Performance-based partnership forms for maintenance by Dutch housing associations

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Abstract

Dutch housing associations develop new procurement methods for maintenance of their housing stock. Performance agreements are being developed to replace traditional tenders by longer-term cooperation. OTB Research Institute is doing research on performance-based maintenance contracts with the focus on the clients, especially housing associations. These agreements promise, among other things, the optimal use of know-how of parties involved. The development of performance-based partnership forms for maintenance varies greatly according to the type of maintenance and building components concerned. In general, the partnership forms can be described as: price and performance agreements for maintenance activities, long-term cooperation and lump sum performance-based contracting. The role of maintenance contractors broadens to advisers. Not all possibly occurring defects have to be used in performance-based agreements. Long-term co-operation can be based upon decisive performance requirements directly linked to the specific functions of a building component. The contractors themselves should monitor the degradation processes by performing performance measurements.

Keywords: housing association, maintenance, partnership, performance-based, performance indicators

Introduction

Dutch housing associations are not-for-profit organisations, which are obliged to operate in the interest of housing, in particular by providing decent, affordable housing to lower-income households. In 2002, 552 Dutch housing associations together possessed more than 2.4 millions of rented dwellings. This entails that social housing account for 37 percent of the total housing stock, and 75 percent of the total rented stock. Growth is not so much due to new construction or the purchase of dwellings, but is further to an ongoing wave of mergers.
In the 1990s, the national government granted housing associations considerably more freedom of policy but also diminished the financial support. Furthermore, demand for social housing decreased, partly due to a booming economy and changes in housing preferences towards home-ownership. As a consequence housing associations began to adopt business-like approaches in their housing management. They had to operate more market-driven and client-driven.

The professionalism of housing associations have led to a noticeably greater attention for maintenance processes and partnership forms in the supply chain for maintenance. The growth in the size of the holdings for which an individual housing association is responsible is an important factor in considering the adoption of performance-based maintenance contracts. Some larger associations have as many as 40,000 dwellings under their management, which renders it more or less essential to explore alternative means whereby maintenance processes can be managed efficiently and effectively. An additional factor is that the housing associations have chosen to re-focus on their core business, and a number now regard maintenance as a secondary process for which outsourcing, provided it is organized in a responsible manner, is preferable. Another reason for considering performance-based contracts is the emergence of a strategic housing stock policy. This entails a customer focus, greater differentiation in quality and hence some variation in maintenance performance levels (Straub 2002a).

The interest shown by housing associations in performance-based agreements is also further to their adoption and development of quality management systems. Many associations have now adopted the INK (Institute of Dutch Quality) management model, comparable to the EFQM Excellence Model (EFQM 1999). While still focusing on direct results and processes, the associations wish to shift the emphasis onto continuous learning, innovation and improvement and to seek out value adding partnerships with other organisations.

Outsourcing and procurement

The traditional maintenance approach entails single, detailed contracts and competition based on price, usually by means of a tender process. By contrast, the performance-based approach centres on a set of desired performance or service levels. Maintenance contractors no longer act as suppliers of capacity, but become active participants in the overall maintenance process. They assume certain risks and responsibilities with regard to the quality and costs of maintenance activities, doing so for a long period wherever possible.

At present, clients and contractors have divergent views concerning the content and implementation of a performance-based approach. Despite such differences of opinion, the parties concerned have a common interest in developing performance-based concepts and suitable instruments for performance measurement. Both clients and contractors cite a number of advantages attaching to a performance-based approach (Straub 2002b). Clients emphasise the reduction of financial risks at the longer term and steering the maintenance processes on main points. Contractors underline improvements of performance and service and innovations in the whole maintenance process by having continuity in orders and sustainable relationships with clients. The appropriate partnership forms for a housing association depends on its size, organisational structure, business-like approach, the type of maintenance and building components involved and especially its goals for partnering.
RESEARCH PROJECT
The OTB Research Institute for Housing, Urban and Mobility Studies, which is part of Delft University of Technology in the Netherlands, is doing research to the application of performance-based maintenance agreements by Dutch housing associations. The research project is entitled ‘Performance-based cooperation in the technical management of housing stock’. The research comprises two ongoing studies. The first study is into performance-based agreements for several building components and organization’s maintenance activities and involves seven large, innovative housing associations. The second, parallel, study is into performance-based approaches and involves input from contractors specializing in exterior surfaces. Both studies hope to promote mutual learning and to establish guidelines for performance-based maintenance concepts. The first phase involved literature reviews and case studies into housing associations’ current procurement and outsourcing methods. Performance-based agreements covering the maintenance of central heating systems, lifts, flat roofing and work to exterior surfaces have been examined and compared. Maintenance processes were modelled. In 2004, performance-based processes and agreements for exterior surfaces were further elaborated.

