



# Creating excellent secondary schools

A guide for clients



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# Foreword

**‘We all have a responsibility to ensure that future generations will appreciate new schools for the inspiration they bring’**

**Building Schools for the Future, the government’s £45 billion investment programme, aims to rebuild or renew every secondary school in the country by 2020. It is the biggest capital investment in education for 50 years. But designing and building good secondary schools is not easy. They are complex projects with a large numbers of uses and a wide variety of users. And now that the government rightly wants schools to provide learning not just for young people but for the whole community, they will have even more.**

© Michèle Turan



Good design is therefore fundamental to the delivery of such an ambitious programme. The whole school environment has to work efficiently for all of its users and this requires a skilful contribution from contractors and engineers, as well as architects and specialist designers.

I hope this guide will help to demystify the process and encourage you to get involved in this opportunity to transform secondary school buildings across England. It is an endeavour on a scale that will only happen once in our lifetimes. We all have a responsibility to ensure that future generations will appreciate new schools for

the inspiration they bring to teachers and students and the improved quality of life that they bring about.

A handwritten signature in black ink that reads "John Sorrell".

**John Sorrell CBE  
Chair, CABE**

# 1 Introduction



# 1.1 The importance of good design

**‘Around 60 per cent of students and staff have indicated that the quality of building design affected their choice of university’**

Good design is about providing buildings and spaces that are fit for purpose and built to last – but also lift the spirits of everyone who uses them.

The benefits of good design are measurable. Research from the UK and abroad has demonstrated the link between design quality and the delivery of high-quality services. This link is particularly clear in the field of education.

Evidence shows that the design of schools can promote the performance of pupils and a more creative approach to teaching and learning. A UK study of pupil performance found that capital investment in school buildings had a strong influence on staff morale, pupil motivation and effective learning time.<sup>1</sup> Studies on the relationship between pupil performance, achievement and behaviour and the built environment have found that test scores in well-designed buildings were up to 11 per cent higher than in poorly designed buildings.<sup>2</sup> Good design can help recruit and retain staff, cutting the costs of staff turnover. And, in another education sector, around 60 per cent of students and staff have indicated that the quality of building design affected their choice of university.<sup>3</sup>

Good design makes public services easier to deliver and so improves productivity. At one school, the redesign of the playgrounds and school hall allowed supervisors to see the children easily in communal areas. This meant it could reduce the number of lunchtime assistants from eight to five and switch the resources it saved to direct educational expenditure.<sup>4</sup>

Although well-designed environments can undoubtedly support successful teaching and learning, no one would suggest that design alone can raise educational achievement. However, poor design can be an obstacle to raising educational standards above a certain level.

1 PricewaterhouseCoopers, Research Report No 242, *Building performance: an empirical assessment of the relationship between schools capital investment and pupil performance*, Department for Education and Skills (DfES), London, 2000

2 *The value of good design*, CABE, London, 2002

3 *Design with distinction: the value of good design in higher education*, CABE, London, 2005

4 PricewaterhouseCoopers, Research Report No 242

# 1.2 CABE and the design of schools

**‘We have established a schools design assessment panel – a group of specialist experts offering detailed advice on school building designed through BSF’**

CABE aims to influence and inspire the people making decisions about the built environment so that they choose good design. Our expert teams of designers, architects and planners offer quality support to important building projects – including new schools – right from the outset.

The UK’s largest public building programme for more than half a century is well under way. As part of this, the government is committed to rebuild or refurbish every secondary school in the England through its £45 billion Building Schools for the Future (BSF) programme.

But massive investment does not automatically mean a good legacy for future generations. Creating great places for people to live, work and learn is a difficult, complex process.

The Department for Children, Schools and Families (DCSF) funds CABE to provide free support and guidance to all local authorities involved in BSF to help them deliver schools that are well designed and function well and that are a pleasure to use. The government has set up a specialist agency, Partnerships for Schools (PfS) to deliver BSF, and CABE also works closely with it.

CABE is supporting those involved in the BSF programme by:

- advising local authorities on the procurement process
- assessing school designs
- training school leaders and client design advisors
- offering guidance and research
- reviewing designs put forward by bidders during the competitive stage of BSF.

Through all of this work, we have acquired a wealth of knowledge about the processes involved in school building projects.

To bolster our schools design advice, we have established a schools design assessment panel – a group of specialist experts offering detailed advice on school building designed through BSF. All BSF projects from here on in will go through this schools design review.



# 1.3 Ten points for a well-designed school

- 1 **A high-quality design** that inspires users to learn.
- 2 **A sustainable approach** to design, construction and environmental servicing.
- 3 **Good use of the site**, balancing the needs of pedestrians, cyclists and cars and enhancing the school's presence in the community.
- 4 **Buildings and grounds that are welcoming** to both the school and the community while providing adequate security.
- 5 **Good organisation of spaces** in plan and section, easily legible and fully accessible.
- 6 **Internal spaces** that are well-proportioned, fit for purpose and meet the needs of the curriculum.
- 7 **Flexible design** to allow for short-term changes of layout and use, and for long-term expansion or contraction.
- 8 **Good environmental conditions** throughout including optimum levels of natural light and ventilation for different activities.
- 9 **Well-designed external spaces** offering a variety of different settings for leisure, learning and sport.
- 10 **A simple palette of attractive materials**, detailed carefully to be durable and easily maintained and to age gracefully.

CABE has developed these points over time, drawing on our knowledge of the school building design process. Checklists have an obvious value but they do not in themselves lead to good design: good design is the result of the successful synthesis of these key points.

## Case study 1 – exemplar designs

**‘The exemplar designs are not copyright: therefore other designers are free to use the ideas’**

In 2003, the DCSF commissioned a set of exemplar designs covering a range of types and locations of school. These designs – five primary schools, five secondary schools and one ‘all-through’ school – were created by 11 leading architecture, landscape and engineering teams – not as templates, but as springboards for developing imaginative and sustainable school buildings.

The intention of the exemplar designs programme was to:

- develop a shared vision of ‘schools of the future’

- create concepts and ideas for well-designed schools – push forward the boundaries of innovation and inspiration
- support the delivery of BSF
- encourage the construction industry to develop new ways of delivering school buildings.

Although the teams designed buildings for real sites, the proposals were not necessarily intended to be built but to raise aspirations, demonstrate what could be done within normal cost limits, and explore ideas and concepts that could be used in future school

**Whitefield Fishponds Community School,**  
Bristol by Wilkinson Eyre Architects

© Moun Architects with Wilkinson Eyre Architects





building projects. Many of the designs researched specialist aspects of school design in detail, such as flexibility and adaptability, prefabrication and environmental comfort. The designs were all published in full, and are not copyright: other designers are free to use the ideas. The schemes are illustrated in a DCSF schools for the future publication<sup>1</sup> and on the DCSF website<sup>2</sup>.

Wilkinson Eyre Architects, one of the practices that worked on the exemplar designs, has subsequently been appointed as the designer for Bristol City Council's pathfinder BSF project, as part of the Skanska consortium. The first phase will see the rebuilding of Brislington Enterprise College, Hartcliffe Engineering Community College,

Speedwell Technology College and Whitefield Fishponds Community School. The programme is funded through central government PFI credits worth £150.7million together with some £9.5million of the council's own funds, and there will be ongoing consultation with parents, students, staff and the community as the project develops.

Whitefield Fishponds Community School has strong links back to Wilkinson Eyre's original designs for an innovative, modular 'kit of parts' developed for the DCSF exemplar schools project. The design is based on the concept of a 'learning cluster', accommodating up to 300 students. At Whitefield, a series of learning clusters are linked by an internal street and complemented by central facilities blocks.



The street becomes a social hub, helping to maximise opportunities for learning beyond the classroom. It is enlivened by the sinuous forms of the internal walls of the learning clusters. The architectural composition of the scheme promotes – both physically and visually – the school's policy of inclusion, reinforcing the close relationship between it and the community.

<sup>1</sup> See Appendix 2

<sup>2</sup> [www.dcsf.gov.uk](http://www.dcsf.gov.uk)  
See [tinyurl.com/yoqnc](http://tinyurl.com/yoqnc)

## Case study 2 – excellent design in Herefordshire

**‘We love the buildings because they’re light and airy and very grown up. It’s easy to work here’**

**Year seven student**

### **The school**

Whitecross High School is a recently built secondary school in Herefordshire that has been well received by both the school community and the architectural press. The school and local authority have been praised for their sustainable approach and the completion of the project on time and to a challenging budget of £12 million through the private finance initiative (PFI).

