

The role of the architect in integrated contracts for social housing renovations in the Netherlands

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Abstract

The use of integrated contracts in the Dutch construction sector has increased in recent years. Integrated contracts presume facilitating a much more effective process than traditional delivery methods leading to reduced cost and time and higher quality. In first instance this type of contracts was only used for large and complex infrastructure projects and new buildings. In the last five years they have been used also in the social housing sector for renovation projects, giving positive project outcomes. In this kind of projects the supply-side actors work together in a team formed by an architect, consultants and construction companies; commonly referred as a consortium. There is a lack of knowledge about the formal and informal bindings between the consortium members, the specific roles of the consortium members and its influence on the project outcomes. The aim of the research project was to get an overview of the existing organizational typologies and the changes in the role of the architect (e.g. type of work, amount of work and work relations). The study is based on a series of interviews with architects working with integrated contracts in social housing renovations. The findings indicate that in the majority of the projects analysed, the architect is contracted by the main contractor rather than by the social housing organisation. The use of an integrated contract has no important effects on the relation of the architect with the social housing organization and improves the relation of the architect with the main contractor, consultants and advisors, and other specialized contractors involved. The architect is switching from a designer role to a technical and aesthetic advisor role compared to design-bid-build projects.

Keywords: architect role, integrated contracts, renovation, social housing

1. Introduction

The use of integrated contracts in the Dutch construction sector has increased in recent years. It represented in 2011 8.9% of all public construction contracts published on the main Dutch tender database (www.aanbestedingskalender.nl) (Hardeman 2012). Integrated contracts in the construction sector is used to refer to contracts that include the design and construction works in a single contract, but that can also include maintenance, finance and/or operation (Chao-Duivis and Wamelink 2013). One of the main characteristics of this type of contracts is that the companies in charge of the construction, and in some cases maintenance and operation, are involved in the project from the beginning of design phase, what allow them to participate in the design decisions contributing with their practical knowledge. In general, integrated contracts are assumed to result in lower costs, better performance and lower risks as a result of a collaborative environment and output specifications (Akintoye et al. 2005; Blayse and Manley 2004; Leiringer 2006).

In first instance this type of contracts were only used in the Netherlands for large and complex projects (Boes and Dorée 2008). Still, in the last five years they have been also used in the social housing sector for new construction and renovation (Hal et al. 2011; Savanović et al. 2012). In fact, the use of this contracts in renovation had its special momentum in 2008, when the shared aim of the national government and social housing organisations (SHOs) for reducing the energy consumption of their housing stock was expressed in the “Covenant for energy savings”. In the covenant it is declared an aim for upgrading to a B label the Dutch social housing stock or a least to upgrade it two level higher that its current status. In the Netherlands Social Housing accounted by the year 2008 for 32% of the total national dwelling stock (Pittini and Laino 2011). Since 1995 social housing organisations in the Netherlands are autonomous self-finance organisations (Ronald and Dol 2011). Therefore, they are not requested to comply with public procurement rules.

In projects making use of integrated contracts the supply-side actors work together in a team formed by the architect, the consultants and the construction companies; commonly referred in the Netherlands as a consortium or co-makers. Currently, there is a knowledge gap around the role of each of the consortium members and the formal and informal relations among them. The current literature is mainly focused on the dyadic relationship between client-consortium or client-main contractor (Bygballe et al. 2010). There is some research carried out last years about the formal and informal relations among the members of temporary multi-organisations (TMO) in construction, what can be related to the consortium structure (Blois et al. 2011, Lizarralde et al. 2011). The studies about TMO take into account all members involved: client, main contractor and specialized contractors. However, in the projects analysed in these studies the architect is always treated as another specialized contractor and no specific attention is given to the change of its function. The few studies about integrated contracts that refer to the role of the architect highlight that there is a change in its role in comparison to the traditional design-bid-build approach (Volker and Klein 2010, Wamelink et al. 2012).

The research question is how the role of the architect changes in social housing renovation projects making use of integrated contracts compared to design-bid-build projects, and how the formal and informal bindings are with the other involved actors?.

The research methods used and the research hypotheses are described first. This is followed by the presentation of the findings and the discussion of the hypotheses. Finally, in the conclusions the main findings are highlighted and the research limitations and recommendations for further research are outlined.

