

BUILDING PROJECT PROCUREMENT PROCESSES AND THE DEVELOPMENT OF ENVIRONMENTALLY FRIENDLY HOUSING SCHEMES

Deborah Ball and Chris Fortune

School of the Built Environment, John Moores University, Clarence Street, Liverpool L3 5UG, UK

The procurement of new socially owned rented housing schemes which embrace the principles of sustainable construction is presently being encouraged. The government argues that such an approach will not only contribute towards the development of a more eco-friendly built environment but that it will also facilitate a real cultural change in the construction industry towards the adoption of partnering as a procurement process. An ongoing postgraduate study at Liverpool John Moores University is aiming to develop a process model to facilitate the establishment of collaborative relationships between organisations seeking to procure sustainably developed socially owned housing schemes.

Accordingly, this paper addresses general issues connected with the procurement of environmentally friendly housing schemes for rent by considering in particular the perspective of the stakeholder organisations involved in the planning, design, and production of an award winning innovative housing scheme. The paper identifies issues related to the design and procurement of innovation in terms of sustainability from the perspectives of the tenants, (users), and the Housing Association (provider), who were some of the principal project stakeholders involved in the development of the 1999 green housing scheme of the year.

Qualitative data were collected via in-depth unstructured interviews with the key decision makers from the provider organisation indicated above. The data were analysed with the aid of the NUD*IST 4 software package. The emergent issues, grounded in the experiences of the parties involved in the scheme, have then been appraised and as a result the paper advances a preliminary conceptual model of factors which may need to be considered by others seeking to develop other environmentally friendly housing schemes on a similar basis.

Keywords: conceptual models, environment, innovation, procurement, social housing, sustainability.

INTRODUCTION

Recent government reports (Egan, 1998, Latham 1994) have called for supply chain partnering principles to be adopted by the construction industry and its clients as part of a process of fundamental change in the procurement practices commonly in use in the UK. At the same time the Housing Corporation (H.C.), which is the body through which the government funds the many Housing Associations (H.As) in the country who procure new housing schemes, have called for the incorporation of sustainable development principles into future housing schemes (DETR, 1999). As yet no consensus has been reached on either the optimum procurement process arrangements for these construction industry clients. Similarly, Gilham (1998) indicates that the extent to which sustainable development principles are understood and subscribed to by the differing stakeholder organisations, that could form the streamlined

procurement processes, need to be made more explicit. It was decided to set up a post-graduate study that had amongst its aims the development of a process model that could be used by project stakeholders to initiate change.

That study is presently ongoing and this paper reports work undertaken as part of a preliminary scoping investigation into the topic. The main thrust of the paper is concerned with the development of a conceptual procurement process model that has been induced from data collected from some of the main project stakeholders involved in an award winning 'green' housing scheme at Harlow Park in Liverpool. The paper is structured so that it sets the scene and context for the preliminary study by firstly identifying the significance of the social housing sector as a client group to the construction industry and then reviewing literature related to building project procurement and sustainability in order to provide a mandate for the study. The paper then describes the main features of the Harlow Park scheme, justifies its approach to data collection and analysis and concludes by advancing the conceptual model indicated above.

THE SOCIAL HOUSING SECTOR

Housing is an important sector of the construction industry, with total activities (new build, repairs and maintenance) representing about 40% of total construction output (Ball, 1996). The housing sector has been placed at the forefront of issues central to the efficiency / quality / sustainable development research agenda following the publication of the Egan Report (1998) and governments sustainable construction report (DETR, 1999). Innovation is seen as a key to achieving the objectives set by both agendas.

Housing providers in the private sector have conventionally tended to look for profits mainly from land gain rather than seeking to develop improvements through efficiency gains or product innovation (Gibb, 1999). The public (socially owned) rented sector has been restructured by government policy in the past twenty years. The adoption of strategies that reflected pressure on the government to contain public expenditure has seen 1.6 million homes transferred from local authority ownership to private homeownership between 1979 and 1999 (DETR, 2000). Malpass (1999) asserted that the adoption of government policies have virtually brought to an end new building by local authorities and resulted in H.As, which are not-for-profit organisations, now becoming the main providers of socially owned housing for rent.

