that project specification is still a challenge for them and that they tend to write down too much. “Sometimes we write things down in the tender document and then during the process we notice that we are steering on the wrong thing with that. Then we say in the nota that the contractor can forget that part.” (Quote number 5:7).

What they describe in the tender documents is based more on wishes and they do not go into detail. For association B the focus of the tender is not the design of the houses, especially when the project contains ground-bounded houses. Instead they focus on the process, cooperation and trust.

**Association C**

In most cases association C only formulates boundary conditions and hands the design responsibility then over to the contractors. It is a matter of knowing how much they want to decide themselves and what risk they are willing to accept. Interviewee C1 gave an example of a healthcare client of them. In their contract with that organization

Interviewee C2 stated: “How much is there really to specify? All the ground-bounded houses are the same, 5.40 wide, prefab concrete, etc. Only with apartment buildings there is more design freedom” (Quote number 6:13).

**Association D**

Interviewee D1 agreed with the fact that there is a movement in the design responsibility, but that there is not one right solution. As comment on the ‘living building concept’ of Hennes de Ridder, interviewee D1 stated that De Ridder thinks in modules. The idea that buildings are constructed in blocks, which can be collected from a catalogue, does not seem right according to interviewee D1. “Contractors who open their map and say: we did something with energy and we added a little sustainability. That’s not what we want, we want integral solutions with synergy between the components” (Quote number 2:13).

**ERA Contour**

Interviewee E1 stated that it is remarkable that on one point in time housing associations started to see themselves as project developers for new construction projects, and even a whole inhabitants-support and maintenance department has grown around that. That is so embedded in the organizations, which makes it hard to change. However, it is doubtful which of those tasks really belong to the core tasks of a housing association and how efficient it is.
“In a way, a housing association is nothing more than a real estate investor. A real estate investor who by confidence invests in real estate for a specific target group that otherwise has trouble to find a decent house themselves” (Quote number 1:17).

Interviewee E2 said about over-specification that when the housing association really knows what they want, they better be clear about it to save everybody the time. Sometimes in a tender document, criteria are formulated without preference, while the association actually already has a clear idea of what they want.

Cross-case analysis - theme 5

The associations acknowledge the proposition and they state that this is an on-going development, which can still be challenging for them. On the other hand, the associations state that the product specification in the housing sector is not so complex and that more room for distinction would not necessarily result in much change in the end product.

All associations state that the design of ground-bounded houses is completely developed; in apartment complexes there is a little more room for design, as stated by association C. Also interviewee E2 from ERA Contour said that if the association knows what they want with the design, they should be clear about it upfront.

Furthermore, all associations believe that the potential added value of EMAT procurement lies in the process. Association A talks about the construction process and methods and all associations mention the communication and inhabitant involvement, especially concerning renovation and maintenance projects.

Theme 6: Score calculation

Proposition:
An EMAT matrix with relative weights can be literally used as a calculation model by contractors in order to determine the optimal project approach.

Sub questions:
• Do you test alternative outcomes of the tender with sensitivity analysis or with another method?
• Do contractors need to analyse the criteria to learn where they can distinguish themselves from the competition?
• Should contractors interpret the EMAT matrix as a calculation model or is it intended as a global guideline for integral plans?
• Do you have experience with an EMAT tender where the relative weights of the criteria were different afterwards than intended upfront?

Association A

Association A used the price-correction system, where fictional discount is assigned for every criterion.
An example from the reference tender of association A was the criterion sustainability, for which a fictional discount was awarded based on the EPC-value. On the question whether contractors should conduct a cost-benefit analysis for the cost of reaching the EPC-value and the benefit of the fictional discount, interviewee A1 replied the following: “We do not want that all parties come with a high EPC-value, because our objective is a lower EPC” (Quote number 4:27).

Thus, the fictional discount in both reference tenders from association A assigned for sustainability are an incentive to conduct a cost-benefit analysis for the optimal EPC-value (high or low). But interviewee A1 stated that their preference actually is a project with a low EPC-value.

**Association B**

Association B used the WFS system where points are assigned for every criterion.

Association B works with a budget ceiling and the points are divided 1/3 - 1/3 - 1/3 between respectively process, design and planning. As a result the set-up for the tender is not really an incentive for contractors to analyse and calculate the optimal score.

**Association C**

Association C used the WFS system for one reference tender and for the more recent reference tenders they applied the price-correction system.

Interviewee C2 stated that for all new projects they now apply the price-correction system instead of the WFS, because that way they have more feeling with the numbers. Besides this, the consideration about the height and the balance of the points can be made better.

Moreover, C1 stated “According to me, housing contractors should calculate scenarios, but subjectivity in the awarding process is hard to exclude” (Quote number 6:26).

**Association D**

Association D applied the WFS system, where points are assigned for every criterion.

Interviewee D1 stated that an EMAT matrix shows what the housing association finds important. The housing contractors should use it to emphasize on the objectives of the association and it serves them in the optimal way. However, they do think you should not use it literally point-by-point, like MB also responded to the theory of De Ridder. Association D does not want that the plans are a patchwork and that is exactly what they are afraid of when constructors apply an analytical approach.

“Housing associations are not looking for the smartest boy in the class, the one who can read a matrix in the best way, but instead they want a contractor who can understand the association’s objectives the best way” (Quote number 2:28). When contractors are not sure about the nature of an assignment, they should ask about this. Interviewee D1 stated that there are tenders where certain contractors did not ask a single question. That is a sign that the contractor does not try its utmost to get to the bottom of the goals and objectives of the client.

At the same time D1 stated that: “The big tragedy from an award contest is that if you compete and draw perfect within the lines as requested in the documentation, and
afterwards it turns out that the winner went outside the lines. In the next tender you also decide to draw outside the lines and then the result is that you are excluded because you did not meet all the conditions. That means that the contractor paid too little attention on what the association really wanted“ (Quote number 2:29).

ERA Contour

Interviewee E2 stated that he always conducts a sensitivity analysis on the EMAT criteria and weights. “It reveals things that you would not see at first sight” (Quote number 3:17). This is information that can be useful to determine the best strategy. With ‘hard’ objective criteria this works very well, with more ‘soft’ criteria you have to ask yourself if the association considers the percentages before or after the sensitivity analysis.

Interviewee E1 stated that it is risky to analyse EMAT matrixes in too much detail, as you do not know whether the persons at the associations did the same analyses when they made the matrixes. He believes that it is a way to ensure that all the aspects that the client finds important are integrated in the plans in a balanced way.

Cross-case analysis - theme 6

Association A and C (in the second reference tender) applied the price correction system, based on fictional discount. Association B, D and C (in the first reference tender) applied the WFS system, based on points.

Interviewee A2 and C2 both stated that according to them, the fictional discount should be used for a cost-benefit analysis. At the same time, the comparison between the heights of the fictional discount of the two reference tenders of association A shows that they still have difficulties to determine the discount for the right incentive.

Association B and D, who applied the point system, both said that they do not think that an EMAT matrix should be considered as a calculation model. Interviewee D1 emphasized this by saying that they look for the contractor that understands the client in the best way, not the one that is best in solving matrixes.

Interviewee D1 and E1 from respectively association D and ERA Contour, both had the same concern about the use of mathematical analyses. D1 said: “if we are smart enough to make these analyses, then we still do not know if the contractors will understand it” (Quote number 2:5). From the contractor’s perspective interviewee E1 said that they can make these analyses to find the best project approach, but it is doubtful whether the association intended this when they designed the tender. This indicates a two-sided lack of trust in each other’s abilities.