### **The consultation**

Consultation with pupils, staff and governors gave the designers clear direction on many issues. The school community debated and reached a consensus on what they wanted for their school. Head teacher Denise Strutt says: ‘By engaging young people and their aspirations in the key decisions we think we have got a better school out of the process; one the students feel proud to be part of.’

Project	<b>Whitecross High School, Herefordshire</b>
Client	<b>Herefordshire Council</b>
Architect	<b>Haverstock Associates</b>
Contractor	<b>Stepnell Ltd</b>

© Møller von Stenberg





### **Sustainability**

'Orientation, construction, thermal mass, insulation and air tightness were all vital to our aim of a low energy solution,' according to the architect, Haverstock Associates.

Aspects of sustainable design were carefully researched and considered by the designers, in consultation with the school, right from the outset of the project.

The school has solar shading above the south-facing classroom windows (see picture above). Direct sunlight does not come into the room so

there is no need to pull-down blinds and less need for artificial lighting.

Large expanses of the roof are covered with sedum. This not only helps to replace landscape and habitat on what was formally a greenfield site, but also improves the insulation and life performance of the roof as a whole.

### **Satisfied customers**

The completed school has won the approval of students and teachers alike. 'We love the buildings because they're light and airy and very grown up. It's easy to work here,' said one year seven student.

Denise Strutt says everyone is thrilled with the new building. 'From day one the students responded very positively to the buildings. Their behaviour and learning improved and we are working even more effectively than we have before. Students are really alert in lessons because they have good natural light and fresh air pumped into the rooms.'

# 1.4 How to achieve good design

CABE believes that clear processes should be followed by the local authority and school to achieve a well-designed school:

- a **clear vision** for how education will be delivered in the future in the school
- a **client design advisor** who can help schools to translate their vision into a brief, and help them to challenge design proposals that fall short of their aspirations and evaluate designs as an 'expert client'
- a **well thought-through approach to sustainability** in terms of both the construction and the use of the building
- **the school must know what it wants** in terms of functional requirements and quality
- a **thorough brief** developed in consultation with the school that sets out these requirements and takes account of the need to provide flexibility and adaptability for future patterns of learning and other uncertainties
- a **competitive process** which encourages the use of high-quality design teams
- **skilled designers** who can engage in a constructive dialogue with the public sector procurer, end users and the supply and manufacturing base
- **providers (builders and managers)** who will deliver the building, rise to the challenge of design and work well with their clients, engaging them in the process
- a **programme that provides sufficient time** for the designers to achieve a good solution
- a **realistic and robust budget** that is sufficient to build a school of appropriate construction quality.

# 1.5 CABE's 2006 schools audit

**'There are not enough schools being built or designed that are exemplary, inspiring, innovative, or sufficiently flexible'**

A total of 124 new secondary schools were completed in the five years up to 2006. CABE conducted an audit of the design quality of a sample of 52 of these and found considerable cause for concern.<sup>5</sup> Although there were some excellent schools, half of the schools visited were assessed as 'poor' or 'mediocre'.

There was evidence that things were getting better towards the end of the period covered by the survey. However, it was still clear that there are not enough schools being built or designed that are exemplary, inspiring, innovative, or sufficiently flexible to allow for a diversity of approaches to education in the future.

With very few exceptions, schools performed badly on basic issues of environmental sustainability. CABE advises local authorities to ensure that the teams they contract to design their schools have a good track record of designing buildings that function well in terms of environmental performance.

Sandhill View School, Sunderland © Andrew Beard



<sup>5</sup> *Assessing secondary school design*, CABE, London, 2006

# 1.6 Educational transformation

The government requires that the current investment in secondary schools is not just about providing new buildings but is about acting as a catalyst for educational transformation. The rebuilding programme is intended to support its commitment to raising educational standards and levels of achievement by pupils.

Whatever the funding source for the building project in a secondary school, there is an obligation to take account of the various educational reforms proposed by the government. The government reforms likely to have the biggest impact on design are outlined below:

## Every child matters

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This is a new approach to the well-being of children and young people from birth to age 19.<sup>6</sup> It contains five outcomes that children and young people have said are key to childhood and later life and that services for children should work towards providing:

- be healthy
- stay safe
- enjoy and achieve
- make a positive contribution
- achieve economic well-being.

This means that the organisations involved with providing services to children – from hospitals and schools to police and voluntary groups – will be teaming up in new ways, sharing information and working together to protect children and young people from harm and help them achieve what they want in life. Children and young people will have far more say about issues that affect them as individuals and collectively, such as the design of their school. Briefs for new schools should be written with these five outcomes in mind.

<sup>6</sup> See *Every child matters*, HM Treasury, TSO, 2003, also available at [www.everychildmatters.gov.uk](http://www.everychildmatters.gov.uk)



## Inclusion and disability legislation

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There is a direct link between disability and poor attainment in education. Many disabled children underachieve and access to education is key to their future independence, both financial and social.<sup>7</sup> Inclusion strategies within schools should aim to ensure the full integration of all students, regardless of their abilities, race, gender or religion.

The Disability Discrimination Act (DDA) provides protection to disabled people and defines disability as anyone with a physical, sensory or cognitive impairment. It also includes those with mental health issues that have a substantial and long-term adverse effect on their ability to perform day-to-day activities. This could be a member of staff, a parent, pupil, visitor or a sportsperson using educational facilities.

Estimates suggest there are 700,000 children directly protected by the DDA and 10 million adults.<sup>8</sup> It has been recognised by government and society that children's education should be provided equally regardless of gender, religion, racial ethnicity or physical or cognitive abilities. The special needs and disability act (SENDA)<sup>9</sup> requires that disabled children will normally have their needs met within a mainstream school and that they should be offered full access to a broad, balanced and relevant curriculum throughout their school life. Access is required to all aspects of school life, including social activities, both in school time and out of hours.

This may require different approaches to teaching and learning and may involve more individual and group tuition, creating a need for a wide variety of sizes of rooms. Because new mainstream schools are likely to accommodate pupils with physical disabilities alongside other pupils, there will inevitably be a need for specialist facilities and/or adaptations to existing buildings.

<sup>7</sup> 'There is a significant gap in the attainment levels of disabled young people: 21 per cent of disabled people aged 16–24 have no qualifications whatsoever, compared to 9 per cent of non-disabled people of the same age – an 11 per cent gap' (*Labour Force Survey, autumn 2004*).

<sup>8</sup> Although clearly defined figures are hard to find, evidence indicates that approximately 15-20 per cent of all pupils have some form of special educational need (SEN) or disability at some time. On average 3 per cent of all pupils have statements of SEN and a higher percentage of children with profound physical, health or complex needs are surviving childbirth through medical advances

<sup>9</sup> Special Educational Needs and Disability Act, 2001

## Extended schools

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Secondary schools are major resources for local communities and the new and refurbished facilities should be designed for shared community use where appropriate. In line with the Every Child Matters initiative, every BSF school will be an extended school, offering additional or dual use facilities such as sports halls, libraries, nurseries, and ICT resources outside the school day. BSF offers an excellent opportunity to integrate schools into wider regeneration projects, re-establishing schools at the heart of communities. The school needs to work with its local community and partner agencies to determine what provision is required and how it might best be delivered. There is a core offer of services (summarised below) which an extended school must provide, but the government hopes that most schools will go beyond this:

- high-quality childcare available 8am – 6pm all year round
- a varied programme of activities to be on offer, such as homework clubs, sport etc
- parenting support
- swift and easy referral to a wide range of specialist support services
- providing wider community access to ICT, sports and arts facilities, including adult learning.<sup>10</sup>

## Transforming education for 14-19 year olds

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Schools will be working not only extended hours but with a much wider client base. There needs to be separation not just at the end of the school day into the evening but also during the day and for multi-agency working.