In England the H.C. is the government quango responsible both for regulation and funding of such not-for-profit organisations. Although there are more than 2400 associations in Britain only the largest 10% are involved with the procurement and development of new building schemes. These large associations have attracted the biggest share of capital investment since 1989 and therefore they have led the growth and transformation of this sector in recent years. H.As have changed significantly since the late 1980s and are now subject to close regulation and control by the government through the H.C. that affects the level and location of activity.

Egan (1998) recommended that H.As be used as the vehicle that the construction industry should use in its search for improvements because they are an influential client group that are homogenous in nature. As a result it is now government policy that all Non- Departmental Public Bodies (NDPBs) including the H.C., must fully implement the principles set out in the Egan Report by the year 2003/2004. By this time all funding allocations from the HC for the construction costs of projects will be

subject to conditions of Egan compliance. This places changes to the building project procurement processes and the introduction of innovation near the top of H.As' research agenda.

SUSTAINABILITY, INNOVATION AND PROCUREMENT

The responsibility of the construction industry to address issues raised by the sustainable development debate has given rise to the concept of sustainable construction. Frameworks for achieving 'sustainable or green or environmentally friendly' construction and have been suggested by Kibert (1994), Hill and Bowen (1997) and commented upon by Ofori (1998). Recent literature by Gilham (1998), Palmer *et al* (1997), Curwell *et al* (1998), and Curwell and Cooper (1998) reveals that as a concept 'sustainable development' is widely perceived as being made up of 'fuzzy buzzwords' and is open to many different interpretations. Sustainability models such as those advanced by Kibert (1994) and Bowen and Hill (1997) viewed sustainable development as being about the intersection of social, environmental and economic goals. The UK Government has developed a strategy to address sustainable development by identifying priority areas for action, setting targets, and developing indicators to monitor and measure progress (DETR, 1999). Commentators such as Levett (1998) see this model as an advance on the existing policies that treated social and environmental goals as the same or dependent on economic goals or other development policies that focused on economic goals. However Levett's (1998) 'nested' models of sustainability place the environment and its protection as a precondition for all social and economic activity including new building projects.

How is the environmental impact of new housing schemes assessed? The available literature reveals that reliable assessment of environmental impact is a difficult task. Frameworks such as Environmental Standards Award, BREEAM, GBC, and BEQUEST have been developed and others continue to be developed in an attempt to assist, construction professionals amongst others, in the determination of a project's environmental impact. It is beyond the scope of this paper to attempt any assessment of their performance. However, if stakeholder organisations wishing to become involved in building project procurement relationships are able to make more explicit 'where they stand' on issues related to sustainable development, then such a mapping exercise would identify any differences in understanding, value and approach. If these differences between potential stakeholder organisations are not addressed then they may lead to effective barriers to change. Gilham and Cooper (1998) made clear that once such differences were made more explicit, any change processes subsequently required for effective interaction between the stakeholder organisations concerned could then be more effectively managed.

Goodchild and Chamberlain (1999) in their recent review of procurement practices used by Britain's H.As defined procurement as 'the process through which a purchaser obtains a product or service which is at the heart of the development process in social housing and is crucial to the implementation of publicly funded housing programmes'. Recent literature on building procurement in general indicates that the widespread adoption of partnering is seen by many as being the way in which the construction industry can deliver more streamlined procurement processes to their clients. However, the available literature also reveals that partnering appears to be a 'confused' concept that means different things to different people, Cox and Townsend (1998), Ellison and Miller (1995), Bennett and Jayes (1998). Therefore, it could be said that as yet, there is no definition of partnering which is commonly held amongst

client organisations in general and H.As in particular. H.A.s have been encouraged by the government in the wake of the Egan report (1998) to adopt partnering procurement processes. Goodchild and Chamberlain (1999) revealed that as yet there is little evidence of partnering experience amongst the large H.As that are involved in the development of new building projects.

Some of the larger local Merseyside based H.As have formed themselves into a benchmarking club and are now beginning to address the issue of how to introduce the principles of sustainability into their procurement processes. One of the H.As in the benchmarking club has been involved in the development of a new house building project that was recognised as being the 'green' housing scheme of the year in 1999. Thus it was an opportune time for the research team to work with that H.A. and their stakeholder organisations, to look in detail at the processes used to procure their innovative scheme. The aim being to develop a procurement process model that can be used by organisations wishing to embrace the called for change in their building procurement arrangements.