Theme 7: Weighing mechanisms

Proposition:
Applied weighing mechanisms have significant influence on the score outcome and hence should always be described in the tender document.
Sub questions:
• How has the decision for the applied weighing mechanism been made?
• Why are weighing mechanisms with hierarchical order applied?
• Why are relative weighing mechanisms applied?
• Why are absolute weighing mechanisms applied?

Association A

In the reference tenders association A applied a combination of absolute and hierarchical award systems. Combining two award mechanisms has an effect on the deviation of the scores between those criteria and affects the relative weights. Interviewee A1 stated that they were not very aware of this and that those facts were not taken into account when they made the choice for the award mechanisms.

Association B

Accept for the criterion ‘value’, association B assigned scores from 1-10 for every criterion in the tender without instruction on how the score is calculated or assigned. For the price criterion they let a real estate agent appraise all the plans and the score is assigned based on the professional opinion of that agent.

Association C

In the first reference tender, association C applied with the acceptation of the two price-based criteria, absolute scores from 6-10 are assigned to every criterion. For the two acceptations, hierarchical scores (5, 6, 7, 8 or 9) were assigned. As a result the deviation on those two criteria became higher than the expected deviation in the other criteria, since with those criteria it is possible that multiple contractor receive the same score. This distinction in deviation results in changed relative weights and a change in focus, which is now much more on price than indicated by the division in the tender document.

Interviewee C1 stated that a sensitivity analysis was not conducted upfront and that the relative weight of the price criteria was higher than anticipated. Interviewee C1 made clear that they were unhappy with his result and that they aspire to change this in the upcoming projects.

Association D

Just like the other three associations, association D agreed with the idea that all the weighing mechanisms should be clear upfront. Hence, association D always adds a blank EMAT matrix to the weighing mechanism. According to Interviewee D1 they try to be as transparent as possible; transparent about the weighing mechanisms, but also transparent about the fact that an EMAT tender will never be completely objective. “We try as much as possible to explain the process, this way contractor have the choice themselves whether they compete or not. That is better than having contractors complain afterwards that they disagree with the process” (Quote number 2:30).

ERA Contour

Concerning this theme the input of ERA Contour is irrelevant.
Cross-case analysis - theme 7

All the interviewed housing associations revealed the applicable weighing mechanisms upfront in the tender document. Association A, C and D applied a combination of two weighing mechanisms for different criteria, which influences the relative weights of the criteria. Association A and C both stated that the outcome of the tender was unexpected and that the focus of the tender due to the applied weighing mechanisms moved more towards one criterion than intended.

Association B assigned scores from 1-9 for every criterion, which does not lead to a changed focus. The applied set-up from association B does not give contractors a good starting point and therewith not the ability to make a rational estimation about their score/performance.

Theme 8: Financial incentives

Proposition:
EMAT weighing mechanisms, such as WFS or fictional discount, are ‘indirect financial incentives’ and will affect the price of the tendered plans.

Sub questions:
• Do you think that it makes a difference whether WFS or the price correction system (GoW) is applied?
• Are you prepared to make additional investments in comparison with the period in which lowest-bid was the standard procurement?
• Is there a relation between the height of the fictional discount or the amount of points and the available budget for that criterion?

Association A

The two reference tenders both contained the criterion sustainability; for both criteria a fictional discount could be earned based on the EPC-value that was achieved. However, the height of the fictional discount was significantly changed. This suggests that the focus on a low EPC-value is a lot higher in the second tender than in the first one.

Interviewee A1 responded that creating the right incentive is the hardest part while designing an EMAT tender. The height of a criterion is not directly linked to a budget that was made available for that criterion. “You have to make the discount high enough so that it forms an incentive for the contractors, but not too high because than it becomes more of a demand” (Quote number 4:24). The evaluation of the outcome of completed tenders helps association A to adjust the height of the fictional discount for the next tender.

Association B

Association B works with a fixed budget. Interviewee B2 stated that they give a fair but competitive price to the contractor, for which they need to execute the project. They know what quality they desire and have sufficient expertise to calculate what that should cost.
“We challenge the market to work smarter, better and nicer. [...] Where can you standout? And how can you create more value for the same budget?” (Quote number 5:7).

**Association C**

Association C went from the WFS system to the price-correction system, in other words: from points to fictional discount. This was done for the reason that with fictional discount the project leader had a better feeling about the incentive that they give to contractors. Nevertheless, this is still the hardest part of setting up an EMAT tender according to interviewee C1.

About the desired price/quality ratio, C1 responded: “Doesn’t everyone desire much quality for a small price?” (Quote 6:32). They have a certain quality in mind, but are willing to accept a lower quality for a strongly reduced price.

**Association D**

At theme six association D already stated that the EMAT matrix should not be seen as a calculation model. Therewith, interviewee D1 indirectly also says that he does not see EMAT points as a financial incentive. D1 mentioned that their objectives in EMAT procurement is to execute projects with added value and an optimal price/quality ratio.

They accept that the initial investments will all be a little higher, but this loss is retrieved back in the process and the trust between the parties. “For this price, the contractors will help me to finish the project for the agreed price and that way it saves the project leaders from having to go to the board for additional money” (Quote number 2:31).

**ERA Contour**

It depends on the criterion, according to interviewee E2, for example sustainability with EPC-value is a real cost-benefit situation. Contractors can calculate for what cost they can realize a certain EPC, what it will save them on monthly cost and how this is related to the fictional discount. On the other hand, a criterion such as communication is much ‘softer’; the investments for this criterion do not have a direct relation with the fictional discount. “We are not saying: we applied a Facebook campaign for 10.000 euro” (Quote number 3:13).

The general impression and the price are always very important. If the criteria are assessed after the price than they can tweak the points or discount in such a way that the lowest-price alternative still wins. That is why the price always needs to be competitive, no matter what.

**Cross-case analysis - theme 8**

Association B holds control over the price by determining the budget for the contractors. The set-up from the tender does not give an incentive to apply a cost-benefit analysis. They are clear that the plans should not cost much more than the period in which lowest bid tender was the standard. Interviewee D1 from association D stated the opposite, he does accept the fact that the price of a project will rise a little when applying an EMAT tender. This is earned back through a better and more controllable construction and communication.
Association A and C both agreed with the idea that contractors can apply a cost-benefit analysis, but that the price/quality ratio is more important. Interviewee C2 stated that the determination of the right fictional discount is the hardest part of setting up an EMAT tender.

Theme 9: Price/quality ratio

Proposition:
Contractors need information about the desired price/quality ratio of the association, which can change from project to project.

Sub questions:
• If you would draw a price/quality graph by following the four steps, would that change for every project or would that remain about the same for every project?
• Do you think that in the housing sector it is possible to draw an accurate price/quality graph?

Association A

Interviewee A1 stated that it is an interesting theory, but very hard to realize in practice. For the horizontal axis, with the price, it is possible to define a scale. But the vertical axis, where the quality is situated, is so subjective, that the level of concreteness that the diagram suggests cannot be justified. For technical criteria it could be possible, but for the ‘soft’ criteria it will be very difficult.

Interviewee A2 added that he is currently working on a tender where a similar diagram is applied. This is a healthcare project and has a much more technical character, moreover the tender is formulated by a specialized consultant.

Association B

A price/quality diagram is not an addition in the tender documents, according to Interviewee B1. He stated that they have a clear view of the price and quality they desire, and do not expect the contractors to deviate from this. “We give a budget for a 7 and we do not expect that for 10 percent extra budget we will get a 9” (Quote number 5:8).

Association B believes that the technique of drawing up a price/quality graph with a reference price and quality is too complex for the relatively simple practice of constructing houses. “We are talking about simple row-houses, not rocket-science” (Quote number 5:9).