2. Research Methodology

A search among a series of websites listing innovative construction projects have been carried out in order to identify social housing renovation projects making use of integrated contracts that are completed or in their construction phase. This search included: *Agentschap NL* (Agency of the Dutch Ministry of Economic Affairs), *Energie Sprong* (construction innovation program of the Dutch Ministry of the Interior and Kingdom Relations) and *Passief Bouwen* (Dutch passive house organisation). Also an inquiry to identify this sort of projects has been addressed to experts of *SBRCURnet* (Dutch construction knowledge network organisation), *Vernieuwing Bouw* (Dutch construction renovation knowledge network organisation), *Noorderberg* (construction supply-chain integration consulting firm) and to several experts.

In total 21 social housing renovation projects making use of an integrated contract with involvement of an architect have been identified in the period 2005-2013. All the projects were tendered as Design-Build contracts and some of them included the possibility of Maintenance a posteriori. In the Netherlands the participation of an architect in a renovation project is not mandatory. Nevertheless, it is common practice to have an architect involved in case the façade is modified because he is the most competent professional to present the project to the *Welstandscommissie* (appearance committee), a committee that advises the municipality about how the design of a building fits within its environment, in order to obtain the construction permits.

The architects involved in these project have been contacted by mail and by phone to participate in the research, 13 accepted. The participating architects were interviewed making use of open and closed questions; an interview took in average 90 minutes. The 13 interviews are the main source of information of this study. This was complemented with the information published on the websites of the involved actors: SHOs, architect office and construction companies.

The renovation projects have been carried out mainly in row houses. The size of the projects differ from 24 dwellings the smallest to 290 the biggest and with an investment per apartment from approximately € 20.000 the lowest to € 120.000 the highest. A summary of the characteristics of the projects is presented in Table 1.

Table 1. Analysed projects summary

	<i>Project location</i>	<i>Number of Dwellings</i>	<i>Type of dwellings</i>	<i>Tender</i>	<i>Investment per dwelling</i>
1	<i>Leiden</i>	252	<i>Row houses</i>	<i>Not competitive</i>	56,500
2	<i>Leek</i>	45	<i>Row houses</i>	<i>Not competitive</i>	80,000
3	<i>Hoek van Holland</i>	52	<i>Row houses</i>	<i>Not competitive</i>	120,000
4	<i>Drunen</i>	25	<i>Row houses</i>	<i>Not competitive</i>	45,000
5	<i>Haarsteeg</i>	32	<i>Row houses</i>	<i>Not competitive</i>	100,000
6	<i>Almere</i>	246	<i>Apartment block</i>	<i>Not competitive</i>	23,000
7	<i>Zwolle</i>	148	<i>Row houses</i>	<i>Competitive</i>	70,000
8	<i>Biddinghuizen</i>	80	<i>Row houses</i>	<i>Competitive</i>	40,000
9	<i>Zwolle</i>	24	<i>Row houses</i>	<i>Competitive</i>	108,333
10	<i>Krimpen aan den IJssel</i>	240	<i>Row houses</i>	<i>Competitive</i>	80,000
11	<i>Ulft</i>	54	<i>Row houses</i>	<i>Competitive</i>	80,000
12	<i>Ulft</i>	115	<i>Row houses</i>	<i>Competitive</i>	81,739
13	<i>Leeuwarden</i>	290	<i>Row houses and apartment blocks</i>	<i>Competitive</i>	19,931

Firs a series of six hypotheses about the comparison between design-bid-build projects and integrated contract projects have been formulated based on a literature review. The hypotheses refer to the type of work of the architects, the amount of time spent per project, the relation of the architect with the SHO and the construction companies, and design phase duration.

1. The architect carries out a different type of work

In the Netherlands the leading role in consortiums participating in projects making use of integrated contracts is mainly taken by the main contractor (Volker and Klein 2010) similar to the situation that have been reported from the UK (Greenwood et al. 2008) where integrated contracts are widely being used. The leader is expected to carry out the project management task (Wamelink et al. 2012), what in a design-bid-build approach often was done by the architect. This position means that the accustomed type of work of the architect will change.

2. The architect has a lower amount of work per project

As mentioned in the previous hypotheses the leading member of a construction consortium in the Netherlands is the main contractor. Not being responsible for the project management will result in a lower amount of time spent by the architect in the project.

3. The architect is in a compromised position as SHO advisor

In the new situation, where architect and main contractor are at the same side of the table, the tasks and responsibilities of each one are not always clear for the client (Sebastian 2011). If the architect is contracted by the main contractor the main contractor becomes the client of the architect rather than the SHO, and as such the role of the architect as advisor to the SHO could be compromised.