ENVIRONMENTALLY FRIENDLY HOUSING SCHEME – HARLOW PARK, LIVERPOOL

The construction of twenty-three new houses for the Harlow Park Housing Co-Operative in central Liverpool is an example of an environmentally friendly housing scheme. The scheme, completed in 1999, has subsequently gained a number of national awards for the innovative nature of its environmentally friendly design. It was developed in conjunction with CDS Housing and, unlike previous experimental 'green' schemes it attracted only normal development grant funding from the H.C.. The scheme was to re-house a group of existing tenants who had previously been housed in cold, damp inadequate walk-up deck access flats owned by the local authority. It included the following environmentally friendly features:- (i) 'Ecolite' timber frame system which incorporates lightweight masonite I section beams in its structure, (ii) open span internal spaces that made use of natural daylight and unused attic space, (iii) recycled newspaper as a sprayed insitu external wall insulating material, (iv) energy efficient heating and hot water systems, (v) low energy consumption and costs-in-use which met the BRE environmental standards, (vi) use of recycled bricks and other materials from renewable sources in order to reduce the environmental impact of construction and minimise waste. As a result the scheme's flexible internal layouts met Lifetime Homes standards and achieved an NHER rating of 10 out of 10. The main innovative feature of the housing scheme's procurement process was the way in which CDS actively sought to include the prospective tenants of the scheme in its development decision making. This ensured that the tenants (or users) themselves became fully involved with all phases of the design and ultimate procurement of their homes.

Other stakeholders in the development process of this innovative housing scheme have been indicated in Fig. 1 and were the key personnel from CDS H.A (the providers), their architectural and quantity surveying consultants (the advisors) and their building contractors (the constructors). Given the potential significance of the development itself it was considered opportune by the research team to use the scheme as a case study from which data could be gathered. It was suspected that such a scoping or preliminary study would identify not only the major barriers that the stakeholder groups faced in the procurement of this environmentally friendly housing

scheme but also the ‘soft gates’ by which such procurement problems had been resolved.

DATA COLLECTION AND ANALYSIS

The research called for the evaluation of the project stakeholders own accounts of what they each considered to be the main barriers that faced the procurement of the Harlow Park scheme, as well as their views on the strategies needed for their resolution. Given the nature of the research problems it was resolved to adopt an interpretivist approach and make use of a qualitative research methodology. Such an approach would enable the study to generate a conceptual model grounded in actual experience. The qualitative data were initially collected through a series of unstructured in-depth conversations with key personnel from the stakeholder organisations identified above. The data were collected in distinct phases that reflected the incremental involvement of each of the stakeholder organisations in the development process that is illustrated in Fig. 1. Accordingly it was resolved to collect data from the key decision makers in the ‘providers’ organisation, namely the director of development (interviewee 1) and the development officer responsible for the scheme within CDS Housing Association (interviewee 2).

Data collected from these key decision makers within the ‘provider’ organisation had the potential to generate evidence that would encompass each of the other main development phases shown in Fig. 1. This would facilitate the formulation of a conceptual model of the whole process. Strauss and Corbin (1990) indicate that in order to commence data analysis it was necessary to become fully immersed in the material gathered from the in-depth unstructured non-directive interviews.