In coming years the Dutch situation with regard to innovative performance-based concepts will be compared to that in other countries, and that current in the refurbishment and new-build sector. There has been considerable prior research into the performance-based concept in new construction (e.g. Pries 1997). The results of our study indicate that the preconditions that exist here also apply for the most part to maintenance and improvement work. The outcome of the research may assist in discussions around the transition of the building sector from one-dimensional orientation on costs, to process and value maximization.

MAINTENANCE
Each type of maintenance demands for its own procurement method, and contract form. In the case of performance-based partnership forms for building components, a preventive and/or condition-based maintenance approach forms the basis of all maintenance activities. However, this does not mean that the agreements should not also cover breakdown services by comprehensive contracts, such as those to which flat roofing and various installations. Preventive cyclical maintenance and breakdown service lend themselves particularly well to the performance-based approach. In case of preventive cyclical maintenance regular, fixed contact moments between client and contractor already exist. Preventive activities are carried out to preclude breakdown of the system. Performing breakdown service is not so much a question of performance level of the installation components, but that of the technical service levels, i.e. response time and active maintenance time. Some of the performances can be derived from the requirements of the client’s own quality management systems, put in place to ensure customer satisfaction.

Performance requirements
For a performance-based approach to maintenance work the Performance System Model of CIB TG37 Performance-Based Building Regulatory Systems (Tubbs 2004) can be used. This model can be divided into a qualitative component and a quantitative component. Qualitative is where the building owner needs are expressed in general language usually in the form of goals and objectives. Derived from that are
functional statements and operative or performance requirements. Quantitative are criteria and standards. Standards contain verification methods. For maintenance functional statements, performance requirements and performance criteria suffice. Performance requirements are not just technical, but can also hold performance of service delivery, e.g. response time. Performance requirements, even on the long-term, can be considered as output specifications. In case that the use of the component strongly influences performance, output specifications do not satisfy. Client and contractor need ‘output measure’. This is the case by installations.

**Performance of building components**

The performance of building components can be determined by assessing defects. All components have to contend with performance loss through ageing, use, and external causes. Performance loss is measured in terms of defects ascertained. The defects are registered during a condition assessment or performance measurement. As a result of several research projects and the use of the method in the Dutch House Condition Survey, the process of condition assessment using standard lists of defects and a six-point condition scale has become popular by property managers, consultants and contractors in the Netherlands. The condition categories are of a chronological order that describe possibly occurring defects without references to remedial work, but just describe occurring defects (Straub 2002a). A performance-based maintenance agreement could be based upon minimal performance criteria of building components. In long-term agreements also the performance at the end of the contract period should be agreed (Straub 2002b). The contractor has to meet or exceed these criteria by executing the right maintenance activities to the building component at the right time.

**Performance requirements in performance agreements**

Not all possibly occurring performance requirements and defects have to be used in performance-based agreements. Decisive performance requirements are directly linked to the specific functions of a building component. See table 1 for wooden windows and doors. For assessing the defects, one could refer to official international standards, e.g. ISO 4628 and ISO 2813. See table 2.

Table 1: Decisive performance requirements windows and doors wood

<table>
<thead>
<tr>
<th>Substrate</th>
<th></th>
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<tbody>
<tr>
<td>Jammed movable parts</td>
<td></td>
</tr>
<tr>
<td>Decay of wood/ Rotting</td>
<td></td>
</tr>
</tbody>
</table>

**Finishing**

<table>
<thead>
<tr>
<th>Loss of gloss paint</th>
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</thead>
<tbody>
<tr>
<td>Discoloration paint</td>
</tr>
<tr>
<td>Cracking paint</td>
</tr>
</tbody>
</table>

**Glass and glazing**

<table>
<thead>
<tr>
<th>Functioning double-glazing</th>
</tr>
</thead>
<tbody>
<tr>
<td>Damages glass</td>
</tr>
</tbody>
</table>

Table 2: Example performance requirements, paints to woodwork

<table>
<thead>
<tr>
<th>Performance requirements</th>
<th>Verification method</th>
<th>Percentage of measurements</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td></td>
<td>Criteria final acceptance control</td>
</tr>
<tr>
<td>Loss of gloss paint</td>
<td>ISO 2813</td>
<td>90% degree 0 10% degree 1</td>
</tr>
<tr>
<td>Cracking paint</td>
<td>ISO 4628</td>
<td>100% degree 0</td>
</tr>
</tbody>
</table>
PARTNERSHIP FORMS

Partnership forms applied by Dutch housing associations, especially for condition-based maintenance, can be described as: price and performance agreements for maintenance activities, long-term cooperation and lump sum performance-based contracting. Table 3 contains the most important characteristics of these partnership forms compared to the traditional contracting-out of maintenance activities.