A major reform of secondary education is planned with a new entitlement that will guarantee young people a choice of specialist diplomas alongside the existing curriculum. Through this system young people will have opportunities to learn in ways which motivate and engage them and, through hard work, qualify them for success in life. There will be 14 specialist diplomas and students will eventually be provided with access to all of them within their local area. The specialist diplomas will be a mix of academic and vocational study, covering areas such as construction and the built

<sup>10</sup> See DfES, *Designing Schools for Extended Services*, DFES, 2006

environment, creative and media studies and engineering. Inevitably, a certain amount of specialist accommodation will need to be provided. The whole range will be available not just in one school but in linked schools, so students may be required to travel between schools depending on their specialism.

## Workforce reform

Since September 2005 all teachers have been entitled to a guaranteed minimum of 10 per cent of their timetabled teaching commitment for planning, preparation and assessment time. This potentially has an impact on the twin aims of raising standards and tackling teachers' workloads.

With the changes in the workforce schools will now have to provide for a much wider range of adults who will be supporting learning. It is no longer just the teacher and the staffroom. For example, some schools are now designed to have some spaces that are either shared with students or where staff work across disciplines.

A large number of teaching assistants are being employed to work alongside qualified teachers in the classroom and administrators are providing additional support in the school office. All these issues will have a significant impact on the accommodation requirements within schools.



# 1.7 New patterns of learning

In the past, the primary objective of school building programmes was often simply to replace old and crumbling buildings with new schools or to patch up existing ones so that they kept warm and did not leak. Little consideration was given to how education might change over the next 10, 20 or 30 years. Patterns of learning, with standard classes of 30 and computers all locked up in ICT suites, were rarely challenged. Briefs for new buildings, and hence the accommodation provided, closely replicated what had gone before.

New patterns of teaching and learning are now being considered and introduced. At the same time there is a very high level of investment in secondary school buildings. This creates the opportunity for designs to reflect these changes and accommodate new educational pedagogies. There are three examples of important concepts that have implications for school building programmes: personalised learning, schools within schools and project learning.

## Personalised learning

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Learners get the chance to participate fully in their own education and contribute to decisions about the supply and public value of education in general. The government considers that there are five key aspects:

- **Assessment for learning (AfL).**  
Assessment for learning is the process of seeking and interpreting evidence for use by learners and their teachers to decide where the students are in their learning, where they need to go and how best to get there. Assessment is supportive of learning and will take place at a time and place to best suit the learner. It is moving away from the 'formal' mass end of year exam and towards taking the assessment appropriate to ability and independent of age. This will require very flexible spaces and not necessarily the big hall for exams.
- **Effective teaching and learning (including grouping and ICT).**  
Where the spaces needed will not be the 30-place classroom but be flexible to allow individual, small group and large seminar groups. These will be facilitated by unbroken access to ICT. Design will be looking at flexible floor plans as well as fitting in classrooms with breakout.
- **Curriculum entitlement and choice**  
(see previous section on 14-19 curriculum).

- **Organising the school** (see previous section on workforce remodelling).
- **Beyond the classroom** (see previous section on extended schools).

There are already examples of personalised learning in most UK schools.

### Schools within schools

This is a practice that has been noticeably developed in the USA as a response to the very big and unmanageable schools that had been created. In the UK it has gathered some pace as it is being recognised that small schools can be more easily managed, are preferred by students and parents and usually achieve better results.

Schools within schools are effectively one school building containing many smaller schools, so for example there might be 1000 pupils in one school building, with 250 11-18 year olds in each of the four schools within that school. Students are often taught according to ability rather than age.

There are different levels of organising a school within a school. One way is to sub-divide the school into four or five small schools which operate independently. There is some sharing of the more specialised facilities such as sports and science and technology but that is all. Another way might be to have the school divided by a pastoral or relationship separation, into four school 'houses' for example, but with little curriculum separation.

### Project learning

Traditionally in secondary schools the curriculum has been delivered through discrete subjects organised into 'departments' or 'faculties'. An alternative approach is learning in a largely project-based structure where topics are explored using a wide range of 'subjects'. In the review of the key stage 3 curriculum, it is being recognised that 'teaching' in discrete subjects to fixed ages is very restrictive and does not sit well with true personalised learning. Interdisciplinary learning through theme and topic allows students to learn at their own pace and in their own way. Experience of this project-based learning has existed for a long time. It is only now that the quality of technology is allowing students and teachers to operate at a level of sophistication not possible before. The big challenge is to review the curriculum and give teachers the skills and confidence to deliver their knowledge across subject and age boundaries.

## Case study 3 – personalised learning in Sweden

**‘The circulation areas are multi-functional, with private study areas for group work and tutorials and social areas’**

Kunskapsskolan in Sweden is a publicly funded, privately run company that has 24 schools, 6,400 students and 600 employees throughout Sweden. It was established in 1999 by Anders Hultin, who felt the state system was failing individual learners and wanted to establish schools based on personalised learning. His schools provide teaching and learning tailored to individual students in buildings comprising flexible spaces that enhance the physical and social learning environment.

A total of 16 of the 24 schools cater for secondary students aged between 12 and 15. Each has about 400 students, in line with the usual size of schools in Sweden.

### **Principles**

Kunskapsskolan has a clear educational concept based on five principles, which form the basis of its curriculum:

- lifelong learning
- international perspective
- educated students
- problem-solving skills
- personal development.

Enköping School, Sweden  
Classroom and main circulation

© Andrew Barr



The core subjects of maths, Swedish, English and one other modern language are organised on a ladder-based system, divided into 32 levels. Students start at the step on the ladder that is most appropriate to their level, working at their own pace and towards their own goals.

© Andrew Beard



**Enköping School, Sweden**  
Private study area (above) and flexible spaces for groups (below)

© Andrew Beard



Other subjects are theme-based: they are not learned independently but in an integrated manner based on learning through problem solving, often containing an historical aspect to create context and depth.

The underlying principle is that students should have a programme that suits their own preferred learning style and individual aptitudes. An analysis of each student is carried out on entry to determine their optimum learning style.

Learning targets via pathways are planned for the four years and broken down into year, term, and week. Each student meets their tutor at the beginning of the week and a learning plan with targets and goals is agreed and recorded in the student's logbook. This will be a mixture of formal teaching, group tutorials, group work and personal study, depending on what suits the individual student.

While staff/student ratios are similar to the UK at 1:20, more unsupervised private study leads to more opportunities for one-to-one mentoring and small group tutorials. Each student is responsible for their learning progress, which they monitor in their logbook.

When students are engaged in private study, they can take breaks when they want, including the use of a small café.

### **The Kunskapsskolan buildings**

Because of funding constraints, all the schools operate out of converted premises, which are often former office or industrial buildings. Following a similar open-plan pattern without corridors, the circulation areas are multi-functional, containing private study booths and tables for group work and tutorials and social areas. Classrooms are fully glazed and open directly off these areas, as does a lecture theatre that can be used for teaching, assemblies or performance. Dining areas are also used for study and class groups. In addition, there are small glazed private study/tutorial rooms with soundproofing from the communal areas.

The result is a very flexible school building that can be used in many different ways; both teaching staff and students occupy available parts of the complex as required. A specific response to the education model based on personalised learning, the form is very different to most schools in the UK.

For further information see [www.kunskapsskolan.se](http://www.kunskapsskolan.se)

# 1.8 Sustainable schools

**‘When planning a new or refurbished school, sustainability and education for sustainable development need to be planned for together’**

Carbon dioxide (CO<sub>2</sub>) emissions are the primary cause of global warming and buildings account for about half of them in the UK. The programme of rebuilding and upgrading all secondary school buildings provides a unique opportunity to improve this situation dramatically. Some local authorities are already exploring the possibility of creating zero carbon schools.

However, sustainability is about much more than energy conservation and CO<sub>2</sub> emissions. It is about buildings that minimise waste, that avoid the use of pollutants, that protect and enhance habitats for plants and wildlife and that provide healthy environments in which to work. It is also about having a school that is socially sustainable – a school that meets the needs of its community.

A sustainable school can also be a valuable learning resource. When planning a new or refurbished school, sustainability and education for sustainable development need to be planned for together. The school building process in itself can be a valuable teaching resource. However, the really successful sustainable schools are those where the completed buildings and grounds can become a valuable curriculum resource, for example by allowing students to monitor energy use and to experience how biodiversity is changing.