Association C

Interviewee C1 said that a price/quality graph will give a good overview from the objectives of the client, concerning additional or less quality. Both interviewees C1 as C2 agreed that they would accept a little less quality for significant cost reduction, the cost reduction than can be spend on additional quality in the public space for example. C1 added that it is doubtful whether this will happen in practice. “If I go to a shop to collect a
particular item, the shop assistant always has an idea about a better option for you. An alternative product which is a little more expensive but so much better. The other way around it never happens, I never go home spending less money than expected" (Quote number 6:30).

Interviewee C2 stated that the room for distinction on price is marginal and the quality assessment on the other side is relatively subjective.

**Association D**

Interviewee D1 mentioned that association D has sufficient expertise to set a reference quality and calculate a reference price, which matches that quality. But the degree of concreteness that a price/quality graph creates, is much too high for the housing sector. “It is the question: if we understand it, whether the contractors where we ask the question will understand these graphs” (Quote number 2:23).

Interviewee D1 proposed to turn the technique around and challenge market parties to draw a price/quality graph for the tendering association to analyse afterwards what their preference was. This could be used for the next tender.

**ERA Contour**

Interviewee E1 stated that a price/quality graph would help contractors to come to the desired price/quality ratio, but that he doubts how accurate it will be. E2 added to this that although it is difficult to draw an accurate diagram, it is helpful. E2 said that sometimes they want to come up with a quality or price that ensures that they win the tender; a line like this will help. E2 is sceptical about the use of a reference project. “Contractors are going to start the project in a very analytical way, by studying the reference project instead of focusing on how they can come up with the best project” (Quote number 3:22).

**Cross-case analysis - theme 9**

Firstly, association B was clear about the fact that they do not desire a different price/quality ratio then the one described in the tender documents. Therefore a price/quality reference graph would be not be an addition. Secondly, association C stated that they agree with the idea that they would accept a little lower quality for much cost reduction, but doubt whether this is possible in the ‘standardized’ housing sector. Furthermore, they believe that contractors are more likely to come up with more than with less expensive projects.

Moreover, association A and D agreed that the diagram gives a distorted picture, as the diagram creates the impression that it is very mathematical and exact. This is not the case, because the subjective quality axis causes it to be not exact at all.

Finally, interviewee E1 and E2 from ERA Contour both said that a price/quality diagram could be helpful, but only in the case that it reflects the preferences of the housing associations, and they doubt whether that is the case.
Phase 3
Synthesis
In this chapter the results from the investigation phase will be compared with the insights from theory. An analysis will be done to learn on which aspects does practise agree with theory and on which does the practise deviate from the methods in theory? When the findings from practise do deviate from the findings from theory, the causes of this are analysed.

For the structure of this chapter the 9 themes will be used again, like in the literature review and the investigation phase. The outcome from the practical comparison will reveal whether the themes found in literature that influence a mismatch do actually influence the practise of EMAT procurement for housing associations. The conclusions of each individual theme in this chapter will help the researcher to formulate and integral answer on the main research question in the next phase.

Theme 1: Profile of a housing association

Serving the housing associations in the best way comes from learning the question behind the question. Finding the essences of the assignment, that cannot always be found in the technical set-up of the tender.

The DNA or philosophy of a housing association can help with learning the question behind the question but learning the DNA of an association is not easy. In contrast with the 19th century when there was a compartmentalization in housing associations based on social or religious beliefs, nowadays due to a period of fusions, that compartmentalization has mostly disappeared. Furthermore internal projects from two of the interviewed housing associations pointed out that it is very difficult even for employees of the associations to define the DNA of their own organization.

Vincent Gruis developed a system to classify housing association in profiles based on the focus of the organization. The location were housing associations are placed in the coordinate system from Gruis, is not merely determined by their ‘DNA’ or philosophy. Besides DNA, the influencing following factors for the ‘profile’ of associations were identified: size, location, financial position, demographic developments, history of the project and risk acceptance. These factors can be divided into three categories depending the degree in which the fluctuate. These categories are:

**Stable factors**
- Location of the association: Which section of the Netherlands? Urban or rural area?
- Size of the association: The size of their portfolio and the tendered projects.

**Semi-stable factors**
- Financial position of the association: determines how bad they need financial or social return.
- Demographic developments: which target group are in need of social housing in the operation area of the association.

**Project specific factors**
- History of the project: Cost already made by the association in the project/ground.
- Risk acceptance: How the board of the association is willing to accept risks.

These factors were identified during the empirical phase as factors that influence the position in the coordinate system of Gruis. The project specific and semi-stable factors change relatively fast. As a result the profile of the association also fluctuates.
A lack of knowledge about the DNA or profile of the tendering housing association may cause that housing contractors do not understand the essence of the assignment and lead to a mismatch.

Theme 2: Individual perceptions

The interviewees acknowledged that the involved employees have influence on the focus of the tender trough the set-up and the awarding process. In all the analysed cases the department real estate was dominantly represented in some cases there were even solely employees from the department real estate part of the jury. Employees of the real-estate department are likely to have the cultural type of a ‘purchaser’ and are likely to focus more on price then functionality for example.

The fact that the involved employees influence the focus of the tender is not a direct cause of a potential mismatch. Since the composition of the jury member with their job description is described in the tender documents, contractors can make a perception about the focus of the tender based on the ‘cultural types’ of the jury.

However this perception will be biased when one or more jury members is dominant and pulls the outcome in their preferred direction. Another cause is when a specialist jury member is only allowed to assess one criterion. The discussing about the scores that the jury has to avoid outliers, gives the dominant persons the ability to influence the scores from other jury members.

When certain persons in the jury are more dominant than others, and have the ability to influence the scores of others, the perception of the focus of the tender based on the cultural profiles is distorted. This may be the cause of mismatch. However when the relative weights of the tender are decided with the complete tender board, there is less reason for dominant figures to manipulate the outcome.

Theme 3: EMAT criteria formulation

The housing associations made clear that they find it hard to come up with good EMAT criteria. The theory states that for every project clients need to follow the path from defining the need towards increasingly concrete objectives and criteria. However, the practical comprising showed that in many cases the criteria are copied from a previous project and therefore not always reflect the need, or the attitude from the association towards the project. This can be confusing for housing associations that try to retrieve the question behind the question.

The interviewed associations expressed that the main ‘need’ of a housing association is reducing the monthly cost of the future inhabitants as much as possible.
Theme 4: Integral procurement process

The procurement process is sort of umbrella theme, which contains multiple other themes. Following the steps of the procurement process in the right order is a method to ensure that other processes like the specification of the project, the determination of the needs and the technical set-up are made in a well considered manner and with support from the internal and external stakeholders.

The empirical phase pointed out that the housing associations follow most of the steps of the procurement process. For example associations first define the character of the project before they look at the market for potential contractors. However associations do not determine the most suitable approach for every project again, since they consider the projects to be fairly standard and straightforward.

Step 5, 6, & 7 of the process (chapter 4.2) are critical for the set-up of the tender, to make sure that the technical set-up from the tender reflects the objectives and preferences of the housing association. During step 5, the project is discussed with the tender board, which ideally consists of the same people who will assess the contractor’s plans. The tender board should express their preferences and determine the focus of the project.

The interviewed housing associations stated that the project leaders have influence on the relative weights and thus the focus of the project. His job is to translate the outcome of the tender board into the technical and non-technical set-up of tender. When the translation of the preferences of the tender board is done wrong or when the communication with the tender board is lacking, this will be a cause of a mismatch between the intended and interpreted objectives.

Furthermore the evaluation step is very important because EMAT procurement is a relatively new method. Since this step comes after the awarding process it will not directly affect the potential match or mismatch of the project. However it will help associations and contractors to better understand each other and reduce the chance on mismatches in the future.