Table 3: Characteristics partnership forms

<table>
<thead>
<tr>
<th></th>
<th>Traditional</th>
<th>Price and performance agreements</th>
<th>Long-term cooperation</th>
<th>Lump sum performance-based contracting</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>Objectives</strong></td>
<td>Housing association</td>
<td>Lowest price by competitive tender</td>
<td>Improved quality, budget certainty, direct cost savings, sustainable relationships</td>
<td>Improved quality, budget certainty, direct and indirect cost savings, sustainable relationships, improved maintenance process and innovations</td>
</tr>
<tr>
<td><strong>Risk bearer</strong></td>
<td>Housing association</td>
<td>Partly laid down by maintenance contractors</td>
<td>Maintenance contractors</td>
<td>Maintenance contractors</td>
</tr>
<tr>
<td><strong>Type of</strong></td>
<td>Detailed description Specification work</td>
<td>General agreement including performance requirements, standard activities and unit prices Performance agreement housing complex</td>
<td>General agreement including decisive performance requirements Partnership agreement and performance agreement housing complex</td>
<td>Performance agreement housing complex</td>
</tr>
<tr>
<td><strong>Contract period</strong></td>
<td>One work</td>
<td>Performance agreement: maintenance interval*</td>
<td>Partnership agreement: maintenance scenario</td>
<td>10-15-20 years or life span building component</td>
</tr>
<tr>
<td><strong>Role contractor</strong></td>
<td>Executor work</td>
<td>Adviser</td>
<td>Consultant</td>
<td>Consultant</td>
</tr>
<tr>
<td></td>
<td></td>
<td>Executor work</td>
<td></td>
<td>Executor work</td>
</tr>
<tr>
<td><strong>Type of requirements</strong></td>
<td>Descriptive Technical specifications</td>
<td>Performance criteria</td>
<td>Performance criteria</td>
<td>Performance criteria</td>
</tr>
<tr>
<td><strong>Contractual pricing</strong></td>
<td>Offer contractor Unit prices standard activities</td>
<td>Partly unit prices standard activities</td>
<td>Offer contractor</td>
<td></td>
</tr>
<tr>
<td><strong>Supervision by housing association</strong></td>
<td>Maintenance work Maintenance process</td>
<td>Maintenance process</td>
<td>Maintenance process</td>
<td>Maintenance process</td>
</tr>
</tbody>
</table>

* A maintenance interval is the period between two maintenance activities to the same building component (often compared with maintenance work to other building components), e.g. the cycle of paintwork (six or seven years).

**Objectives, type of commission, agreements and contract period**

The objectives of traditional maintenance contracting are to achieve the lowest price or best price-quality ratio by means of competitive tender. The maintenance contract is based upon a detailed specification of work to be performed.
The objectives of housing associations for price and performance agreements are improving quality, budget certainty, direct cost savings and the development of sustainable relationships. A housing association cooperates for the maintenance of its housing stock with a selected group of maintenance contractors. Those maintenance contractors contribute to the planning process. They give advise about performances and maintenance activities. Maintenance cycles and maintenance intervals are determined beforehand.

In a long-term co-operation objectives of the housing associations are to improve the maintenance process and manage the main outline of the process, to achieve cost savings and to promote innovation on the part of maintenance contractors. Maintenance contractors are acting as consultants. Contractors are consulted at an early stage of the process, and are therefore able to contribute their ideas concerning the best maintenance strategy within the constraints of the performance requirements, the expected exploitation period and the financial aspects applying to each housing complex. The contract duration is a maintenance scenario covering several maintenance intervals, eventually lasting the expected exploitation period of a housing complex. Lump sum performance-based contracting offers housing associations budget certainty and risks reduction over a long period.

Figure 1: Process model Traditional contracting-out (by tender) of maintenance activities
Figure 1 gives a picture of the procurement process model of traditional contracting-out of maintenance activities, used as a reference model. Figure 2 gives a picture of long-term cooperation for maintenance.
Performance measurement and control

In the case of traditional maintenance contracting a housing association supervises the maintenance work. The final acceptance control also involves an examination of performance directly related to the quality of the workmanship. In performance-based partnership forms the contractors themselves should monitor the degradation processes by performing performance measurements. The primary purpose of control and supervision by the housing association is to review the performance achievements and to identify problems with the necessary action. In price and performance agreements performance control is carried out after the execution of initial activities and maintenance intervals (final acceptance control), at specific intervals (period maintenance control) and at the end of the contract period (end control). In a long-term co-operation a housing association just assesses the completion of the work and the performance measurements done by the contractors. Performance control by independent third parties, may take the form of a random check rather than a full inspection of every performance requirement.

CONDITIONS FOR IMPLEMENTING PERFORMANCE-BASED MAINTENANCE PROCUREMENT

Performance-based maintenance procurement influences the internal organisation of both client as contractor, the selection of contractors and the appropriate tools and information provision.

