Department for Education: the James Review of Capital Investment in Schools

Response from the Construction Industry Council

September 2010

Review of England's School Building Programme

Members of the Construction Industry Council (CIC) have always had an active involvement in the school building programme. Representing the construction professions, research and technology associations as well as specialist construction organisations, CIC has monitored the school building and repair programme. It has done this through the promotion of its Design Quality Indicator (DQI) as well as active engagement with Partnerships for Schools (PfS) and the Building Schools for the Future (BSF) programme. CIC hosted a major seminar on school building for members, submitted written and oral evidence to the enquiry by a Parliamentary Select Committee and has maintained regular liaison with PfS.

Many of the professional bodies who comprise the membership of CIC (a full list of members is attached) are actively involved in the design of new schools as architects, builders, architectural technologists, surveyors, structural engineers, building services engineers, facilities managers and engineering and design consultants or similar. Some of our members, for instance the Chartered Institution of Building Services Engineers (CIBSE) have a School Design Group focussing on the operational performance of BSF schools.

CIC has asked its members to submit their views particularly in relation to the "Design and Specification" issues for the school building programme review and the following information represents a commentary from our members.

Looking beyond BSF

The complaint has often been made to CIC (particularly in the early days of the BSF programme) that the bureaucracy of much of the BSF programme was costly and inefficient and resulted in unnecessary expense for teams who draw up designs which are never used; nonetheless it is acknowledged that the school building programme has resulted in the development of a considerable body of specialist knowledge in designing, building and refurbishing schools.

It is important that the database of exemplar designs, the concept of minimum design standards and a continuing focus on issues of whole life costing, sustainability and "value for money" be retained.

BSF did consider pupil demographics on an area basis and so it is hoped that a new system (which will include academies and "free" schools) will not be centred on single schools for single communities. The re-organisation and rationalisation of the school estate needs to be done on a wider local basis and will present local

authorities with the opportunity to free-up sites, release value in them and use these funds to upgrade the remaining school buildings.

Quality of Design

Although a key part of educational transformation concerns teaching in the classroom, the quality of school buildings is also of vital importance. The long term vision of energy efficient buildings that are flexible and adaptable in use, continues to be relevant in a society where educational attainment is still vital for long term national economic growth. Overall the aim must be to work towards creating flexible, adaptable spaces which can serve as community focal points depending on local needs providing for a diversity of learning. For instance, a school building could also function as a local library or village hall outside school hours. Today‘s emphasis on “personalized learning” needs to be balanced with new ICT requirements (which will require periodic upgrading) and the need to cater for specialisms and the consequent diversity of spatial needs.

Quality of design can only be assessed if it can be measured. To this end, the Design Quality Indicator (DQI) for Schools is a process which actively involves the school community in the design, construction and refurbishment of school buildings. It is used at all stages of a building’s development and plays a fundamental role in contributing to the improved quality of school buildings. Crucially DQI for schools gives a unique opportunity for a very wide range of ‘Building users’, the staff, the parents, the governors the local community and the pupils to come together and set priorities and aspirations for their new or refurbished building. They will take into account many factors such as the scale and proportion of a school building; a functional and efficient layout; build quality and durability; grounds, landscaping and space use; accessibility; environmental services and energy use as well as acoustics; to name just some of the main elements. The DQI tool facilitates those same ‘users’ to appraise how well the design meets those priorities and aspirations and influence any improvements; it goes on to allow them to judge the success of the completed building in use.

It is important that the use of this tool is continued so that a wide range of building users has an effective voice in securing buildings that are well designed and fit for purpose. When used well it offers a great sense of community ownership of the resulting buildings with the consequential advantages that brings. It further contributes to the national database of the impact of design quality decisions and outputs can be maintained to inform future decisions about the school estate and to achieve optimal benefits for all parties to the process.

Design process

Last year, following widespread complaints, Partnerships for Schools reviewed its entire procurement processes, in a bid to reduce timescales and costs; one problem being that designers often had to produce multiple designs which were then rejected. This resulted in improvements through the use of exemplar designs, pre-qualification questionnaires and synchronised meetings which improved decision making. However, some of the problem lies with EC procurement rules, which place a legal requirement to test both a bidder and the bid, and these rules will not go away post-BSF.

In a changed school building environment with more focus on refurbishment rather than new build, the future framework is very unclear. Whatever system emerges, opportunities for small firms (both in terms of design and construction) need to be maximised as this was widely seen to be a failing of the BSF programme.