Theme 5: Project specification

The initial focus of this research was directed on the room for distinction that needs to be offered to contractors in order to make them utilize their design and engineering expertise and create projects that exceed the client’s perspectives. During the literature review multiple theories were found that acknowledge this idea and state that clients tend to over-specify projects in tenders.

*Hennes de Ridder compares over-specification of a project with going to a Michelin-star restaurant, telling the chef the desired dish and how he should prepare it.*
However, the result from the practical comparison was not completely in favour of these theories. The participating housing associations all realize that they do not have to specify and prescribe the products and methods in as much detail as with traditional procurement. However the design of most projects in the housing sector is relatively simple and standardized. Especially with ground-bounded houses, associations do not expect much more of the final product when they would give more design freedom to the contractors. The added value is found much more in the construction methods, the planning and communication with (future) inhabitants.

The input from the contractors also deviated from the insights gained in the literature study. Contractors are frustrated about situations where the association knows already what it prefers but still leaves ‘room for distinction’ in the tender. This seemingly room for distinction, afterwards turns out to be a waste of time and money for all contractors since the association already decided what they wanted upfront.

Creating ‘room for distinction’ while the association already has a clear preference, is a potential cause of a mismatch between the intended and interpreted objectives between the association and contractors.

Theme 6: Score calculation

The technical set-up of an EMAT tender with a score matrix can be interpreted on multiple ways. One way in which contractors can analyze the criteria to find out on which criteria they can gain the most point or on which criteria they can distinguish the most on their competitors. This can be analyzed with a sensitivity analysis, which can change the relative weights in percentages significantly.

A factor that potentially causes a mismatch is that associations and contractors do not know for each other how they intend to interpret his technical set-up from EMAT tenders. During the empirical phase of the research, housing associations expressed their concerns about whether the contractors are capable to make the calculations. Contractors in return, doubt whether the association intends the relative weight before or after an analysis of the scores.

The doubt from the contractors proved to be justified since the outcome of the empirical phase was that two of the four interviewed housing associations agreed with the proposition that an EMAT matrix can be used as a calculation model and two disagreed. Striking was that the two associations in favor applied the price correct method to combine the scores of the EMAT criteria with the price, the two disagreeing associations applied the WFS method where the price or value is translated into points to be combined with the scores of the EMAT criteria.

A selection of four housing associations is too little to state that the found pattern proofs a connection between the opinion and the award mechanism. However results from the PhD research of Marco Dreschler, on the topic of EMAT award mechanism, support the findings. In this conclusions he states the following: “If one chooses for a ‘value minus price’ system, then the price correction system should be applied instead of the point system, since the point system is error prone and more labor-intensive.” (Dreschler, 2009).

Indicated by to the mixed visions, the calculating and analyzing of the score matrixes of EMAT tenders to determining the best project approach is a cause of a potential mismatch between the intended and interpreted objectives.
Theme 7: Weighing mechanisms

Theories from Telgen, Schotanus and Chen, point out that the applied weighing mechanisms influence the ability for contractors to distinguish themselves from other contractors. Among the analyses cases in the practical comparison 75% were examples where certain criteria became increasingly importance as a result of the applied weighing mechanisms. Especially a combination of multiple weighing mechanisms for different criteria can have influence on the relative weights and thus on the focus of the tender.

Several interviewees from the housing associations stated that they were surprise by the outcome of the tender because the focus shifted as a result of the applied weighing mechanisms.

Much like in theme 6, the potential cause of the mismatch lies in the doubt from contractors about the intentions from the contractor. Do they realize that the relative weights have shifted after an analysis of the scores, or do they realize that through the application of a hierarchical weighing mechanism the price becomes more decisive?

Theme 8: Financial incentives

For housing associations it is hard to determine the right height of the fictional discount or the right number of points for the EMAT criteria. In the case of fictional discount there is a difference between ‘hard’, quantifiable criteria such as energy label and ‘soft’ criteria such as communication. In the first case a cost-benefit analysis between the cost of reaching of a certain energy label and the assigned fictional discount can be made to make a rational decision about the optimal approach. In the case of a ‘soft’ criterion the fictional discount does not stand in direct relation with the cost. A cost-benefit analysis can give distorted input for the determination of a fitting strategy.

The question, do you expect to pay more for projects with EMAT procurement than with traditional procurement, provided different answers? Some associations stated that they accept that initial investments for projects with EMAT tendering will increase while other associations stated not to be willing to pay more than with traditional procurement.

The divergent views from the association on this matter indicate cause of misinterpretation and therefore a cause of a mismatch.
The price/quality diagram, which illustrates the preferred price/quality balance of the client, is in theory a very useful method. It helps contractors to find the optimal match between their price/quality line and the preference of the associations. In practice, however, both the associations and ERA Contour did not recognize the graph as a useful method despite the fact that contractors do think that information about the desired price/quality balance will be useful.

The biggest concern is the fact that comparing the p/q line of contractors with the desired p/q line of contractors is an exact, analytical method way of finding the best project approach. The graph itself, however, is not exact because the scale of the vertical quality axis is hard to define in an objective way.

It gives the impression of a very precise method, whereas in fact it is not. As a result, the application of Q/P graph is more likely to create more mismatches than it would help to solve them. Because the price/quality graph was not found in any of the analysed cases it will be labelled as neither the cause or the solution for potential mismatches.
10 Expert validation

10.1 Introduction
The applied case study methods for the empirical phase are qualitative and the quantity of interviewees is limited. Therefore the generalization of the outcome of this phase forms a bias on the research. To reduce this bias the results and analysis of the case studies, the outcome is discussed with four experts from practice.

The experts review, whether the statements from the interviewees reflect the general opinions in practice. Furthermore the nine themes are discussed and the preliminary conclusions and recommendations to see whether they can be improved and if there is anything to add.

The expert interviews will be used to improve the conclusions and recommendations. The interviews will be typed out as transcripts and included in the Atlas.TI analysis, which can be found in appendix D. Most of the outcome of the expert interviews is directly process in the conclusions and recommendations, only the most remarkable insights are written down in the following section.

10.2 Experts

Joost Fijneman
Institute: Bouwend Nederland
Position: Manager Procurement Institute
Description: As manager of the procurement institute construction and infrastructure, Joost Fijneman has a good feeling for the problems that occur in practise. He was one of the lecturers at the congress “The future of EMAT” in November 2015.

Sensitivity of information
Mr. Fijneman acknowledges that context factors, like the history of the project, probably influence the behavior more than the DNA or the profile of an association. However, information about these factors is not always information where the associations are proud of and could potentially affect their reputation. “There can be distress in the neighborhood, or it concerns a renovation project which should be done 20 years ago, this is all very valuable information, but at the same time it is information which the associations rather not share with the public” (Quote number 8:1). For this reason the contractors sometimes need to use other sources than the tender document to retrieve these factors.

Jury consultation leads to less score spread
Regarding the consultation of the score, which is in most cases done by the jury, Fijnemans commented that it can influence the score spread. The interviewed housing associations stated that they discuss the scores to prevent outliers, but at the same time it results in a reduction of the score spread. “Imagine that the outcome of the jury is two times a 9, two times an 8 and one time a 6. When the jury members are going to discuss the 6 will rise a little and the two 9’s will probably drop a bit. This way the outcome tends to move to an average each time. When this happens the room for distinction becomes less” (Quote number 8:3).
Gunnen op Waarde

Regarding the determination of the right financial incentive through the weights of the criteria, Mr. Fijnemans stated that Bouwend Nederland is a supporter of the price correction system (Gunnen op Waarde). In this system fictional discount, or added value, is awarded for each criterion. Also for the less quantifiable criteria the financial discount needs to reflect the additional price the housing association is willing to pay, the value not the price.