**The Academy of St Francis of Assisi**, Kensington, Liverpool. A school with many sustainability features.





## Case study 4 – learning about the environment

**‘Special solar panels on the roof of the main block preheat the water for hot water taps and showers, keeping gas bills low and saving on fossil fuels and greenhouse gas emissions’**

The Academy of St Francis of Assisi is Liverpool’s first city academy. It is a mixed 11-16 school and will eventually cater for 900 children. While having a strong Christian ethos, it exists to serve children of all faiths – or none at all – in some of the most deprived areas of the city.

The Christian ethos and its environmental specialism shape the curriculum that the school offers. For example in year seven the academy offers a curriculum based on six environmental themes, all of which will have significant community content.

The academy is unique in its environmental specialism and the buildings have been designed to reflect this. More than 10,000 cubic metres of concrete have gone into the construction of the academy, rather than the traditional steel framework. This material was chosen because it has a high thermal mass<sup>1</sup>: it will heat up quite slowly, but will retain heat in winter, meaning that it requires less fuel to heat it up over its many years of lifetime – a big step towards reducing global warming.

Project	<b>The Academy of St Francis of Assisi</b>
Client	<b>Anglican Diocese and Catholic Archdiocese of Liverpool</b>
Architect	<b>Capita Percy Thomas</b>
Contractor	<b>Birse Build Ltd</b>

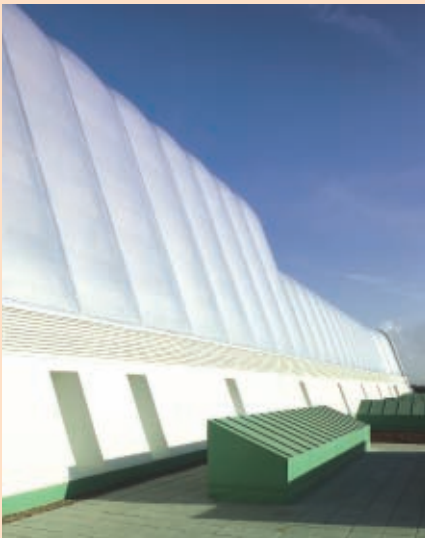
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#### Academy of St Francis of Assisi

Solar atrium – internal (above) and external (below) views. Large north facing windows to classrooms provide good daylighting without solar over-heating or glare. Manually controlled louvres provide good natural ventilation.



The rear of the site is south facing and the design of the academy uses this to good effect. At the rear of the main block is the solar atrium. This is made out of a very strong transparent plastic, ETFE, which is stretched over a steel framework. The whole area under the atrium is bathed in light throughout the day.

In the winter the atrium allows most light and heat through, helping to heat up the building. In the summer, the outer reflective surface of the ETFE reflects most of the light and heat away, helping the buildings to stay cool.

The roof of the admin/ICT block also faces south. As a result it has arrays of photovoltaic cells, also used on communications satellites, as they convert sunlight into electricity, helping to reduce electricity bills and save on fossil fuels and greenhouse gas emissions. On a sunny day they can produce about 3 per cent of the school's electricity. Special solar panels on the roof of the main block preheat the water for hot water taps and showers, keeping gas bills low and saving emissions.

The roofs of the year seven and year eight blocks and those of the sports hall/assembly hall are covered in special materials that will support the growth of plants, and aid local biodiversity. The year seven and year eight blocks are covered in a special plant called sedum. The outdoor classroom area on the roof of the sports hall/assembly hall will be covered in several plant growing surfaces, including crushed sandstone (from the excavations on the site) and crushed sea shells.

The academy is helping to conserve water by collecting rainwater that falls on the roofs and grounds. This is stored in a large blue plastic tank buried underground. With minimal treatment, its supply of 'grey' water will be used to flush toilets. The tank holds 28,000 litres.



1 See also Case study 11 for an explanation of thermal mass

# 1.9 Inclusion

## **‘Services should be accessible and available to disabled people in a manner comparable to able-bodied people’**

It is estimated that there are 700,000 children and 10 million adults with disabilities. Each individual will have a disability (or more than one) which could limit their ability to access the school, curriculum and the social aspects of the school day.

An inclusive learning environment is one in which a school understands and responds to individuals’ learning needs, aiming to ensure that they not only take part in education but are actively and fully engaged in their learning. Inclusion strategies within schools should provide for the full integration of all students and the community. To ensure that this happens, the school should endeavour to provide:

- an individual learning programme
- a curriculum which promotes progress in learning
- effective teaching
- counselling, guidance and initial assessment
- opportunities for students to discuss and manage their own learning
- support for learning
- support for learners such as crèche facilities
- procedures for assessing, recording and accrediting achievements
- learning materials and resources
- technical aids and equipment
- learning technology
- trained staff
- accessible physical surroundings, for example teaching rooms, sports facilities, sanitary facilities, recreational facilities, library, etc.

It is true that planning for everyone’s needs is impossible and there is no performance standard for the DDA that will guarantee protection. However, there are many considerations regarding disabled children’s needs that can be assessed and reasonable measures can be implemented to meet the likely requirements of the DDA premises and operational policies alike. It is important to grasp the intention of the Act: that the services should be accessible and available to disabled people in a manner comparable to able-bodied people.



Mansour Academy, Farnham, by BDP © David Barbour/BDP

## 2 Background to schools projects



# 2.1 People involved in school building projects

The provision of funding for a new or refurbished building will not guarantee design excellence. High quality can only be achieved by having a competent team who work well together on your project – clients, stakeholders, advisors, design team and contractors.

It may be tempting to try to simplify matters and involve fewer people, but this can be a false economy because a poorer quality, less appropriate building can result. There is significant evidence that design quality is superior and satisfaction levels are higher where the full range of stakeholders have been involved in a school design.<sup>1</sup>

This is a brief introduction to the people most likely to be involved in a school building project:

## Clients – the people who commission the building

**The local authority:** For most schools, the local authority holds the project budget and signs the contract for construction work. However, Diocesan Boards of Education or trustees do this for voluntary-aided schools. Within local authorities, children’s and young person’s services will normally have a buildings or premises team with experience of managing school building projects, who will take responsibility for managing the project. They will be responsible for liaison with DCSF (and Partnerships for Schools where appropriate) throughout the project.

**The school:** The project will obviously impact on all members of the school community – from students, parents, teachers, governors, head teacher and senior managers to support and admin staff, caretakers, cooks and cleaners. All will have valuable insights into the requirements and aspirations for new or refurbished buildings and their involvement will be valuable. Ideally there should be one person who acts as the ‘school representative’ and has responsibility for communicating with all the other parties involved in the project, attending meetings and feeding back to the school.

<sup>1</sup> *Being involved in school design*, CABE, London, 2004

## **Other stakeholders – the people who will use the building**

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**The local community:** In line with the government's aspirations for extended schools at the heart of communities, it is important to think about the needs of the future users of the building as well as those of the existing users. Schools are often the most significant public building within a neighbourhood and the majority are underused out of school hours. To be able to maximise the school's potential users, it is important to find ways of involving representatives of the local community from an early stage. Community ownership of the project can also help significantly at crucial stages, such as submission of the planning application and during construction work.

**Other service providers in extended schools:** These are the services that make up an extended school, and may include libraries, social and health services, childcare, youth services, sports providers and other public services.<sup>2</sup>

## **Client team advisors – the people who give advice to the client on achieving successful school buildings**

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**Project manager:** Responsible, on behalf of the client, for planning, monitoring and controlling all aspects of the project from inception through to completion. They coordinate, lead and motivate the project team, which may include in-house staff as well as specialist consultants. Their role is to achieve the project aims on time and to the specified quality, cost and performance standards.

**Technical advisor:** Coordinates the technical aspects of BSF projects, and possibly also on academies and one school pathfinders. Advises on all the technical detail such as specifications and construction standards.

<sup>2</sup> see [www.teachernet.gov.uk/wholeschool/extendedschools](http://www.teachernet.gov.uk/wholeschool/extendedschools)



**‘A design champion should be someone in a senior role within the client body who takes responsibility for ensuring design excellence throughout the development of the project’**

**Client design advisor:** An architect skilled in designing education buildings who advises the local authority and the school. They must not only be an expert in school design but also be extremely competent at communicating and working with stakeholders. The client design advisor provides high-level knowledge and experience of the design and construction process. This helps to ensure that they are adequately prepared and clear about their requirements and can make the most of the opportunities that the school building project presents.<sup>3</sup>

A client design advisor is appointed as an individual but will be expected to have a wider team to assist them, both in terms of providing a range of expertise and having the capacity within the team to work with many schools at once if required. So that they can think and act independently, they should not be appointed through the technical advisor.