In the creation of zero-carbon school buildings, awareness of operating costs also needs to be considered. Low carbon design is not a cheap build option and awareness of the whole-life costs of a school need to be viewed as a major on-going factor.

These operational requirements need to be factored into design at a very early stage. Classrooms and lecture theatres are complex structures from an environmental stance. They need to perform well acoustically both for the spoken word and for music. Background noise control has to be taken into consideration. These spaces also have high heat loads which are of a transient nature as pupils come and go. Ventilation, lighting and thermal control are all important areas.

A common criticism of low carbon buildings is that design targets for energy use are often not achieved. The task of designing, engineering and facilitating learning spaces to support a mass educational system also has to involve post-occupancy evaluation to find out how teachers, pupils and support staff use and operate the building.

Legislation, Design Standards and Design Guidance

Tim Byles reported to the Education Select Committee on 27 July 2010 that in autumn 2009, when Partnership for Schools was asked to take responsibility for the design criteria for school building, there were 88 pieces of guidance on design. He said that an initial process of rationalisation had taken the number down to 40 and that currently PfS is working to get a framework of three elements to take into account.

The general trend towards the proliferation of guidance and regulation is a source of concern to CIC members. Some have contended that the sheer volume of information produced is self-defeating. It is interesting to note that the new Parliamentary Under Secretary of State at Communities and Local Government, Andrew Stunnel MP, is currently embarking on an exercise to assess ideas about the Building Regulations, both in terms of scope and compliance.

While in the future, there may be a more individualised approach, it is hoped that the principles of sustainability, flexibility, the good use of internal as well as external space and the integration of ICT with the building process can be retained within a more local framework.

If, as expected, there will be more emphasis on renovation or even the refurbishment of existing buildings to be re-used as schools, planning policies and requirements such as the Change of Use Regulations will need to be modified to permit this more readily than at present.

Please find attached to this document three appendices of additional detailed comments provided by the Chartered Institution of Building Services Engineers (CIBSE) , the Institution of Structural Engineers (IStructE) and the Landscape Institute (LI) all of whom are leading members of CIC

Graham Watts OBE
Chief Executive
Construction Industry Council

Appendix 1

CIBSE RESPONSE to CIC Request for Schools Information

by Dr Dejan Mumovic (edited by Alex Nenadovic 27 July 2010)

In the last 3 years the members of CIBSE School Design Group have contributed to a number of key research projects focusing on various operational performance aspects of BSF schools.

School buildings are complex, dynamic, socio-technical systems seeking to provide solutions to a multitude of ill defined and conflicting issues including the basic truth that the built environment is fundamental to the occupants' sense of well-being and it is the totality of this idea that we need to understand and appreciate. Within schools, classrooms and lecture theatres are more complex then most structures environmentally. They usually have high heat loads, which are of a transient nature as pupils come and go, and from lighting which changes from class to class depending on the teaching methods used, and they generally have full or nearly full occupancy. Classrooms and lecture theatres also need to perform well acoustically, both for the spoken word and for music, and as sound amplification is generally not used, background noise control is critically important. All these factors, in addition to energy use place constraints on the ventilation design, and if this is poor, it can lead to the deterioration of Indoor Air Quality (IAQ) and thermal comfort. Although complex, achieving the balance point between IAQ and energy use is unfortunately just one of many socio-technical engineering challenges in school buildings. Based on a number of research projects and professional judgement CIBSE School Design Group believes that we need a more holistic approach to the assessment of school buildings.

Past attempts to reduce carbon emissions from existing school buildings and current ongoing efforts to deliver low carbon school buildings conducive to learning have had little success. Reasons for this include a poor understanding of: (a) how to design, engineer and facilitate learning spaces for changing pedagogical practices to support a mass education system, and greater student diversity, (b) how pupils and teachers use energy in school buildings, (c) how pupils and teachers interact with new technology, (d) how they respond to socio-technical energy conservation initiatives, (e) how the overall indoor environment quality affects the learning performance of pupils and productivity of teachers. The absence of readily available energy use data matched with descriptors of physical form, indoor environment quality parameters, occupant use of space and behaviour affects the accuracy of predicted energy consumption at the design stage and prevents the development of a transparent and validated strategy for modelling energy use in school buildings while providing indoor environment parameters required to provide a conducive learning environment. Therefore, it has to be concluded that the engineering science of designing learning environments is remarkably underdeveloped and that a step change in the approach to the design of school buildings is urgently needed.