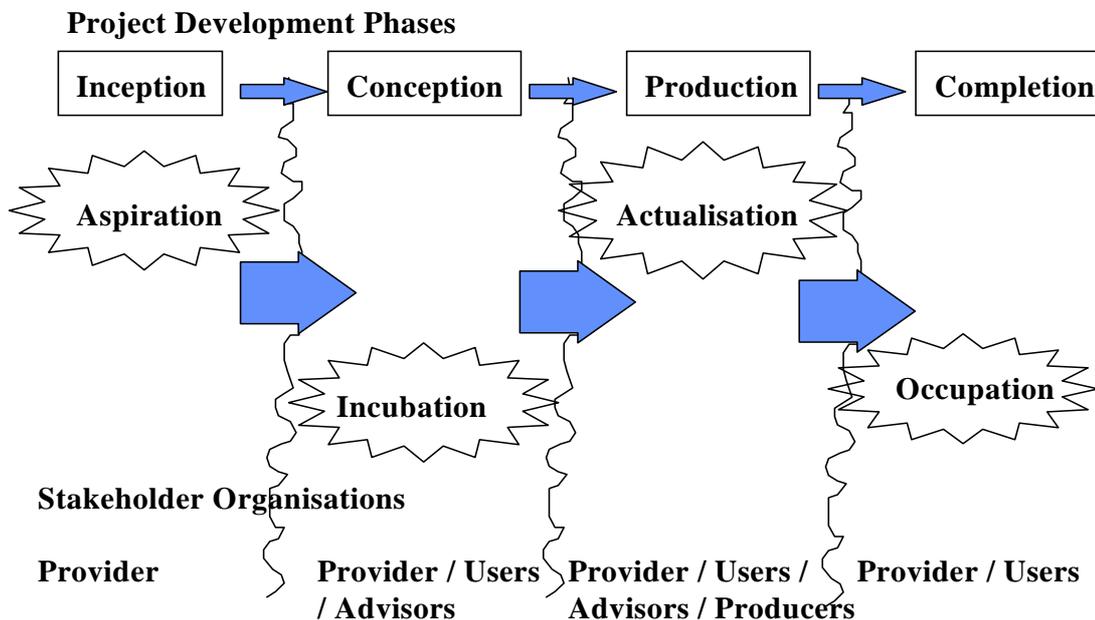


Figure 1: Stakeholder organisations and building project development phases

The analysis was facilitated by using the NUD*IST4 qualitative data software package and a preliminary data-analysis framework was developed which initially had three main categories of procurement process factors that reflected the rigid product focused RIBA design stage labels that have been indicated in Fig.1. Thus the data

from the initial round of interviews were analysed to confirm the appropriateness of the main process model selection categories and to identify any of their emerging sub-categories and properties. Each main category is now considered in turn,

Inception

When the data that were coded against this preliminary category were reflected upon and the context in which the comments were made further considered it became apparent that the interviewees saw the project procurement process as a series of 'barriers' which needed to be overcome. For instance comments such as, '*from its starting point as an environmentally friendly scheme its brief ... with that as its starting point I would say that it (the scheme) was significantly different*'^(int 1 tu:4,7) and '*I have been responsible for the conception of the scheme, the idea ... because green housing has been a strong interest of mine*'^(int.2 tu:6-8) indicated that the initial stage of the project had a different starting point from the norm which in turn caused it to have a more softer or blurred initial focus than usual. As a result it was decided to re-label this category 'project aspiration' in the emerging grounded data-analysis framework.

The remaining data that had been coded against this category were then considered and comments such as, '*a lot of the forces for change were due to the personal interest of the staff*'^(int1 tu:38), '*I think the main driving force (for the scheme) was the green policy (adopted by the Housing Association)*'^(int 1 tu:53), '*it was unusual to have a staff member with the technical knowledge to impart to others ... to be very useful*'^(int 1 tu:57) '*since we had the green policy, the idea was to have a pilot scheme to try out the ideas*'^(int 2 tu:10,11) '*the Harlow Park co-operative had been kicking around as a group for some years and were now being considered for funding ... and so we put it (the environmentally friendly scheme) to them as an offer*'^(int 1 tu: 65,66), were reflected upon. As a result it was decided to include 'operational, opportunistic, and organisational' as sub-categories of the main category of 'project aspiration' against which data could be coded in the emergent grounded data-analysis framework.

Conception

The data gathered from the interviewees revealed that they saw moving to the next phase in the procurement process as not being an instant process. Comments such as, '*there was quite a long period of negotiation when we considered how far we could go (with the green agenda)*'^(Int 1 tu:30,31) and '*we then had to find a scheme suitable to act as a pilot*'^(Int 1 tu: 65) indicated that this main category should be re-labelled as 'incubation' to reflect the actual process on the ground. The remaining data that had been coded against this category were then considered and comments such as, '*they thought (the tenants) well we'll go along with the scheme and see what we will get out of it*'^(Int 1 tu:69), '*in liaising with the Board and getting their approval it was fair to say that the green agenda was not high on their agenda*'^(Int 1 Tu: 179), '*in terms of our consultants (quantity surveyors) we deliberately chose a fairly cynical hard edged outfit ... to keep the other lot (the architects) with their feet on the ground*'^(int 1 tu 207,209), '*the tenants preferred it all on the outside and that necessitated changing the layout again*'^(Int 2 tu: 150), were reflected upon.