The appointment of a client design advisor is mandatory in the BSF programme. They will be appointed by the local authority to advise all the schools (on average, 10) within that wave of funding.

**Design champion:** Ideally someone in a senior role within the client body who takes responsibility for ensuring design excellence throughout the development of the project. The design champion need not be an expert in design, but should be able to influence policy at a high level. They may be a local authority officer or an elected member who is sufficiently detached from the project to take an objective view of design quality and who has sufficient authority to intervene if they feel standards are in danger of falling. They should be appointed when the project is first initiated.

<sup>3</sup> Contact RIBA for a list of accredited client design advisors

**CABE enabler:**<sup>4</sup> CABE assigns a built environment professional with schools experience to each local authority working on BSF projects when each wave of the programme is launched. It is funded by the DCSF to provide free advice to the local authority up until the selection of the preferred bidder for each scheme.

The key stages for CABE's involvement are:

- helping to define a unique local project vision
- advising on the appointment of expert project team advisors, such as the client design advisor
- advising on the benefits of design quality and value for money
- assessing options appraisals and feasibility studies
- securing a shared stakeholder and local authority brief
- discussing evaluation methodologies and selection criteria.

**Education/SEN advisor:** Member of the client project team who will take responsibility for ensuring that all aspects of the proposals will contribute to and support the educational vision, in terms of transformation, pedagogy, raising standards, inclusion and so on. They may either be from the children's service or a consultant engaged by the council.

<sup>4</sup> CABE's role is explained in more detail in *Building Schools for the Future: introducing the CABE schools design quality programme*, CABE, 2007

**Jo Richardson Community School,**  
Multi-purpose atrium spaces used for dining,  
community events, etc.



## Case study 5 – the client design advisor in Greenwich

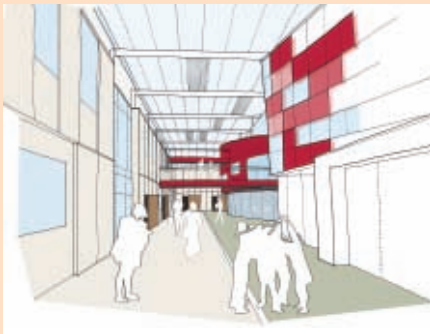
‘Having them as part of our design group, helping us to challenge design presentations, has been really valuable’

Trish Dooley,  
head teacher

The London Borough of Greenwich appointed Ruth Butler, a partner at David Morley Architects, as client design advisor for its BSF project. Greenwich adopted an alternative procurement route under which the five schools in the borough were designed at the same time by separate design teams.

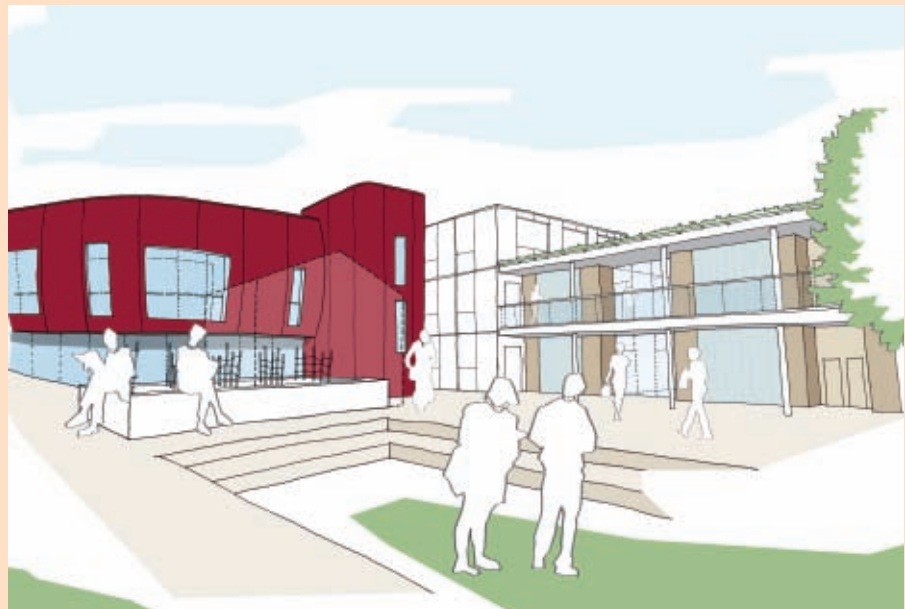
Greenwich project manager Brian Mohammed found the client design advisor invaluable for:

**Making the schools ‘intelligent clients’.** Schools need to have a clear vision of how they will transform education within their school and how the building and the grounds will support that transformation. The client design advisor played a key role in encouraging the schools out of their comfort zone and getting them to consider the strategic organisation of the school (teaching, social, pastoral care), how they could use spaces creatively and not just visualise an upgraded version of their current school.



© Hawkins Brown and Aup

Ethan Hill Technology College for Girls, Greenwich, by Hawkins Brown © Hawkins Brown and Aup





### **Developing the education vision into an output specification.**

A high level of resources was required at this stage and David Morley Architects dedicated one partner, two architects and one assistant to work on the project. Ruth Butler approached this by asking the schools a series of probing questions and sketching adjacency diagrams, helping them to visualise how things might work in terms of organisation. The advisor's role is to help the schools develop a clear idea of what they want – not to provide them with solutions, which is the job of the architects. Schools were asked to think about what would happen in particular types of space such as corridors, outdoors, ICT rooms, dining and social spaces.

**Being a critical friend.** The local authority is responsible for the

delivery of the project on time and to budget. The client design advisor's role, which is independent of the delivery team in this project, means they are in the unique position of being a step back from the delivery of the project. They play an important role in making sure that Greenwich and the schools are achieving what they have set out to do and do not stray from the brief.

The value added by the client design advisor is unquestionable. The CABE enabler who worked on this project said that 'the performance of the client design advisor has been outstanding, particularly in bringing the schools fully up to date, and including them actively in the output specification'.

Trish Dooley, head teacher of Thomas Tallis School, says: 'I found them very useful in

translating the local authority's procurement procedures into a reality. Having them as part of our design group, helping us to challenge design presentations, has been really valuable.'

Brian Mohammed also identified some of the qualities the client design advisor possessed that were of particular benefit to this wave of BSF, and would be useful for other authorities and schools:

#### **An interpreter**

- putting people's verbal ideas down on paper visually in a way which people can relate to
- understanding all the sides to the authority's vision – education, ICT, corporate visions – and making it into something tangible
- helping the architects get their ideas across to the school and vice versa. Your advisor needs to be able to communicate complex design ideas to lay people.

#### **A shepherd**

- guiding the schools through the maze and confusion of the process

#### **A competent designer**

- they are responsible for challenging the architects' designs so they must be experienced and competent

#### **A politician**

- understanding different stakeholders' objectives and dealing with this sensitively.

## The design team – the people who design the building

**Architect:** Has overall responsibility for the design and coordinates the input from the other members of the design team.

**Landscape architect:** Responsible for designing all the external areas, including the detailed design and specification of all outdoor sport facilities, playgrounds, courtyards and planted areas. Develops, with the architect, an integrated approach to the use of the whole site, and a scheme where the detailed design of the external areas has a strong relationship with the building and its internal spaces.

**Buildings services engineer:** Responsible for all heating, ventilation and electrical systems in the building. Helps to ensure that the environmental conditions in the building are good and can have a significant impact on the sustainability of the building.

**Structural engineer:** Designs and checks all the structural aspects of a building, such as foundations, steel or concrete frame, retaining walls.

**Quantity surveyor/cost consultant:** Reports on and manages the cost of the project within the design team.

**Acoustic engineer:** Helps to design and check the acoustic properties in classrooms, social areas, and performance and music rooms so that they are appropriate for their intended use.

**Design team project manager:** May be employed by the client in addition to the other disciplines in the team to co-ordinate their work. Role is to help ensure that the project runs smoothly, and is completed on time and within budget.

**Construction design and management coordinator (formerly the planning supervisor):** By law<sup>5</sup> they must be appointed by the client of any construction programme lasting more than 30 days (or 500 person/working days). Their role is to ensure cooperation within the design team so that they give proper attention to minimising health and safety risks to construction workers during the building and maintenance processes.