Having this in mind the members of CIBSE School Design Group would be happy to provide further oral evidence to the Department of Education on the following projects:

PROJECT 1:
DCLG Study on Indoor Environment Quality Performance of BSF Schools in England

Contact:
John Palmer (AECOM), Dr Dejan Mumovic (University College London)

Main Conclusions:
This study of 8 BSF schools showed that while the acoustic standards are demanding it was possible to achieve natural ventilation designs that meet the criteria for indoor ambient noise levels when external noise levels are reasonably low. The most telling conclusion of the research is the degree to which most classrooms in the sample have met the requirement of not exceeding 1500 ppm of CO2 averaged over the day but how few will meet the need to readily provide 8 l/s per person of fresh air under the easy control of the occupants. It would seem that the basic requirement of 1500 ppm of CO2 is achieved as a consequence of the window areas being just sufficient to provide that level of fresh air (approximately 5 l/s per person) at low and intermittent occupancy.

Reference:
Mumovic, D., Palmer, J., Davies, Orme, M., Ridley, I., Oreszczyn, T., Judd, C., H.A. Medina, Pilmoor, G., Pearson, C., Critchlow, R., Way, P., (2009) Winter Indoor Air Quality, Thermal Comfort and Acoustic Performance of Newly Built Schools in England, Building and Environment; Vol. 44, Issue 7, 1466-1477

PROJECT 2:
Predicted vs. Actual Energy Performance in Schools

Contact: Professor Mike Davies (University College London)

Main Conclusions:
This study of 15 BSF schools analysed discrepancies between predicted and actual energy performance of schools. This study aims to give clients a range of likely energy use instead of the single predicted energy consumption figure, and to help clients understand factors which will affect the energy use and what they can do about it.

Reference:
Demanuele, C., Tweddell, T., Davies, M. (2010) Bridging the Gap Between Predicted and Actual Energy Performance in Schools; CIBSE School Design Group Bulletin No.3, pp. 20-22

PROJECT 3:
Assessing the Role of Post occupancy Evaluation in the Design Environment – A Case Study Approach

Contact: Dr Ian Pegg (Buro Happold)

Main Conclusions:
This study of 5 BSF schools analysed operational performance of five city academies designed by Buro Happold. The findings provided useful initial energy benchmarks for other studies and highlighted that many building performance issues are beyond control of the services engineers due to their low team status.

Reference:
Pegg, I (2007) Assessing the Role of Post Occupancy Evaluation in the Design Environment – A Case Study Approach, Engineering Doctorate in Environmental Technology, Brunel University

PROJECT 4:
Intelligent School Buildings (a range of school related projects)

Contact: Professor Derek Clements Croome (Reading University)

Main Conclusions:
A number of research studies focus on school related topics such as the impacts of ventilation rates on learning performance of students and processes involved in achieving design quality in schools. The paper below gives an assessment framework which could be used to design schools fit for the challenges of the 21st century.

Reference:
Clements-Croome, D., MacMillan, S., Mumovic, D. (2010) *Designing Intelligent School Buildings*, CIB World Congress, May 2010, Salford, UK

PROJECT 5: Survey of Obstacles to Successful Low Carbon School Design

Contact: Dr David Coley (Exeter University)

Main Conclusions:
The object of this research is to identify **obstacles** to successful low carbon school design and then to survey design teams to rate these obstacles according to how difficult they are to overcome. The research is intended to be useful to design teams who are involved in a low carbon school design in the future. It should highlight potential obstacles to the design and allow the team to either avoid or mitigate for the consequences of that obstacle.

Reference:
Ongoing study – no published papers yet;

PROJECT 6: School Carbon Management Plan: UCL Evidence

Contact: Dr Dejan Mumovic

Main Conclusions:
Based on a comprehensive survey of 286 UK building professionals, this project identifies the major issues of importance to energy efficient provision of indoor environmental quality in school buildings including design time allocated, design conflicts and lack of detailed life costing studies.