The client organization

Prerequisite is willingness to co-operate. In the traditional organization structure, responsibility for procuring maintenance work often falls to the staff of a technical department of the housing association, such as the maintenance project managers. Traditionally, a fixed small group of maintenance contractors is involved, working with standard specifications. In fact, this is more a case of ‘ordering’ maintenance work. By contrast, ‘procurement’ implies that the choice of maintenance contractors is made at a tactical level within the organization, perhaps within a central procurement department. The selection and evaluation of contractors can be made at this level, based on purely objective criteria. Housing associations already working with maintenance partnership forms acknowledge the importance of an intelligent client role. They realize that they require people with different skills: fewer hands-on technicians and more maintenance process managers, being people with a thorough knowledge of procurement, legal issues and access to high-level technical expertise (even if this has to be brought in from elsewhere). The financial mandate to enter into long-term agreements is probably greater within a procurement department than on the operational level.

Selection, assessment and organization of contractors

Within performance-based partnership forms, the selection of maintenance contractors with whom the client wishes to work is extremely important. A housing association performs an appraisal of business risks based on information that allow them quickly to predict a contractor’s risk of success or bankruptcy. Besides, the housing associations currently use selection and assessment documents which they have developed themselves and which enable maintenance contractors to be selected objectively and systematically. For contractors a performance-based approach means major changes in working processes, methods and need for information. Especially
contractors need other skills and knowledge. In performance contracts the contractor takes the majority of the risk to supply an agreed performance level. In co-operation with suppliers and manufacturers, e.g. for paints and roofing systems, they have to guarantee life span of (new) materials and construction elements.

A positive development in this regard is that maintenance sector organizations are now working on their own system of quality assurance, with a certification system for affiliated members. An example is the development of a scan for performance-based competences of maintenance companies (Hoofdbedrijfschap Afbouw en Onderhoud 2003). Maintenance companies must be able to define and achieve the various performance levels for each type of maintenance and building components. Moreover, the contractors must be able to present and substantiate the (financial) risks attached to the various maintenance scenarios in a long-term cooperation. For example, they must be able to assess whether the likelihood of damage recurring, or damage being caused to other parts of the fabric, will increase given certain methods of carrying out the planned maintenance work.

Here, it is important that not only the management of the maintenance companies know the implications of such a system, but that the operational staff are also aware exactly what the new working method entails. This applies equally to the clients, among whom some disparity may exist between the intentions and practices of management and the manner in which the maintenance project managers wish to work. The traditional manner of thinking and working, with its focus on incidental maintenance interventions, is not simple to abandon in favour of one based on performance requirements. Difficulties in doing so are similar with training building inspectors performing condition surveys (Straub 2003).

CONCLUSIONS

Dutch housing associations are for many reasons considering the application of performance-based maintenance contracts. With this they expect to manage maintenance processes efficiently and effectively.

Dutch housing associations fear a disturbance of price competition using long-term performance-based contracts. Together with their desired flexibility in maintenance policy they restrict the co-operation period to maintenance work intervals.

The performance-based maintenance contracts and partnership forms are not comparable the UK-concept of partnering (e.g. Pearson 2004). According to Pearson both parties have to look for increase profitability, share risks, innovate and enhance security. In the Dutch case housing associations take the initiative and dictate working methods and solutions. The long-term cooperation form intends to be an effective partnering relationship with common objectives for all parties involved. A long-term partnership will enable both housing associations and contractors to derive the greatest possible advantage from the performance-based maintenance approach.

It is important to acknowledge that the client organization’s objectives are likely to change over time and external circumstances may change. Therefore any long-term cooperation must incorporate a degree of flexibility. Working with a housing complex-independent general agreement, partnership agreements and performance agreements offers the desirable flexibility. A lump sum contract lacks flexibility.

Clients and contractors should be aware that realization of each other’s objectives depends more on the process and the manner of working than on the type and duration of the legal contract. Based on the client’s starting position, the intended quality level, specific project characteristics and an assessment of the risks, the choice of cooperative structure and contract form can be made with the interests of each party in
mind. Lump sum performance-based contracting seems not to be appropriate for maintenance work. Availability of extensive specifications is a crucial prerequisite (Van Weele 2002). Having extensive specifications are a contradiction with performance-based contracting of maintenance. Contractors that agree to assume greater risks will charge higher prices. Most housing associations are not willing to pay off all the risks. Owner-occupiers with less knowledge may be willing to do so. Long-term cooperation with the client must be accompanied by improvements to process and performance, and by cost savings for client and contractor alike. Maintenance contactors can match their knowledge of degradation processes, condition-based maintenance and the practical activities involved to the circumstances of each project, such as location and usage, and to the principles and conditions applied by the client. In doing so, they must also make use of the knowledge of suppliers of products and materials.

REFERENCES