Maarten Georgius
Institute: Aedes
Position: Senior Advisor Procurement
Description: Aedes is the Dutch branch organisation for housing associations with over 400 members. Maarten Georgius is advisor on multiple topics, including cooperation, supply chain management and procurement.

Bringing two worlds together

Mr. Georgius stated that he has the feeling that housing associations and housing contractors need to take more time to get to know each other. With EMAT procurement there is a bigger need for the two worlds to come together. Bouwend Nederland and Aedes can fulfil a guiding role in that process. “I know an example of an association in Rotterdam and a construction firm that worked together for over 20 years but where the boards of both organisations had never met. And thus they had no idea with who they were really doing business” (Quote Number 9:2).

Pilot/experiment

Another thing that Mr. Georgius observed is that in many times EMAT procurement is applied by housing associations for pilot projects or experiments. The results are secured too little in the organization in the form of procurement guidelines. The next time they apply a different process or fall back into old habits. “When you chose for EMAT procurement, make sure that there are clear internal guidelines, this will result in more unilateral behavior and reduces confusion at the side of the market parties” (Quote number 9:3).

Aedes is currently working on EMAT procurement guidelines for the Dutch housing associations, which might help in achieving more unilateral procurement behavior of housing associations.

Internal client

Mr. Georgius acknowledged the finding from the interviews that the project leader has a lot of influence in setting up the tender. According to Maarten the project leader should be responsible for the collection of the input from the ‘internal client’. A collection of departments, including policymakers, together determine the character and the focus of the tender. “I suspect that in many cases individuals are responsible for the question” (Quote number 9:10).

Jan Telgen
Institute: University of Twente (UT)
Position: Professor of Public Procurement
Description: Jan Telgen is a professor that is specialized in procurement in the public sector and in societal problems. He is the (co)-writer of numerous articles on the subject of EMAT, many of them used in this research.
Disadvantages of hierarchical and relative weighing mechanisms
Like in many of his publications, Telgen pleads against the application of hierarchal and relative weighing mechanisms in tenders. The scores of the contractors with these systems are all depending on the performances of others. This contributes to the unpredictable character that EMAT procurement currently has. Techniques from Best Value Procurement, where score spread is created by only assigning scores of 2, 4, 6, 8 and 10, is not the solution according to Telgen. “This is a forced method to come to a solution. They identified the problem, but their solutions bring new problems with it” (Quote number 7:14).

Gunnen op Waarde
Mr. Telgen is a big supporter of the ‘Gunnen op Waarde’ method. What is currently happening is that everything is translated into points, but this has a big disadvantage for the communication towards contractors. It is hard to understand for contractors when they hear afterwards that they scored 71.8 points and the winner 79.8 points. When the price correction system is used, the contractors receive a score in the form of an evaluation price, which is their price minus the fictional discount. When their evaluation price is 200,000 euro higher than the winner of the tender, they know that for the next tender they should lower their price with about 200,000 euro to be competitive with the same quality. “It is difficult to determine the right fictional discount, but in fact with the point system this is not different. Mathematical it is the same, but communication wise, the price-correct system is highly preferable” (Quote number 7:8).

Dare to be protest against a non-transparent process
Mr. Telgen pleads that contractors should always challenge the tender methods when they contain relative weighing mechanisms or other non-transparent processes. He understands that in the housing sector, with private tenders, the relation between client and contractor is very important, but feedback about the tender does not have to go through a lawsuit. Several ways exist to evaluate after or communicate during the process that it is unpredictable, non-transparent or unfair without negatively influencing the relation between the housing association and the contractor.

Thomas Kok
Institute: Inter Tender Consult
Position: Co-owner and Trainer EMAT
Description: Thomas Kok gives EMAT training to companies in the construction sector. He has a lot of experience in the field due to the numerous tender processes, both from the client’s side and the contractor’s side, he has been involved in.

Why are criteria applied?
Mr. Kok explained how Inter Tender Consult supports contractors with EMAT tenders and with retrieving the question behind the question, and that it is always questionable how far the client should go in specifying the question. He gave an example where a client states: We want a safe living environment. Then they would post the question: everybody wants a safe living environment, but why do you specifically ask it here? Is it a bad neighborhood now? Or is it because there is a busy street? So the first step is to analyze the question before contractors can use their expertise. “It seems that clients always go to the market two steps to early” (Quote number 10:4).

Review Jury
When the composition of the jury is known and the focus of the tenders is based on their
input, this can be an important tool to learn how the plans will be assessed. Based on the cultural profiles and in even more detail with tools like LinkedIn, profiles of the individual judges can be made. An external review committee can be composed consisting of the same profiles. This committee can ‘pre-assess’ the plan and give the contractor a better idea of how their plan will score in the tender.

**Gunnen op Waarde**

In accordance with the other experts, Mr. Kok states that the price correction system is always preferable over a point system. About the fact that housing associations find it difficult to determine the right fictional discount, Kok states the following: “Clients say we apply the point system because we find it hard to determine fictional discount. Therefore they then give this responsibility of defining the desired value to the contractor, contractors who only have a couple of weeks and do not know the project yet. Housing associations should define this and cannot simply avoid their responsibility, because they find it difficult” (Quote number 10:9).
Phase 4

Conclusions
11 Conclusions

In the definition phase of this research the existing knowledge about EMAT procurement in the housing sector is analyzed from three different perspectives i) cultural perspective ii) process perspective iii) product perspective. The literature review resulted in the identification of nine themes that play potentially cause a mismatch in the intended and interpret objectives between the housing associations and housing contractors. By conducting case studies, the insights from theory are tested in practice. During the case study analysis, for every theme the knowledge from theory is compared with the empirical data.

In this latter phase of the research, the individual conclusions of the themes combined with insights from the expert interviews will be analyzed on interrelation and hierarchy. Again with the use of the Atlas.Ti these interdependencies and hierarchy of subjects is analyzed and placed in a network diagram. This analysis can be found in appendix D. Based on the above an answer can be given on the main research question:

"Which factors influence the potential mismatch in intended and interpreted objectives between housing associations and contractors in EMAT procurement?"

Now that the conclusions for the different themes and their interrelations are clear it can be concluded that there are three main factors of a potential mismatch, which are:

1. The difficulty of deducting the question behind the question.
2. Wrong reflection of the objectives of the housing association.
3. Wrong reflection of the focus of the housing association.

These three factors will be explained in the following section.

The difficulty of deducting the question behind the question.

All the associations agreed on the fact that the contractor who will win the tender, is the contractor who can retrieve the question behind the question and is able to discover the essence of the assignment.

This led to the conclusion that there is information, which is necessary to define the optimal project approach, but cannot be found in the set-up of the tender. As potential method for learning the question behind the question strategic profiles of a housing association are analysed. In literature multiple theories are found which state that housing associations can be classified in multiple strategic profiles based on variables such as a focus on financial or social return. Practise showed however that housing associations do not have one static DNA or strategic profile, which can be used to predict their preferences and behaviour. Instead multiple fluctuating internal and external factors influence the behaviour and ‘profile’ of the association more than their DNA. Although this information is important to understand the true objectives from the housing association, they will not always be very open about it because it can contain sensitive information. An example can be found in the history of the project; when a housing association tenders a renovation project for a neighbourhood of which the houses are years overdue for maintenance, this can be considered as important information, which will most likely influence the focus of the assignment. At the same time the housing association might not want to share this information since it might give them the reputation that they do not take good care of their real estate.

In conclusion, one can say there is important information to define the optimal project approach, which is a) not formulated in the tender document, b) fluctuating and c) something sensitive. These three factors increase the complexity of defining the optimal project approach and are a potential cause of a mismatch in the intended and interpret objectives.
Wrong reflection of the objectives from the housing association.