Reference:
Mumovic, D., Dasgupta, A., Prodromou, A., Arora, P. (2010) Towards a Roadmap to Sustainable Schools, IAQVEC 2010, Syracuse, New York, USA

Full report could be found on:
www.cibse.org/content/Knowledge_Bank/Appendix%20to%20CIBSE%20response%20-%20UCL%20EVIDENCE.pdf

In addition to those projects we would like to highlight the following case studies:

Case Studies A: Aufkirchen School in Germany Passivhausschool (CIBSE School Design Group Bulletin No.3)

This low carbon school cost no more than a typical conventional school of the same size. The 3649 m2 school is heated from a 60kW gas boiler (which is a tiny fraction of that installed in the UK for a school of its size). Measured heating energy use is 13.5 kWh/m2 compared to 158 kWh/m2 median for maintained schools in England. The school uses exposed concrete walls to provide accessible thermal mass and openings in the corridor floor to thermally connect the two levels.

Case Studies B: Low Carbon Awards 2010 New Project – City Academy Hackney (Supplement in CIBSE journal)

Success of this project was down to the involvement of Engineers before the building even had a shape. The school makes cutting edge use of natural daylight via four 'light wells' that run through the centre of the building allowing light to flood into the heart of the structure and warm air to rise up and stop classrooms overheating. Using natural ventilation instead of fans is projected to save 180,000 kWh/year with instant payback. Daylight usage projected to save 85,000 kWh/year with instant payback.

Photovoltaics will produce 16,000 kWh / year with a payback of 41 years (including grant funding).

A ground source heat pump will remove the need for 315,000kWh of gas. Payback will be in 95 years (including grant funding).

Case Studies C: Langley Academy, Slough (CIBSE School Design Group Bulletin No.3)

The first step taken was addressing the environmental design principles of the building. The lecture theatre and drama room were located on the western side in order to shield the classroom wings from the afternoon sun. External shading was used to control solar gain and also increase 'usable daylight,' by reducing the use of internal blinds. Thermal mass was used by providing exposed slab soffit to avoid summer overheating.

Appendix 2

Comments from the Institution of Structural Engineers

What was good about BSF?

Consensus is that the UK had (and to some extent still has) a problem with its school building stock, from the point of view of:

- Physical condition (mixture of Victorian, post WW1 and 1960s stock, now failing in terms of fabric deterioration)
- Layout (not well-suited to modern curriculum and societal situations)
- Performance (in terms of both layout flexibility and energy use)

BSF represented a major effort to address these issues by providing new building stock, hence was generally seen as a good thing.

BSF also offered the ability to investigate new layouts, better-suited to modern teaching methods, on an individual (non-modularised) basis. This resulted in the possibility of providing inspirational, high quality, holistically-designed facilities to a higher technical standard than had been possible previously.

What was bad about BSF?

Not all schools were able to meet the standards set by the BSF Exemplar Schools. Options of different procurement routes (PFI, D&B) led to different levels of design quality being delivered (e.g. PFI schools with ongoing FM responsibility: emphasis on high quality construction, future flexibility, longer design life. D&B schools with responsibility for construction delivery only: emphasis on cheap, quick construction with some evidence of non-ideal solutions being used, subsequently failing to perform well in areas such as acoustics and internal environmental conditions).

Serious concerns have been voiced about the amount of design time (intellectual effort) wasted through the over-complex nature of the design and the procurement processes. The issuing of tenders to an unrealistically large number of competing teams was seen as being particularly wasteful, and ultimately counter-productive, as the failure of a delivery team typically would cost far more to rectify than the cost reduction gained through forcing competition through overloading tender lists. There is also some anecdotal evidence of teams with inadequate capability being included on tender lists, in order to increase competitive pressure.

Are the levels of design quality appropriate?

Typically ‘yes’ for PFI / FM schools; sometimes ‘no’ for D&B schools, for the reasons stated above.

It is worth noting that some excellent projects have been delivered, of which we should be proud.

ICT – in or out, tail wagging the dog?

ICT is seen as a very important issue both now and into the future, however the aspiration to use ICT to deliver individual, personalised learning is seen as being an unrealistic aim. It is seen as important to design for future flexibility of ICT installation - best achieved by including a realistic structural zone for containment (75mm to 100mm finishing / services screed provides a good compromise in terms of load accrued versus space occupied and ease/cost of alteration in the future).

Design for flexible future ICT provision while working with current technology, rather than assuming a fully ICT- driven curriculum and providing fully adaptable structural layout based on doubtful assumptions about future containment requirements.

How could the design process be made more efficient?

Consider pre-qualification of integrated designer/contractor teams to carry out schools projects, not designers in isolation.