4. The architect has a better relation with the construction companies

Implementing an integrated process is one of the proposals made by the national evaluation reports of Lathan (1994) and Egan (1998) for the UK construction industry in order to improve the collaboration between the involved actors. Numerous comparative studies about the use of integrated contracts in large construction project have reported the predicted improvement in the collaboration between consortium members (Akintoye et al. 2005; Konchar and Sanvido 1998; Leiringer 2006). Smaller projects as social housing renovations are not expected to be different in this regard.

5. The communication with the construction companies is less formal

In projects making use of a design-bid-build approach the architect and the construction companies start their communication when the design is completely defined and they have clearly different responsibilities with regard to the SHO. In this set-up in which architects and construction companies need to take care of their own responsibilities the communication between them tend to be formal. In projects making use of integrated contracts the architect and the construction companies are sitting at the same side of the table, and from the point of view of the SHO they share responsibilities. Moreover, they are both involved in the design phase what means that they have a high level of communication during this phase what is expected to cause a lower level of formality in their communications (Hoezen and Volker 2012).

6. The project has a shorter design phase

In this research the design phase is defined as the period of time between the involvement of the architect until the start of the construction works. In projects making use of integrated contracts the construction companies participate in the design phase what allows architects to take faster design decisions as the viability (price and technical feasibility) of various design alternatives could be immediately evaluated. Moreover, compared to a design-bid-build approach there is no need for a works tender after the design is completed. The consequence of these two factors is that the length of the design phase could considerably be reduced as reported in previous research over two French social housing renovation projects (Salcedo and Straub 2014).

3. Findings

Two types of tender procedures have been identified among the analysed projects, the non-competitive (six projects) and the competitive (seven projects). See Figure 1.

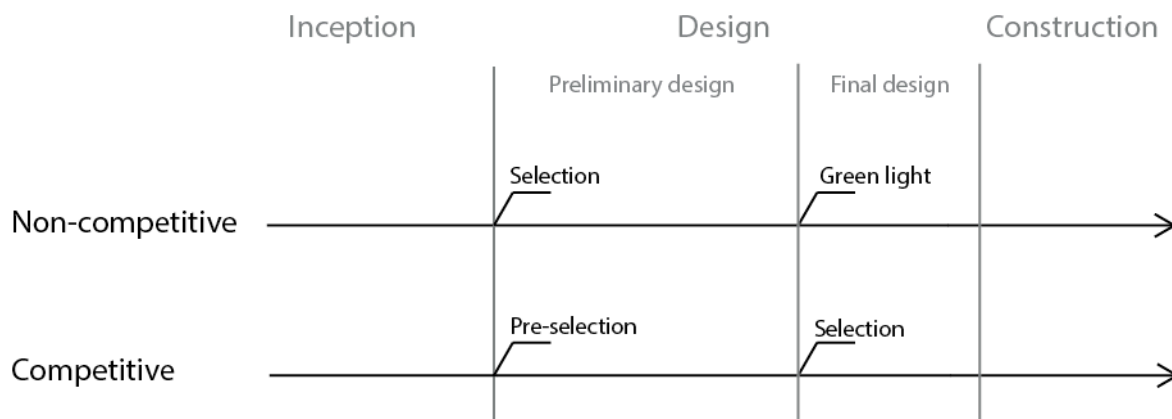


Figure 1. Time organization on non-competitive and competitive procedures

In the non-competitive procedure the selection of the awarded consortium is commonly based on non-project related criteria (e.g. capacity for team work, sustainability vision or capacity to innovate) and their previous experiences. The common practice is that only invited candidates participate in the selection procedure. In a couple of projects making use of the non-competitive procedure there was no selection procedure and the awarded candidate was directly appointed. The design work starts after the consortium has been selected. When the preliminary design is finished there is often a green light procedure, a moment in which the SHO decides if they go further with the project and when the project budget is definitively fixed.

In the competitive procedure there is a pre-selection and a selection phase. The pre-selection is based on non-project related criteria or are directly appointed. The pre-selected candidates are then invited to participate in the selection process, in six of the seven competitive projects three candidates per project were pre-selected. The selection is based on the evaluation of the preliminary design proposals, what means that previous selection of the awarded consortium most part of the design work has been already done. After the project is awarded there is still some design work to be done to fine tune the initial design proposal. In this study the size of the sample, thirteen projects, does not allow to make an statistical analysis. However, some differences can be identified between the competitive and non-competitive projects when analysing some of the hypotheses.