With traditional procurement the client could decide in high detail what they wanted and implement their preferences in a specified process and design. With EMAT procurement these preferences need to be transmitted to the contractors who now are responsible of implementing this in a process and design.

To make sure that the information in the tender documents truly reflects the objectives that the housing association has or at least that the people who assess the plans have, a number of processes exist, gathered under one central process; the integral procurement process.

One of the first steps of the integral procurement process is the formulation of the EMAT criteria that will be used for the assessment of the projects. Theory states that the process of formulating criteria consists out of multiple steps in which first the ‘needs’ of the housing association concerning the project are formulated and then step by step translated in more concrete criterion. Since individual perception varies between different employees within an organisation, it is important that the defining of the ‘needs’ and objectives of the project is done with sufficient support from stakeholders within the housing association; the internal client.

Practise showed that the set-up of most of the tenders is based on the setup of previous tenders and more or less the same criteria are used over and over again. Housing associations gave as main explanation that the projects within the housing sector become more and more standardized and therefore one can also work with standardized EMAT tender setups.

The downside of this is that a limited group of employees of the housing association is responsible for the set-up and focus of the tender. In most cases a project leader from the department of real estate is predominantly responsible. This individual with its individual perception is now responsible of determining the need, the objectives and the focus of the tendered project and translating this in the tender document.

For the assessment of the project plans housing associations compose juries. Most associations emphasized on the fact that they do this in such a way that it is a good reflection of the organization. Typically one jury member from the department real estate, one responsible for innovation, one from client support, one from top management and so on. All with individual perceptions and different cultural profiles. The issue is that it is not the perception of this group on which the need, the objectives and the focus of the tender is based. Instead this was much earlier determined based on the perception of the project leader. As a result, the contractors are giving answers to the jury on questions that are not asked by this jury but by the project leader. This process leads to a wrong reflection of objectives and can lead to a mismatch.

Wrong reflection of the focus from the housing association.

The technical set-up of the tender consists out of the EMAT criteria, the relative weights of the criteria and the weighing mechanisms. Contractors use this setup to help them defining the optimal project approach for the tender.

Basically there are two ways of interpreting the technical set-up of a tender. One way is to look at the relative weighs in percentages in the tender, which give an idea about the preferences and focus of the housing association. A well-executed project approach, based on these relative weights will most likely result in a ‘good’ score.

An alternative way of looking at the technical setup is to analyze the score to discover those criteria that offer room to distinguish from the competition. This room for distinction can be found by conducting a sensitivity analysis on the technical setup of the tender. The analyzed
cases during the empirical phase showed significant differences in the focus the tender before and after a sensitivity analysis. When housing contractors define their project approach based on the outcome of the sensitivity analysis they are not just focusing on achieving a 'good' score but he is focusing also on achieving a better score than their opponents, and therefore a winning score.

Although striving at a good score seems inherent for striving at a winning score the relative weights of the criteria are significantly different. This raises the question, which approach reflects the preferences and focus of the housing association? When for example the housing contractor determines his project approach based on relative weights after a sensitivity analysis but the project leader of the housing association did not take this into account when the translated the needs, objectives and focus from the housing association in the setup, this will result in a mismatch between the intended and interpret objectives.

A lack of knowledge, both at the associations as contractors side, about of the consequences of certain weighing mechanisms and other aspects of the technical setup of an EMAT tender plays a significant role in this cause.
12 Recommendations

In the previous chapter different causes of a mismatch between housing associations and housing contractors are concluded. In this chapter insights from the research will be used to give recommendations for the current practice of EMAT procurement and for further research into the subject.

Since the housing association in the role of tendering party is responsible for the EMAT process, the first section of this chapter is directed at the association and will recommend how they can improve the current EMAT practice. The different aspects are integrated in a recommended procurement process, which is illustrated in figure 34. Consequently a section follows with recommendations for housing contractors, this section is focusing on aspects that contractors need to keep in mind when they define their project approach. The last section of this chapter will provide recommendations for further research. Subjects that came to light during this thesis or topics that felt outside the scope of this research, which are definitely worth researching, are formulated as recommendations.

12.1 Recommendations for housing associations

Look for the unique aspects of the project

During the interviews, associations made clear that the housing sector is relatively standardized and that many projects (especially ground-bounded houses) are not that special. For that reason the setup of the EMAT tenders is also becoming more and more standardized. This way the whole EMAT procurement practice becomes a routine job whereby less incentive is created for contractors to fully utilize their ability to generate creative solutions. Hereby housing associations do not use the new possibilities offered by EMAT procurement in comparison to traditional procurement.

Therefore it is recommended that a tender board or policymakers from the housing association organize a session to determine on which aspects the project is standard and on which aspects the expertise of the market can create additional value for the project. The criteria were the expertise can create additional value should weigh heavier in the score matrix. When it is concluded that the project concerns a simple one, where contractors can hardly add value, the association has to be clear about the fact that price will be the predominant selection criteria.

Define the focus of the tender with the jury/tender board

In section two of the last chapter it is concluded that a setup of a tender, which is merely defined by the project leader or the real estate department, can cause a mismatch. The setup of the tender reflects the preferences of the person that wrote the tender document and not those of the people judging the project plans.

Therefore it is recommenced that the tender board, which ideally consists of the jury of the tender, is responsible for determining the tender focus. Context factors, such as the financial situation of the housing association and history of the project, influence the focus of the tender and therefore a policymaker of the housing association should participate. Unless the project leader is part of the jury, his role in this phase is limited to that of process-leader to collect the input of the internal client.

Knowledge about the technical setup

During the previous step the need, the objectives and focus of the tender is defined based on the support of the jury. Now it is the task of the project leader to translate this into a technical set-up for the tender. The technical setup functions as a starting point for contractors and gives them important input for the determination of the best project approach. However, during this research new insights are acquired that show that the applied criteria and weighing mechanisms have significant influence on the relative weights, which possibly results in a wrong reflection of the objectives.
To prevent this, the project leader should have sufficient knowledge about the consequences of the applied mechanisms and the way that contractors will look at the technical setup. By calculating multiple (extreme) scenarios and by conducting a sensitivity-analysis the project leader can check whether the outcome still reflects the earlier discussed preferences and focus.

The combination of multiple weighing mechanisms affects the focus after a sensitivity analysis. Although this is mentioned in the last chapter as a cause of a mismatch, knowledge about the mechanisms can also be used as a tool to create more room for distinction on those criteria that were identified as unique factors of the project. This way the selection of the winner is predominantly done on those points were the expertise of the market potentially delivers the most additional value.

During the case studies, half of the housing associations applied the point system for the EMAT criterion and the other half the price-correction system with fictional discount. The experts were less doubtful and made clear that the price-correction system is preferred over the point system. The math behind both systems is similar, but the price-correction system creates less confusion and provides contractors with better feedback during the evaluation. The height of the fictional discount should reflect the value of a criterion and not the price.

**Market consultation**
When the first steps of the procurement process are taken with care and sufficient support, it will be better possible to determine the character of the project. Since most projects from housing associations are privately tendered, the housing association can reduce the chance of a mismatch by selecting only those contractors who match the character of the project. Maarten Georgius from Aedes emphasized on the fact that the world of housing associations and contractors should be brought together and learn more about each others working methods. This will improve the process of preselecting and will reduce the chance on a mismatch.