Provide better definition of design criteria in initial stages. Adopt several set design criteria, depending upon the nature and size of the school project (e.g. for large secondary schools: RC flat slab solutions with set maximum spans and multi-bay layouts. Typically 3.0m floor to ceiling height, typically 100mm servicing / finishes screed, etc).

Greater awareness / attention needed when defining geometry of new designs. (There appears to have been some lack of appreciation of cost and time implications of creating curvilinear building forms, which in some cases forced the use of complex computer modelling simply to be able to define the geometry accurately, let alone build it).

What are the issues with Legislation on Design Guidance?

It is seen as important to maintain the ability of the design team to respond to the situation and requirements of individual schools in terms of design quality. Legislation to force the use of guidance should not be necessary, provided that awareness of the appropriate guidance is thorough and widespread amongst pre-qualifying designer/contractor teams.

Consider making attendance at ‘guidance awareness courses’ a prerequisite for designer/contractor teams to carry out schools work, rather than assuming that designers will be aware of the appropriate guidance.

As a form of public investment, all public-funded school projects should be subject to a rigorous process of whole life costing, not just in terms of financial expenditure, but also in terms of embodied energy and energy in use. New tools and guidance are needed, backed by legislation, to enable this.

It is seen as important not to prescribe design solutions through the development of modular systems. The modular approach can be seen to have resulted in a ‘one size doesn’t fit all’ situation as experienced with systems such as CLASP in the 1960s.

How could we do this better and cheaper?

Minimise cost and performance doubt by stating the design criteria more clearly, defining closely certain physical attributes and requirements of new schools (e.g. materials, structural type, daylighting strategy, heating strategy, ventilation strategy, future flexibility strategy) while still allowing the development of bespoke layouts.

From the procurement point of view, avoid central government procurement processes and institute locally-based processes, but with securely ring-fenced finance to avoid fund poaching.

What can we learn from other sectors and geographies?

Modular production is not seen as the way to go. Evidence is that modular systems lead to poor quality designs, and the systems become more expensive because of the small number of manufacturers involved in producing the system components. It is better for each solution be bespoke, but within fixed design (and ideally, cost) criteria.

Consider two-stage procurement process: First-stage competition with three or four pre-qualified contractor / designer teams only. Fixed budget, based on pre-agreed rate.

Winning team to be selected on quality of design and amount / quality of accommodation provided. Winning team goes on to deliver the projects. This approach minimises cost risk and introduces opportunities to use any money saved through the process to provide more or better facilities. Fixed rate per m2 for above ground works; rate plus abnormals allowance for unpredictable variable work such as foundations, drainage.

Implement a suite of standardised back-to-back design team service agreements for all projects, to prevent contractor manipulation of the design team and to minimise internal design team disputes about scope and responsibility.

Maintain reasonable conditions, raise standards or seek transformation?

We should aim to do better that maintain reasonable conditions. We should aim to facilitate the raising of teaching standards through the provision of attractive, adaptable, durable, high-performance schools.

Transformation of the curriculum should be a matter for discussion by teaching staff. Let the pedagogy drive the design, and the design facilitate, rather than dictate, the pedagogy.

Tristram Hope
IStructE Trustee and Executive Board Member

Sarah Fray
IStructE Technical Director

Appendix 3

Comments from the Landscape Institute

The Landscape Institute wishes to make the following contribution to CIC's submission to the review of England's School Building Programme:

A - Procurement:

1. ***Insurance:*** A number of Landscape Institute members have complained that the procurement rules for BSF effectively made it an exclusive club of practices able to take part. One of our registered practices reported being asked to carry unlimited PI cover in order to be able to join a BSF consortium. This is apparently because all of the participating firms are required to carry the same levels of insurance, regardless of the actual levels of risk involved in the work they are undertaking. This makes it impossible for many smaller firms to take part at all – firms which are often local, know the schools and their environment, and would be excellently placed to help in their renewal. These firms would usually also often offer excellent value for public money. For those firms which do elect to carry this unreasonable level of insurance the only effect is to drive up costs which are then passed on to the client (i.e. the taxpayer). Whatever processes are established to replace BSF need to have much simpler and more sensible procurement rules which do not involve exorbitant insurance levels for works of low risk which form a small proportion of the value of the contract.