In the Netherlands there is no legal definition for a construction consortium and no common definition could be extracted from the interviews. Different names were used by the interviewees to refer to the consortium; eg. consortium, co-makers, co-creators or building-team. In some cases the consortium could be related to the TMO concept as defined by Blois et al. (2011). The TMO is composed by all companies involved in the design and construction. But in other cases not all companies involved in the design and construction were considered members of the consortium. For example in some of the analysed projects the companies that had a real influence in the design decisions; architect, main contractors, advisors and some specialized contractors (e.g. pre-fabricated façade maker, window maker) were considered as consortium members, while the other specialized contractors involved in the project were not considered members of the consortium.

Four different types of contractual arrangements with the architects have been identified among the analysed projects. See Table 2. The most common arrangement is that the architect office is contracted by the main contractor and this is synonym in almost all cases that the initiative on creating the consortium comes from the main contractor. Only in one of the ten projects where the architect was subcontracted by the main contractor the initiative of making the consortium came from the architect office.

Table 2. Projects per contractual arrangement

<i>Contractual structure</i>	<i>Number of projects</i>
<i>Architects office subcontracted by main contractor</i>	<i>10</i>
<i>Architects office contracted by the SHO</i>	<i>1</i>
<i>Architects office co-owner of a joint enterprise</i>	<i>1</i>
<i>Architect employed by the main contractor</i>	<i>1</i>

SHO, Social Housing Organisation / MC, Main Contractor / AO, Architects office / Arch, Architect

In none of the analysed projects the architecture office was acting as the main contractor and only one of the interviewed architects said it could be an option for his office. The financial risk of design-build projects has been said to be too big to be taken only by the architecture office. The limitation of the economical risk capacity had been already mentioned by Wamelink et al. (2012) on his proposal of design-build projects design-led.

Hypothesis 1. The architect carries out a different type of work

Nine of the thirteen architects considered that the type of work was different from comparable design-bid-build projects and eight of them had a similar reasoning for this. In design-bid-build the architect was in charge of proposing the design solutions with a detailed description while currently they were in charge of collecting the proposals of all the members participating in the design, facilitating the design choices and taking care of the aesthetic ensemble. An architect said: “ It is the same type of work but there is another ratio between making drawings and advice. You act more as an advisor than as a designer.”

Hypothesis 2. The architect has a lower amount of work per project

Only four of the thirteen architects indicated that the amount of work was less than in comparable design-bid-build projects. See Table 3. Three argued that the main contractor took some of the project management tasks that they were used to perform and one argued that the improved efficiency in the design decisions period had an influence in reducing the amount of work. On the other hand, in six interviews it was indicated that there was a higher amount of work but there was not an unanimous reason for it. Some argued the specificities of the project, the fact of being a pilot project or of being a renovation project, and others argued that they had some extra tasks as an intensive site supervision or being in charge of the communication with the tenants.

Table 3. What was the amount of work compared to previous similar design-bid-build projects

	<i>Less</i>	<i>Similar</i>	<i>More</i>
<i>Architect - SHO</i>	4	3	6

In the architectural profession the amount of work relates often to the time spent in the project, but to be certain they were requested also to rate the amount of time they being involved in the project compared to comparable design-bid-build projects. Five answered that the amount of work was less, three that it was similar and 5 that it was more, almost the same results. Not a clear difference between projects with a collaborative and competitive procedures could be highlighted from the results presented in Table 4. The picture does not give a clear indication about the changes on the amount of work.

Table 4. Time spent in the project compared to previous similar projects previous design-bid-build projects

	<i>Less</i>	<i>Similar</i>	<i>More</i>
<i>Collaborative approach</i>	2	0	4
<i>Competitive approach</i>	3	3	1
<i>Total</i>	5	3	5

Hypothesis 3. The architect is in a compromised position as SHO advisor

The results about how the relation between the architect and the SHO was compared to comparable design-bid-build projects does not reflect that the architect is in a compromised position as advisor of the SHO. See Table 5. Only in one case the relation was rated as worse. In all the other cases the architects were requested if they felt that the SHO had less trust on them, and the answer was always negative. Nevertheless, in 5 of the 13 interviews it was expressed that they think that their position as professional it is compromised because they are contracted by the main contractor and not by the SHO. An architect said: “The distance is a bit bigger. You feel that who pays decides and that has an influence. We knew the SHO and all the others seated on the table and we had a close contact but the communication went through the filter of our client. Before a proposal arrives to the SHO the financial feasibility is checked. It is a slightly different role towards the SHO.”