**Early dialogue round**
EMAT procurement still is a relatively new procurement method and many of the problems identified in this research are (partly) caused by a lack of experience. It is a fact that it is hard for housing associations to translate their objectives and for housing contractors to interpret them in the right way. Even when all the recommendations from this research will be implemented it will take some time for the housing associations and housing contractors to build up experience with the formulation and interpretation of EMAT tenders. Probably the mismatch will never completely disappear. However, in most cases current practice identifies the mismatch between intended and interpreted objectives during the evaluation of the scores at the very end of the process. In this phase the contractors already made a lot of cost on internal and external resources.

Therefore it is recommended to introduce an early individual dialogue session with each contractor shortly after the project is tendered. Hereby the contractor gets the chance to validate whether or not the assumptions made regarding the need, preferences and focus of the tender document are as they were intended to be. Furthermore a GO/NO-GO moment will give contractors the chance to exit the process when the character of the project does not fit their character. Creating an open environment, where contractors do not have the feeling that pulling back will prevent the housing association from inviting them for the next tender, is important.
Figure 34: the recommended procurement process
Alternative methods of preventing outliers

During the interviews with housing associations it came to light that the jury members often discussed their individual scores before coming to the final score. The given reason for this occurrence was the prevention of outliers. However this step in the process impairs the rightful reflection preferences of the complete jury where the setup of the tender was based on. Discussing the scores gives certain individuals the ability to influence the scores of other jury members, whereby any dominant jury member can pull the outcome in his or her own preferred direction. As discussed earlier, this way the focus that communicated towards the contractors may shift.

More transparent alternatives, which prevent outliers, are available but are not discussed in this research. An example is the judging of figure skating. There are nine jury-members who, without discussion, assign a score for the exercise. The highest and the lowest score do not count for the final score. This is just an example of a method where outliers are removed without discussing. Further research will be needed into the most appropriate method for the housing sector.

Evaluation

The evaluation of an EMAT tender is probably the most important step since the EMAT method is still relatively new. Losing a tender is part of the reality for contractors, which can have multiple reasons. One scenario is that the contractors understood perfectly well what the housing association desired, but simply did not deliver a plan that met those desires. In this case the contractor needs to work on its products or price to win the next tender.

An alternative scenario is that the contractor made a high quality project plan for a very good price but that they chose for a different approach than the association desired. In this case a lot of potentially qualitative resources are wasted due to mismatch. The evaluation of this mismatch is beneficial for both the association and the contractor.

12.2 Recommendations for housing contractors

Search for project specific factors that influence the preferences of the association

An insight from the empirical research is that important information, which is necessary to define the best project approach, cannot always be found in the tender document. Classifying the housing associations into strategic profiles possibly helps to predict their preferences, but there are also factors that influence these profiles that can change from project to project. Deducting this information is important to find the project bounded and unique objectives of the tendering housing association. This can be information about the history of the project, the financial situation of the association, demographic development or even media related subjects concerning the project. During an expert interview it was mentioned that the information could be excluded from the tender documents intentionally because it concerns sensitive information.

It is recommended that housing contractors put sufficient effort in finding the important information about these factors and use their network to find developments that can influence the project specific objectives of the housing association.

Look for the unique aspects of the tender

Within the analyzed cases, the EMAT tenders show a lot of similarities with the applied EMAT criteria. There are certain aspects, like the planning and cost, which apparently are important for every project. However, there are EMAT criteria that are less often applied and therefore probably specifically selected for that project. These are the criteria that determine the unique character of the project and tracing these criteria back to their original need can help to discover the essence of the project.

Data collection for better sensitivity analysis

In chapter 5 the sensitivity analysis is introduced. With it, the technical setup of a tender can be analyzed and the criteria that offer the most room for distinction can be identified. The outcome of a sensitivity
analysis is depending on estimations on the score spread of the criteria. The score spread is depending on the concreteness of the criterion, the measurability and the scoring behavior of the tendering association. Collecting data from finished tenders can help contractors to gain more insight in the overall score spread of certain criterion and the scoring behavior of particular associations.

With this knowledge, the outcome of the sensitivity analysis will become increasingly accurate, which helps with the determination of the optimal project approach.

**Keep the price/quality ratio in mind**

In chapter 5.4 financial incentives are discussed. Both the point system and the price-correction system are examples of financial incentives where the amount of points/discount determines the incentive that is given on a criterion. However, housing associations stated that determining the right incentive is one of the hardest parts of EMAT procurement and that they use trial and error for this.

Therefore contractors need to keep in mind that the financial incentive does not always correctly reflect the objective of the association. It is recommended that besides a cost/benefit analysis, a check on what effect the decision has on the price/quality balance of the plan will always be performed. Ask questions such as:
- Is the (design) decision an improvement for the price/quality ratio?
- Would we make this (design) decision when there was a much lower incentive?
- How does my competitive position change through this (design) decision?

This way an integral design is produced, which scores good according the score matrix of the tender, but moreover matches the objectives of the housing association.

**Cultural profiles**

The research pointed out that the individual perception of the employees of the housing association plays a part in how the plans will be assessed. In chapter 3.2 five factors are mentioned that influence the perception of an individual. Based on these factors an estimation of the preferences of the jury can be made. In 1974 Webster & Wind already came up with an example of cultural types within an organization, but in modern day LinkedIn is an excellent tool to explore these profiles. Thomas Kok, an EMAT consultant, mentioned that with complex tenders they sometimes even compose a review jury out of people with the same profile as the people participating in the tender jury. This can provide valid information about how the plan will be perceived.

**Dare to protest and to say NO**

One of the differences of EMAT procurement in the housing section in relation to other sectors is that the tenders are private. The relation with the housing association is important for the housing contractors because they need to be invited for tenders before even having a shot at winning one.

However, this should not be a reason for contractors to not mention their surprise concerning the outcome of a tender or disagree with the process. Contractors should look for an appropriate way to communicate with the tendering party about why the process or outcome is non-transparent or unpredictable and express their feeling and thoughts on what change is necessary in order to come to a better project plan.

**12.3 Recommendations for further research**

**Implementation study**

The goal of this research was to identify potential causes of a mismatch in intended and interpreted objectives between a housing association and a housing contractor in EMAT procurement. The outcome of this research can be the input for practical researches in which new uniform guidelines are designed and implementation plans are developed. The implementation can be quite complex due to the dual interest of the housing association and the contractors.
Best Value Procurement in the housing sector

One of the recommendations of this research is to implement a dialogue round in the procurement process. An EMAT tender including a dialogue round, slowly starts to look like Best Value Procurement. So far, BVP is not very often used as a procurement method in the housing sector. Research can help to explore whether or not BVP is a suitable procurement method for the housing sector.

Cost component

One factor that was left outside the scope of this research is the cost-component. Research from the economical institute of construction (EIB) revealed that producing EMAT plans requires significantly more investments for the contractors and that the added value mostly is harvested by the client. Since this creates an unfair balance in the market further research into the procurement methods with a specific focus on the transaction cost and financial compensation between client and contractor is recommended.
13 Reflection

During the execution of the research multiple conditions or a course of events led too limitations of the outcome. To increase transparency about the outcome and for the sake of the reproducibility of the research methodology, these points are addressed in the following section.

Limitation of the literature review

• Lack of scientific sources on the subject
Because EMAT procurement is a relative new subject, there is not much scientific literature to be found on the subject. Many sources used in the theoretical framework are written by organizations like the economical institute for contraction (EIB) or BouwendNederland. These organizations have some interest of their own in the sector and therefore their sources are not as trustworthy as independent scientific sources.

• Lack of sources specifically on housing associations
Many found sources discuss the practise of EMAT procurement in the construction sector in general. During the introduction interviews with both utility contractors and ERA Contour was learned that the two are very different from each other, for example on their legal duty to apply EMAT procurement.