As a result it was decided to include 'rewards, resources, and relationships' as sub-categories of the main category of 'project incubation' against which data could be coded in the emergent grounded data-analysis framework.

Production

The data collected from the interviewees indicated that the initial coding label applied to next phase in the procurement processes related to this environmentally friendly scheme was inappropriate. The term ‘production’ in the context of the RIBA plan of work implies that the focus of activity is now on the construction of the project. However comments such as, ‘*if the tenders (for the scheme) had been awful then we would have had to scale back to the point of being uncomfortable with it being considered as a green scheme*’ (Int 1:tu 158,159), ‘*even after housing corporation funding had been allocated the scheme stood still for a year because of the attitude of the local authority ... we ran into a real brick wall*’ (int 1 tu: 114,117) suggested that a more appropriate coding label for this main category of data within the initial data-analysis framework would be ‘project actualisation’. The remaining data that had been coded against this category were then considered and comments such as, ‘*the biggest problem we had was finding demonstrators to take the co-op tenants to who were not from the brown rice brigade ... we had to say forget the lifestyle look at the walls*’ (Int 1 tu:96,97), ‘*so there was no room for manoeuvre in that respect so we again talked to the tenants about how they would prefer to have the layout*’ (int 2 tu: 138), ‘*because we had long discussions with the tenants about it (as the tenant group had been expecting central heating to be installed) we finally won them over and persuaded them to give it a try after they had voted on it*’ (Int 2tu: 223), were reflected upon.

As a result it was decided to include ‘endurance, education, and expectation’ as sub-categories of the main category of ‘project actualisation’ against which data could be coded in the emergent grounded data-analysis framework.

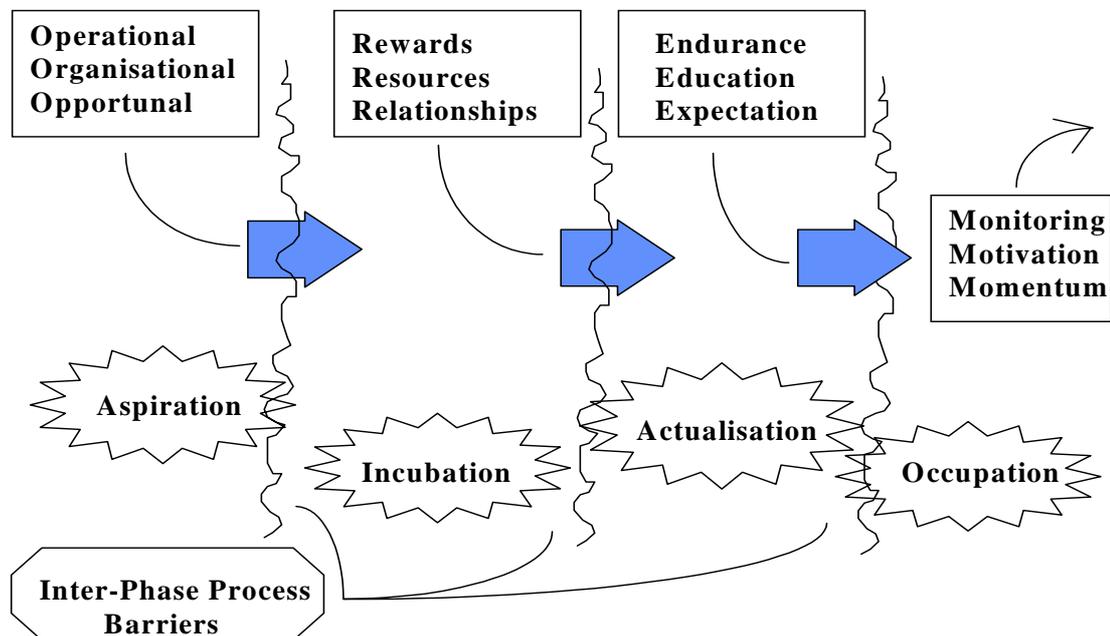


Figure 2: Inter-phase barriers / gates and the green project procurement process

Thus this exploratory work allowed an initial conceptual model to be formed which is illustrated in Fig. 2. Fig. 2 shows each of the inter-phase ‘barriers’ and the emerging ‘soft gates’ that have been collected together and expressed as an indicative proposition, as defined by Strauss and Corbin (1990). Such a proposition can be used

to form an emergent grounded-data-analysis framework for subsequent rounds of data collection. The indicative proposition has been set out as,

The progression of the procurement processes associated with an environmentally friendly socially owned rented housing scheme depended upon the interrelationship of factors related to project aspiration (opportunistic, organisational, operational), project incubation (rewards, resources, relationships), and project actualisation (endurance, education, expectation) in order to be achieved project occupation.