Table 5. How was the relation between architect and SHO compared to similar previous design-bid-build projects

	<i>Worse</i>	<i>Similar</i>	<i>Better</i>
<i>Architect - SHO</i>	1	5	6

Hypothesis 4: The architect has a better relation with the construction companies

The relation between the architect and the construction companies involved in the renovation project is considered to be better compared to comparable design-bid-build projects by 9 of the 13 architects interviewed. Any of the interviewed architects rated the current relation as worse and four rated it as similar. See Table 6. Three of the four architects that rated the relation as similar stated in the

interview that they previously had already a good relation with the construction companies and the relation stayed as good as it was.

Table 6. Architect opinion about their relation with the construction companies compared to previous similar design-bid-build projects.

	<i>Worse</i>	<i>Similar</i>	<i>Better</i>
<i>Architect – Construction companies</i>	<i>0</i>	<i>4</i>	<i>9</i>

Hypothesis 5: The communication with the construction companies is less formal

A big part of the communication between architects and construction companies is done via the drawings and technical specifications (Styhre and Gluch 2009). In order to assess the formality of the communication between architects and the construction companies the architects were requested about the detail level of the drawings they handed in to the construction companies. Ten of the thirteen interviewed architects considered that the level of detail in the communications with the construction companies was lower than in comparable design-bid-build projects. See Table 7. It was said in the interviews that part of the drawings that in comparable design-bid-build projects were developed to a high degree of detail they were this time only elaborated up to a sketch level. For example in the case of making use of prefabricated façades the construction company in charge of that part of the project would elaborate the detailed drawing of the façade while the ensemble would be supervised by the architect.

When asking if the detail level of the communications with the constructor was the same one of the architects said: “I leaned a bit on the expertise of the builder. We did not need to detail everything because they are just as capable to do the proper job. We only interfered in the section of the roof. Because the roof was completely renewed the contour of the building was changing, there we did some detailing”.

Table 7. Level of detail in the communication between architect and construction companies compared to previous similar design-bid-build projects.

	<i>Lower</i>	<i>Similar</i>	<i>Higher</i>
<i>Level of detail</i>	<i>10</i>	<i>2</i>	<i>1</i>

Hypothesis 6: The project has a shorter design phase

Unfortunately it was not possible to find a reference value for the average design phase time in a social housing renovation projects among the reviewed literature. In the analysed projects an important difference in time length could be observed between the projects with a collaborative approach and the projects with a competitive approach. The projects with a collaborative approach had a design phase in average more than 40% longer than the projects with a competitive approach. See Table 8.

Table 8. Time spent from start of work in the project until start of construction works

	<i>Number of projects</i>	<i>Time (months)</i>
<i>Collaborative approach</i>	6	15.5
<i>Competitive approach</i>	7	9

As outlined in the Figure 1 in the competitive approach the award of the contract is based on the preliminary design presented by the candidates. The time schedule of selection procedure is defined by the SHO what forces the participating consortiums to make their design proposals in a specific time frame. The consortiums participating in the analysed project with a competitive approach had in average 2.8 months to develop their preliminary design.

4. Conclusions

This research based on the analysis of thirteen social housing renovation projects making use of integrated contracts gives an indication of the role of the architect in this new set-up. The architect is in the majority of the cases contracted by a main contractor and is switching from a designer role to a technical and aesthetic advisor role. However, the change in role does not have a direct relation with the amount of work per project for the architect. The loss of project management tasks get compensated in some cases by other task like communication with the tenants or higher site supervision.

The new contractual position of the architect does not have negative effect, and in some cases it has even a positive effect, on the evaluation of the relation between the architect and the SHO. In any case the architects do not perceive that the SHO has a lower trust in their advice and the new set-up has a positive effect on the relation between architect and construction companies. The relation is rated as better and it could be also confirmed that the communication between architects and construction companies it is more informal than in design-bid-build approaches.

In regard to the design phase length it has been found a considerable difference between the projects with a collaborative approach and the projects with a competitive approach; the competitive approach projects design length is less than half the design length of the collaborative approach projects.

The research is based in the analysis of 13 projects, is thus a qualitative research, which results cannot be extrapolated. However, it gives an indication of what are the changes are to be expected for the architect when working in projects making use of integrated contracts. Further research is needed to discuss what can these changes could mean for the architectural profession and education.

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