Limitations of the empirical research

• No separate interviews with policymakers and project-leaders
During the literature review, the ‘cultural types within an organization’ were identified as influencing factors in the procurement process. To learn about the difference in perspectives between these cultural types within a housing association, individual interviews were planned with policymakers and project-leaders. When the dates of the interviews were approaching many of the housing associations contacted to say that the agenda of the interviewees were to full and that the interviews had to be combined. As a result the separation between the opinions of the cultural types in the empirical phase was impossible to determine without strong bias.

• Case study quality to low to generalize outcomes
For the empirical phase of the research the input of 1 housing contractor and 4 housing associations are used. This quantity is to low for the generalization of the results in the conclusions. Especially on the themes were two associations were in favour of and proposition and two were against, no rational conclusions could be drawn about how this balance lies in the whole of the Netherlands. In an attempt to reduce the bias in the conclusions the outcome of the literature and case study is discussed with a group of academic and practise experts.

• Case selection based on personal opinion
For the selection of the cases that are used for the empirical research the databank of ERA Contour is used. Based upon pre-set criteria a list was deducted with EMAT tenders that were suitable for the research. The final selection of the cases is made in consultation with Marius Heijn from ERA Contour. He based his selection on knowledge of the persons working at the organization, which interesting persons could deliver good input for the research. The selection was not based on only good relations of ERA Contour or projects that ERA Contour won, but nevertheless the personal opinion of Marius does form a slight bias for the research.
Limitations of the strategy

- **Defensive attitude of housing associations during interviews**

One goal of the research was to look at the EMAT practise from both the client and contractors perspective. ERA Contour filled to role of contractor and provided the needed input. The 4 interviewed housing associations in the role of client all knew ERA Contour as vendor or co-worker. The research is conducted from the office of ERA Contour and all the corresponded was done with an ERA Contour email account, this could give associations the idea that the research conducted for and commissioned by ERA Contour.

During the interviews it could be noticed that interviewees from the housing associations were sometimes restrained in their answers and acted a little defensive.


Bosch, R., van Kalmthout, R., & van Timmeren, A. Energie neutrale Hoogbouw.


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Appendix C

Clients in the housing sector

Data from the CBS shows an oversight in percentages of the granted building permits in the Netherlands (Centraal Bureau voor de Statistiek, 2015). The groups in the table below are the potential clients for the research.

<table>
<thead>
<tr>
<th>Group</th>
<th>Building permit applications 2014</th>
<th>Building permit applications 2015 Q1</th>
<th>Percentage total</th>
</tr>
</thead>
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<td>Housing associations</td>
<td>7077</td>
<td>2213</td>
<td>17%</td>
</tr>
<tr>
<td>Builders of the Netherlands</td>
<td>27403</td>
<td>11462</td>
<td>71%</td>
</tr>
<tr>
<td>Private developers</td>
<td>4885</td>
<td>1804</td>
<td>12%</td>
</tr>
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</table>

Private developers
Private developer’s projects are small and have no complex procurement process. Apart from that, private developers have no legal obligation to apply EMAT procurement and are in most situations free to choose whichever party they prefer (Roetgerink, 2006).

Therefore this group is not relevant for this research and will be place outside of the research scope.

Builders of the Netherlands
The term ‘builders of the Netherlands’ is explained on by the CBS as: Project developers, real estate agencies, developing contractors and financial institutions like banks, retirement funds and insurance agencies (Centraal Bureau voor de Statistiek, 2015).

In article 1.1 from the Dutch procurement law 2012 (translation of: Aanbestedingswet 2012) is stated that the legislation concerning procurement is only applies to: the government, province, municipalities, water boards, or semi-public institutes that have a corporation-bond with public authorities.

This means that the group ‘builders of the Netherlands’ which mostly consist of project developers have no juridical obligation to apply procurement according to legal guidelines and are therefore left outside of the scope of this research.

Housing associations
According to data from the CBS, 17% of the building permits in the housing sector are granted to housing associations.

Housing associations are institutions that develop and maintain the social housing sector in the Netherlands. The Dutch government leaves the corporations operate individually and limits it role to that of financer, policymaker and controller. Because housing associations are semi-public institutions. This raises the question whether the Dutch procurement law applies to them or not (Kempen, 2002).
**Article 1.1 of the procurement law and EU directive 2004/18 art.1 section 9** states that the following criteria determine whether an institution needs to act according to public procurement law:

A. The institution is established with the specific cause to fulfil the need of public need, not being on industrial or commercial ground.

B. The institution has an incorporation

C. The institution’s:
   - Activities are for the major part executed by the central government, province, municipality or water board
   - Performance is controlled by the central government, province, municipality or water board
   - Members of the board, management and/or a controlling organ consist for more than half of resources supplied by a central government, province, municipality or water board.

(Dutch Government, 2012)

Housing associations meet criteria A and B but not fully criteria C. The central government lets the corporations operate autonomous and therefore housing associations are part of the grey area (Kempen, 2002).

In 2011 the former minister of the Interior and Kingdom Relations, Donner, wrote in a letter to the parliament that housing associations have procurement duty are not strictly obliged to use European nor national procurement (Donner, 2011). His statement is an important guideline but does not have legal force until it is determined by court.

The legal and social obligations of housing associations have frequently been a point of political discussion. They have the intention and social obligation to apply EMAT procurement in a good way. Altogether it is assumable that EMAT procurement will become increasingly important for the corporations and more knowledge about the good application of EMAT procurement is desirable.

This research will focus on EMAT procurement in the housing sector with housing associations in the role of client.
Appendix D

Methodology Atlas.TI

To draw conclusions based on a qualitative empirical research, first the empirical data needs to be processed. To do this, three steps need to be taken: 1.) Ordering 2.) Labelling/coding 3.) Determining patterns (Yin, 2013). For this research the software tool Atlas.TI is used to support the data processing. In this software tool all the recorded interviews are typed out as transcripts. Then multiple codes are introduced based on the aspects that came to attention during the interviews. The 9 themes from the previous section are inserted as families and the codes are linked to the appropriate family. It is possible that one code is connected to multiple families. A complete list with the applied families and codes can be found in appendix D.

The last step is to connect the codes to the text by encoding the transcripts. Sections from the transcript are selected and one or multiple codes are coupled to that specific section. After all these sections are couples as quotes to the codes it is easy to retrieve a oversight per code of what all the interviewees have said about that specific subject. This way the similarity ore differences in opinion of interviewees can be learned in a structured way.

To make the results of multiple cases comparable with each other, first an in-case analysis is done. In the in-case analysis the transcripts of the interviews are analysed with Atlas.TI. After all the in-case analyses are finished, cross-case analyses are conducted to compare the results of the different causes with each other. The cross-case analysis will be used are input for the next phase.

Conclusions Atlas.TI

From the data in Atlas.TI which can be seen in the table on the next page two sort of information can be retrieved.

- The first information is about the *quantity of the applied codes*. This can tell something about the number of times that the interviewees mentioned a certain subject which tells something about the importance of the subject. However the interview are conducted in a semi-structure way. This means that the interviewer influences the subjects and themes that are threatened during the interview. As a result the conclusions, which can be drawn from the quantitative information is very biased. Therefore it will not be used for the research.

- The second sort of information about *the connection of the codes with the 9 themes*. The themes are inserted in Atlas in the form of families. Each code is connected to one or multiple families. When a code is connected to more themes this is an indicator that the themes have an interrelation. Based these interrelations, the network diagram on the next page is designed. The character of each connection is defined and the hierarchy between the codes is determined. The network diagram helps to see the ‘core’ of the problems and supports the researcher with the formulation of complete and correct conclusions.
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<td>DNA</td>
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**Families**

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<td>Profile of a housing association</td>
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