CONCLUSIONS

This work has set out a case for the development of a fully grounded process model of practices needed to facilitate the establishment of collaborative relationships between organisations seeking to procure sustainably developed socially owned housing schemes. The paper has set the context for the study by reviewing relevant literature and reporting data collected from a relevant case study based on an award winning environmentally friendly housing scheme. The preliminary data analysis generated an initial conceptual model of the 'barriers and soft gates' by which it is suspected a green building project procurement process may progress. This preliminary model was then expressed as an indicative proposition which will be used to shape and focus the collection and analysis of further data from practitioners in the field.

REFERENCES

- Ball, M (1996) *Housing and Construction: A Troubled Relationship*. (Bristol, Policy Press in association with the Joseph Rowntree Foundation)
- Bennet, J and Jayes, S (1998) *Seven Pillars of Partnering*. Reading Construction Forum, Thomas Telford
- Cox, A and Townsend M (1998) *Strategic Procurement in Construction*. Thomas Telford
- Curwell, S and Cooper, I (1998) The implication of urban sustainability. *Building Research and Information*, **26**(1): 17-28
- Curwell, S Hamilton, A and Cooper, I (1998) The BEQUEST network: towards sustainable urban development. *Building Research and Information*, **26**(1).
- DETR (1999) *A Better Quality of Life: A Strategy for Sustainable Development for the UK*. Department of the Environment, Transport and Regions, London, May
- DETR (2000) *Quality and Choice: A decent Home for all*. The Housing Green Paper, Department of the Environment, Transport and Regions, London
- Egan, J (1998) *Rethinking Construction*. HMSO, London
- Ellison, S D and Miller, D W (1995) Beyond ADR: working toward synergistic strategic partnership. *Journal of Management in Engineering*, **11**(6) November.
- Gibb, K (1999) Regional Differentiation and the Scottish Private Housebuilding Sector. *Housing Studies*, **14**(1): 43-56
- Goodchild, B., Chamberlain, O (1999) Building Procurement in Social Housing in Britain: A Review of the Main Issues. *Housing Studies*, **14**(6): 861-880
- Gilham, A (1998) Strategies for change - understanding sustainable development in a construction industry perspective. *Proceedings of the CIB World Congress*, Gavle, Sweden

- Gilham, A and Cooper, I. (1998) Exploring the cultural dimensions of construction - dealing with difference to achieve sustainable development. *Proceedings of the CIB World Congress*, Gavle, Sweden
- Hill, R.C., Bowen, P.A. (1997) Sustainable Construction: principles and a framework for attainment. *Construction Management and Economics*, **15**: 223-239
- Kibert, C.J (1994) Establishing Principles and a Model for Sustainable Construction. In *proceedings of 1st International Conference of CIB TG16 on Sustainable Construction*, Tampa, Florida, 6-9 Nov
- Latham, M (1994) *Constructing the Team*. HMSO, London
- Levett, R (1998) *Monitoring, evaluation and appraisal of urban housing development, project on 'urban housing capacity and the sustainable city'*. Joseph Rowntree Foundation / TCPA
- Malpass, P. (1999) H.As and Housing Policy in Britain since 1989. *Housing Studies*, **14**(6): 881-893
- Ofori,G. (1998) Sustainable Construction: principles and a framework for attainment – comment. *Construction Management and Economics*, **16**: 141-145
- Palmer, J. Cooper, I and Van der Vorst, R. (1997) Mapping out fuzzy buzzwords - who sits where on sustainability and sustainable development. *Sustainable Development* **5** (2): 87-93
- Strauss, A and Corbin, J (1990) *Basics of Qualitative Research, Grounded Theory Procedures and Techniques*. Sage Publications, London