<sup>5</sup> Construction (design and management) regulations 2007. See [www.hse.gov.uk/construction/cdm.htm](http://www.hse.gov.uk/construction/cdm.htm)

Regulations were introduced because accidents on construction sites currently represent 25 per cent of all workplace fatalities in Britain.

**Access consultant or champion:** Ensures that the building is fully accessible for all. An access champion should be skilled in consultation and negotiation, technical areas, legal and contractual obligations. It is essential that they understand the processes and principles applied to the design and construction of education buildings and their grounds.

The champion on smaller less complex schemes might be drawn from the client or architectural team but where larger, more complex works are being undertaken consideration should be made to employing an independent access consultant directly.

### Contractors – the people the client signs the contract with

**The contracts:** In a traditionally procured project (see section 2.4 on different types of procurement) the client will normally sign the contract direct with a building contractor, which will construct the school, generally using a wide range of sub-contractors.

In BSF the contract is signed with a consortium of separate companies which includes the building contractor who constructs the building. The contract will be a very complex document specifying all the requirements for building works for the initial 'sample' schools (schools which will be designed during the competitive period), the arrangements for negotiating a number of further construction projects as finance is made available and the requirements for facilities management of any PFI school, normally for a period of 25 years.

**The building contractor team:** The individuals within the building contractor that the school will have contact with are the site agent or project manager, who manages all work on site, and the contract manager, who takes responsibility for the project in the contractor's office.

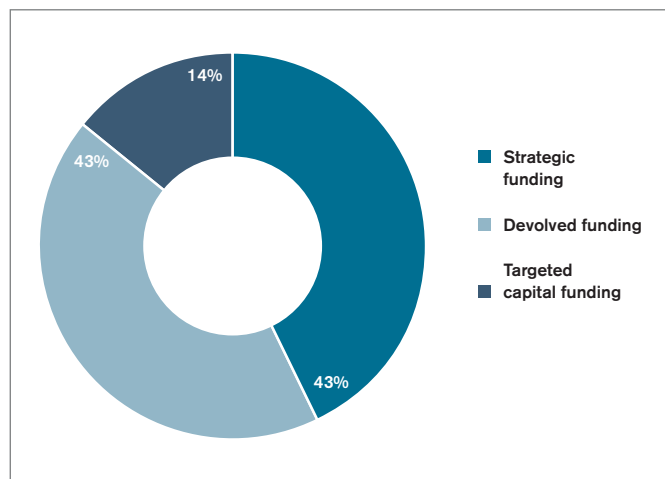
## 2.2 Funding programmes and project structures

Secondary school building projects are likely to be funded through one of several different routes.

### Strategic funding

Approximately 43 per cent of the government's capital allocation for school buildings is being channelled through strategic funding, of which the vast majority is in the BSF programme.

Secondary school funding



### (i) Building Schools for the Future (BSF)

The BSF programme aims to rebuild or renew every secondary school in the country that has not already recently been rebuilt, by 2020. Over 15 annual waves of funding, schools will be rebuilt or remodelled in groups within all or parts of local authorities, usually within a partnership arrangement known as a local education partnership (LEP).

An LEP is a public-private partnership between a local authority, Partnership for Schools and a private sector partner. Its role is to ensure that BSF money is used efficiently and effectively to improve local authorities' secondary school estates.

The exact scope of services to be provided by each LEP will be decided by the local authority but in general it will:

- work with the authority and other local stakeholders to develop strategic investment plans for secondary education for the area
- act as the single point of procurement and service provider – ranging from design, construction, project management and maintenance to ICT services
- integrate and manage a diverse range of supply chain sub-contractors – ranging from building contractors and facilities management services providers to ICT suppliers
- enable delivery of projects through a mix of procurement routes – both private finance initiative (PFI) and conventionally funded





- deliver new and remodelled school buildings
- maintain the new and remodelled schools – including facilities management and ICT – under a long-term partnership agreement.

Under the LEP model, ownership and responsibility for all aspects of local education (including the spending) remains with local authorities.<sup>6</sup>

At the same time, individual schools may be renewed by being academies or 'one school pathfinders' as discussed below.

BSF is not just a building programme; it is a long-term programme of investment and change aimed at transforming educational standards for secondary age students by providing 21st century learning environments. It encourages links with primary schools and opportunities for life-long learning, as well as other joined-up funding for extended school facilities [as discussed below].

The programme is the primary source of capital funding for secondary schools, including special schools and academies where they are within an early BSF wave. It is administered by Partnerships for Schools (PfS) on behalf of DCSF.

A notional funding formula of 50 per cent new build, 35 per cent refurbishment and 15 per cent minor works is used for BSF. The 50:35:15 formula is applied to all projects within a wave. Authorities will be able to agree locally how much of their new build allocation they can concentrate in all-new schools and how much they will want to spread to existing schools. In considering which schools will receive new build accommodation and to what extent, the authority's strategy will be guided by what provides both the greatest improvement in educational outcomes and also the best value for money (on a whole-life cost basis) when compared with options for other schools in the area. For example, merging and rebuilding two small schools as a larger one with new accommodation might cost the same as remodelling them separately but might be equally beneficial educationally. In this way authorities can increase the percentage of new build in their local programme.

<sup>6</sup> *Funding guidance for BSF projects*, downloadable from [www.pfs.gov.uk](http://www.pfs.gov.uk)

**(ii) Academies** are new schools (sometimes established by the closure of an existing school) that are set up by sponsors from business, faith or voluntary groups working with partners from the local community. Most are in areas of deprivation and many involve new school buildings. Each school has a sponsor who provides support and is involved in the governing body. The academies programme is now administered by Partnerships for Schools on behalf of the DCSF and the projects are funded by grant aid from the government.

**(iii) One school pathfinders** are projects that are funded by BSF capital and are aimed at those local authorities not due to start the full BSF programme until waves 10 to 15 (the last waves to receive funding). One school pathfinder funding gives these local authorities the chance to test out now how they will approach educational transformation in their area.

## Devolved funding

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There are two types of devolved funding:

- Modernisation funding is allocated to all local authorities and is intended to help raise educational standards by investing in the priorities for new building work identified by the children's service in its asset management plan. It is allocated to local authorities using a formula that is partly targeted to building need and partly to pupil numbers.
- Devolved formula capital provides direct funding to schools to help support capital needs for their buildings. It is allocated using a simple formula based on pupil numbers. Schools are encouraged to plan their investment over a number of years and can carry forward funds over three years to allow them to tackle large projects. In 2007/08, a typical secondary school will receive £113,000 a year. For PFI projects with full facilities management, this funding is withdrawn in the year following contract signature but is reinstated at the 60 per cent level in the third year.

## Targeted capital funding

This is allocated in a competitive bidding process on a two-year cycle. It is intended to fill the gaps between the BSF formulaic allocations to local authorities and schools. Funding is awarded to projects that are considered to address specified goals best. For 2006-08 these goals include science and design and technology projects, special educational needs or the extended schools/community use agenda. These criteria may change in future.

## Other funding

In addition to these specific forms of funding, local authorities can use their general capital allocation (known as the single capital pot) on school buildings projects. There are smaller allocations available for local authorities experiencing exceptional pressure for additional school places and for improvements to provide disability access in schools. In addition, local authorities can join their projects up with funding from other sources such as Sport England or regeneration agencies.<sup>7</sup>

### **Chaucer School**

A project funded through modernisation funding

© Andrew Beard



<sup>7</sup> Note that some of these funders (eg Sport England and the Arts Council) have their own requirements in terms design standards, such as for access and inclusion.

## 2.3 Funding allocations and budgets

**‘An inadequate budget for a building is very likely to result in reduced design quality’**

The DCSF has different methods of allocating funds, depending on the programme, but they are all based on the same principle. This is a calculation of the funding needed to build a school with a specified number of pupil places, plus an addition for professional fees, VAT (if applicable) and any ‘abnormals’ – extra costs that are a consequence of particular site factors or constraints. Abnormals can include items such as poor ground requiring complex foundations or additional costs arising from local planning requirements, for instance to use natural stone in a conservation area. For refurbishment projects, funds tend to be allocated on the basis of a more detailed estimate of the cost of the necessary works for a particular school.