2. ***Risk:*** BSF has been widely criticised because it required a number of proposals to be worked up to full design stage. This is quite unnecessary from a design point of view and is not a normal part of the procurement process. Normally there is a design competition and only the winner or a few shortlisted proposals are worked up. What is missing from this criticism of BSF is that the costs of developing a full design had to be borne by the practices themselves, and the taxpayer did not pay for anything except the winning proposal. For many small local practices which might offer very good value for money this represents an intolerably high level of risk given that the great majority of proposals will never be built. For the larger practices which are better able to bear the risk of putting in so much time and effort on a design which may go nowhere, there must be a price tag somewhere for the cost of that risk so once again it is far from clear that the taxpayer is getting good value for money.

3. ***Securing Value for Money:*** The Landscape Institute has run a number of design competitions for local authority clients across England in recent years and we offer excellent value for money. We suggest that future school renewal programmes should involve a much simpler and more streamlined competition process than BSF, which the Landscape Institute would be perfectly well able to conduct on behalf of the Department for Education or the new investment vehicle in a very cost-effective way.

4. ***New Build vs. Renovation:*** While there is undoubtedly a need for a complete new building in many cases, present funding arrangements may tend to drive schools towards seeking a complete new building where one may not be necessary. Much can be achieved by adapting and modernizing existing structures. There are also redundant buildings which offer scope for re-planning and operation as schools and academies.

B - The importance of space around schools

1. A key element in the success of either a new build or an adaptation is the quality of the space around the school. Hundreds of pupils congregate outside of the school building at various times of the day for a wide range of reasons. Improving their experience while they are in this space usually represents only a fairly small proportion of the total cost of a new build or a renovation, but adds proportionally much higher value to the overall outcome.

2. Aside from informal recreation, exterior spaces may be used for a wide range of learning activities. There are also perimeter considerations of security, privacy and noise. All these factors make the role and design of external spaces for schools much more important than the external spaces of other buildings. Some special consideration may also be necessary in the laying out of sports facilities.

3. Landscape architecture is an essential discipline in addressing the design of external spaces in educational buildings, whether new or renovated. Such spaces require the talents of a profession trained and skilled in the treatment of external spaces and making them responsive to educational needs. Such skills are distinct from architecture skills and require an understanding as to how people use external spaces, orientation and microclimate, planting and landscape management and a general design capability to unite all these and other factors into a cohesive overall design.

4. We believe that whatever replaces the old BSF approach must take proper account of the immense social and educational importance of the space around the school. We believe that well-designed space around a school, whether new or adapted, offers excellent return on investment for public money. We believe that landscape architects are better placed than any other profession to provide a public assurance of quality for designed space, and we trust that new procurement processes will facilitate their involvement, in contrast to the BSF regime.

Alastair McCapra
Chief Executive

CIC MEMBERS
FULL MEMBERS

ABE	Association of Building Engineers
ACA	Association of Consultant Architects
ACAI	Association of Consultant Approved Inspectors
ACE	Association for Consultancy and Engineering
APM	Association for Project Management
APS	Association for Project Safety
BIID	British Institute of Interior Design
BIFM	British Institute of Facilities Management
BRE	Building Research Establishment
BSRIA	Building Services Research and Information Association
CEBE	Centre for Education in the Built Environment
CIAT	Chartered Institute of Architectural Technologists
CIBSE	Chartered Institution of Building Services Engineers
CICES	Chartered Institution of Civil Engineering Surveyors
CIOB	Chartered Institute of Building
CIHT	Chartered Institution of Highways & Transportation
CIPHE	Chartered Institute of Plumbing & Heating Engineering
CIRIA	Construction Industry Research and Information Association
CQSA	Consultant Quantity Surveyors Association
GF	Ground Forum
ICE	Institution of Civil Engineers
ICWCI	Institute of Clerks of Works and Construction Inspectorate
IHE	Institute of Highway Engineers
IStructE	Institution of Structural Engineers
LABC	Local Authority Building Control
LI	Landscape Institute
NHBC	National House-Building Council
NHF	National Housing Federation
RIBA	Royal Institute of British Architects
RICS	Royal Institution of Chartered Surveyors
RTPI	Royal Town Planning Institute

ASSOCIATE MEMBERS

AS	Adjudication Society
BACH	British Association of Construction Heads
BBA	British Board of Agreement
CIMCIG	Chartered Institute of Marketing & Construction
COTAC	Conference on Training in Architectural Conservation
CYT	Construction Youth Trust
FPS	Federation of Property Societies
SCL	Society of Construction Law
SPONGE	*(a network of young construction professionals focusing especially on sustainability)*
TAG	Local Government Technical Advisers Group
TeCSA	Technology and Construction Solicitors' Association