The calculation of the basic allowance for a school on a specified site is based on the recommended floor area in *Building bulletin 98* (see section 4.5). A cost per square metre rate is then applied, which takes into account the area of the country where the school is located, and the time of construction. These rates are taken from an analysis of actual project costs, with projected inflation rates added on.

An inadequate budget for a building is very likely to result in reduced design quality. Many of the poorly designed schools included in the CABE audit (see 1.5) suffered from inadequate budgets, which were often a consequence of failing to calculate all the likely abnormal costs in advance of an application for funds. If unexpected abnormals come to light mid-way through the design process, it is very likely that savings will have to be found. These imposed savings frequently lead to reductions in design quality such as quality of materials or provision of daylighting rather than a reduction in essential space allocations. It is therefore essential that all abnormal costs are fully identified and carefully calculated in advance.

For more detailed information on funding for BSF projects see the PfS publication *Funding guidance for BSF projects*.<sup>8</sup>

<sup>8</sup> Available at [www.p4s.org.uk](http://www.p4s.org.uk)

## 2.4 Different types of procurement

Procurement can be defined as the method used to select a building contractor and agree a price for the work and deliver the project. In reality there are a very large number of variants, but most of them can be grouped into a small number of generic types – some of which can have several names. The main three are:

### Traditional

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- The client appoints a design team to fully develop the design.
- Contractors then tender for the building work and submit a lump-sum price for the whole project.
- This is suitable for projects where there is time to complete detailed design before tendering.
- An advantage is that the client has full control over all aspects of the design.
- A disadvantage is that the price risk remains with the client. Examples could include the unforeseen cost of additional work, such as in the foundations, or the correction of errors in the specification or drawings.

### Design and build

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- The client appoints a design team to produce designs (these designs are generally not fully developed).
- A contractor is then appointed to work out the construction detail of the design and to build it.
- The contract is normally for a fixed price where the contractor carries the risk of unforeseen items.
- The advantages are that it can be faster and cheaper, with lower cost risk.
- A disadvantage is that the process can result in the client losing control of much of the quality. Once the contractor is appointed, there is no longer a direct relationship between the client and the designers.

### Partnering

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- The client advertises for a project team consisting of the design team and the building contractor and their supply chain (all their sub-contractors and component suppliers). Together with the client they produce the optimum scheme in terms of design, cost and programme. The client normally selects them at an early stage based on their perceived suitability, experience and commercial competitiveness.

- The price is normally determined by some degree of negotiation, and the loss of competition can be more than compensated for by the high degree of co-operation between all parties, as well as the opportunity to start work on site more quickly.
- In design terms, partnering allows the design team to explore design options early on with the contractor, and investigate innovative design and construction ideas.
- A disadvantage is that, because there is limited or no financial competition between contractors to win the job, the price may be less competitive.

The **private finance initiative (PFI)** is a complex form of procurement in which design and build is combined under a single contract with the provision of funding and the responsibility to look after the premises (facilities management) over a long period, typically 25 years. PFI also requires the private sector bidder to provide finance for the project up front, which is repaid by the public sector client through a fixed monthly charge agreed under the contract. This payment can be reduced if the premises are not looked after to agreed standards. Importantly, no payments whatsoever are made to the PFI company until the premises have reached successful 'service commencement' (availability for occupation of the buildings). This has resulted in a track record of more projects opening on time compared to other forms of procurement. However, quality can also suffer from this process.

The contractor appoints the design team at the outset of the tendering process. The limited amount of time available at this stage means the dialogue between the client and design team prior to contract signature is generally more limited than other procurement routes. From the design angle, the points made above about advantages and disadvantages of 'design and build' apply, but the inclusion of facilities management should theoretically make the contractor much more conscious of whole-life costs.

**‘More PFI projects have opened on time than other forms of procurement, but quality can suffer’**

*Oriel High, Crawley by Faulstich Craig Bradley Architects © Andrew Beard*



**Oriel High**, Crawley, West Sussex. A school built using private finance initiative funding.

**BSF** programmes generally include a mixture of PFI and design and build. PFI funding will usually cover schools with 100 per cent new building and the larger number of schools with refurbishment and some new build will be covered by design and build contracts.

## 2.5 Project programmes: allowing time for design

Design teams need programmes that allow time to produce high-quality, creative work. However, there is often pressure to reduce design time. For example, pressure can be applied to ensure that the completion date does not extend by a whole term because it is much easier to arrange the move from old to new buildings during the school holidays. However, the dangers of inadequate design periods can be serious, expensive and long lasting. These are just a few of the possible consequences:

- Failure to test all the possible design options could result in a less cost effective solution being adopted.
- Some of the more complex aspects of school design, such as sustainability, may not be properly explored.
- If a design is not sufficiently developed you may not get robust cost estimates, which may result in having to make compromises later in the programme to compensate.
- Insufficient client and stakeholder consultation could result in fundamental design problems becoming apparent once the building is occupied.
- Design errors may require changes to be made during construction, resulting in much higher costs for their resolution.
- Delay to the construction caused by designs not being sufficiently developed means that any of the benefits of rushing earlier stages are lost.



## 2.6 Project management within the school

**‘It is worthwhile considering the secondment of a senior member of the school staff into a project management role’**

Any major building project for an existing school will need substantial input from the school staff, both at the early option appraisal and feasibility stages and at the detailed design and construction stages. The workload will become so great at times that it will be very difficult for staff to undertake these roles in addition to their other responsibilities. If they do become unable to fulfil their role properly, this can lead to design problems or errors, delays and additional costs.

It is therefore worthwhile considering the secondment of a senior member of the school staff into a project management role for the duration of the project. This person needs to have the authority to make decisions quickly, and also needs to be able to communicate well with, and have the confidence of, all other members of staff.

In some projects this role has been played by one of the deputy heads of a secondary school, who has worked between half and full time on the project. It is clear that this has contributed to the success of schemes very significantly, both in terms of their design quality and the smooth running of the project. The extra cost involved will often be more than balanced out by avoiding extra building costs later in the project. However, where the school does not have the finance available to cover it, then the issue needs to be resolved with the local authority at an early stage.

## Case study 6 – creating capacity at Bedminster Down

**‘The project has become widely known for its innovative and cost-effective solution on what was an extremely challenging site’**

Head teacher Marius Frank was determined that ‘the school would manage the PFI process rather than have PFI done to it’. He designated deputy head Dick Hibdige as the school’s project manager and he was released for about 50 per cent of his time to focus on the project.

Prior to the tendering stage, a detailed reference project was worked up with the support of Batterham and Matthews Architects (Bath). Outline planning permission

was successfully achieved. This reference project provided the platform from which NVB Architects developed a colourful and functionality-driven ‘educational shopping mall’ which has become widely known for its innovative and extremely cost-effective solution on what was an extremely challenging site.

Hibdige chaired and worked with a project steering group, consisting of a cross section of staff and

Project	<b>Bedminster Down</b>
Client	<b>Bristol City Council</b>
Architect	<b>NVB Architects</b>
Contractor	<b>HGB UK Ltd</b>

© Dick Hibdige





**Bedminster Down**, main street (above)  
and external view (below)



governors, throughout the process. There was continuing dialogue from the development of the vision, evolution of the design concept and criteria, work with bidders, evaluation of tendered bids and subsequent detailed work with the preferred bidder through to financial close. This group continued to monitor the construction process through to final delivery of the new building.

During the construction phase, a unique partnership developed between Hibdige and Tony Richards (construction team manager). This interface extended to subcontractors with and through the construction manager and

facilitated the delivery of a quality building on time, within budget and virtually snag free.

Throughout the design and delivery stages, staff and students were actively involved, where appropriate, in detailed development. All areas had a significant input from key staff with management responsibilities for those areas. This was not restricted to curriculum areas; administration, library, reprographics, and catering staff also made significant contributions throughout. Students provided pivotal inputs through workshops with staff and/or architects particularly in the development of the design solutions for toilets, science laboratories and dining area and in the extensive use of colour throughout the building.

The whole process developed an ethos, prior to occupation, which resulted in a design solution that is valued by all and, in addition, has a very significant civic presence within the community.

# 3 Creating a vision and appraising the options



## 3.1 BSF – the local authority vision

**‘BSF provides local authorities with the opportunity to think strategically about the way education is delivered within their area’**

Before starting any project that represents a major investment in school buildings, it is essential to establish some clear objectives that are shared by all the stakeholders. Articulating these objectives in an agreed document is an excellent way to start. You can return to the objectives at various stages to ensure the direction in which the project is developing remains on course. This is vital as it can be easy to get carried away by the excitement of a new school building and to become attached to particular features of the project that may be appealing in their own right but contribute little to the original objectives.

Through the BSF programme, all the schools within a local authority will be rebuilt or refurbished. This provides local authorities with the opportunity to think strategically about the way education is delivered within their area. The degree to which they will transform education will depend on how radical their vision is.

Preliminary thinking should centre on:

- how to transform education
- the sorts of buildings and spaces that will be required to enable or support this transformation.

Thinking about these ideas simultaneously can be beneficial. In 2005, Kent County Council put together an exemplary document (see box overleaf) before its BSF project kicked off. It hopes to stimulate further dialogue and debate both in Kent and elsewhere about how learning will take place in the future and how building designs will need to alter to accommodate new technologies and changes in teaching and learning styles.

Under BSF, each local authority must produce a document called the strategy for change once its wave has ‘kicked off’. This sets out its vision of the way education will be delivered. See Appendix 4 on page 130 for a BSF process diagram for further advice on what schools need to be doing at each stage of the process.

## Case study 7 – Kent: a BSF template

**‘Schools will transcend traditional barriers between institutions by providing innovative and flexible approaches to learning’**

Even before its BSF project kicked off, Kent County Council identified the need to rethink and reassess the perceptions of what a school is, how it is used, how it is designed, how learners learn and how school buildings relate to the wider community and physical environment. It initiated a dialogue between architects, officers, schools and the community in 2005 and its BSF template publication records the exchange of ideas and principles that emerged.

Examples of the ideas and principles that they have adopted in the template include:

### Vision into reality

In the future schools will need to be learning organisations that are integrated into the community. They will transcend traditional barriers

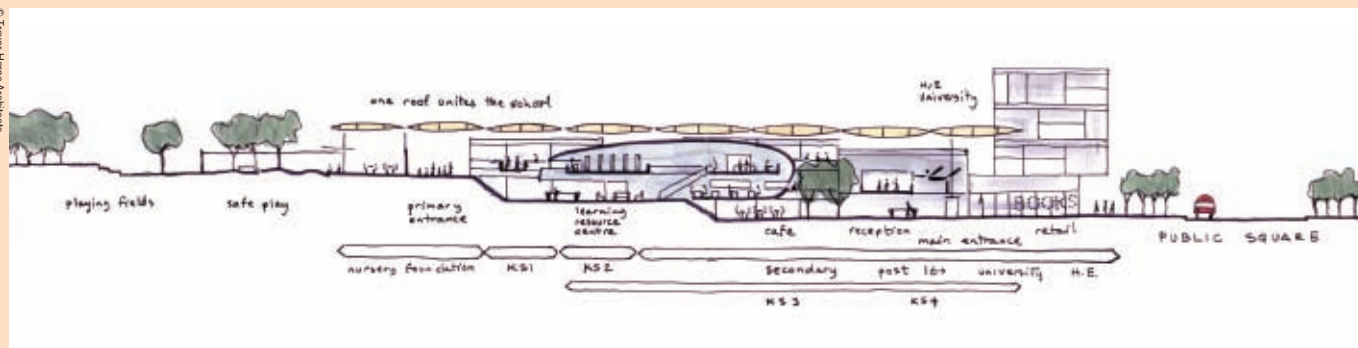
between institutions by providing innovative and flexible approaches to learning. The learning environment should meet the needs of all learners in terms of academic, vocational, social and recreational activities.

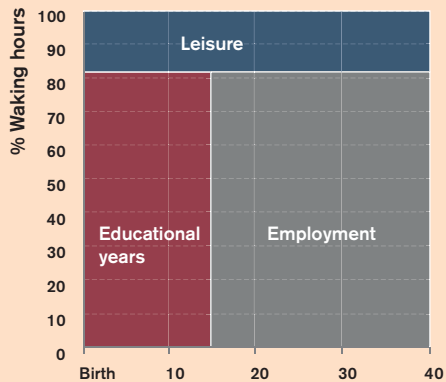
### Principles

A number of principles relating to the schools’ pedagogies are proposed:

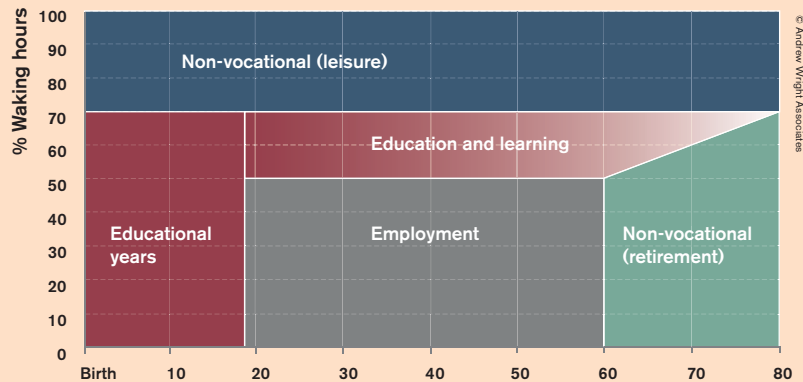
- flexibility in curriculum delivery, based on personalising learning, supported by appropriate technologies and quality learning environments
- knowledge alliances: encouraging collaboration and co-operation between participating institutions, developing learning networks across organisations

These diagrams illustrate an all-age school for 1,320 pupils aged four to 16 years in which young people are grouped in six clusters or centres, with a full range of supporting facilities. Between clusters will be gardens or outdoor rooms.





**1840 – 1880**  
**Daily life pattern**



**2000**  
**Indicative daily life pattern**

© Andrew Wright Associates

Changing life patterns associated with increasing life expectancy and the development of new lifestyles allow us more time to devote to education, leisure and culture.

- co-location of key services, in an environment where learners are encouraged to study what is important
- community engagement and participation for all.

### Tomorrow's classroom

Young people spend 75 per cent of their time at key stages three and four in general or specialist teaching areas that have changed little since the early part of the 20th century. The move towards autonomous learning, driven largely by technology, enables a more personalised form of learning in which young people take control of their learning programme.

### The school day

The new school template proposes a series of clusters, in which teams of teachers work cooperatively in complementary curriculum areas. It also addresses the teacher's day, a design proposal for an all-age school and a primary school, clusters for learning, the learning community and community involvement.



© Trevor Hume Architects

Knowledge alliances: encouraging collaboration and co-operation between participating institutions, developing learning networks across organisations.

## 3.2 The individual school vision

**‘To transform any large organisation’s structure and ethos, a significant amount of time is needed for consultation, strategic planning, developing and implementing the change’**

If you want your school to be successful in its transformational journey, you need to involve all of the workforce and students and parents in the process. To transform any large organisation’s structure and ethos, a significant amount of time is needed for consultation, strategic planning, developing and implementing the change management process. Ideally this should happen a long time before the school will be designed. In BSF it should be at least two years before the funding becomes available, to allow the school and local authority time to develop the education vision. In doing so, a school needs to involve the staff, governors, students and parents in a consultation process to ensure that the majority of stakeholders are supportive of the changes. The vision has to be translated into a change management programme for educational pedagogy and the overall school organisation of staffing, curriculum and student grouping.

The school educational vision then needs to be turned into an output specification for design, ICT and furniture, fittings and equipment. A thorough visioning and change management process for transformation will also ensure that the output specification gives accurate and clear guidance to the BSF bid teams, so that the client will then be able to choose between stronger bid proposals.

The objectives for an individual school vision should be relatively strategic and high level, rather than specific proposals that may not turn out to be the optimum way of achieving the original aims. Objectives might include:

- creating a non-institutional environment which is flexible and can embrace the use of new technologies and learning styles
- creating a building that is an exemplar of sustainable design, which can be used as a tool for teaching the principles of environmental conservation to pupils
- enabling all of the educational, personal and social needs of the pupils, staff and community to be met in a safe, secure, welcoming, inclusive and delightful environment.





## Case study 8 – developing the vision in Avon

**‘Staff concentrated on developing the vision by keeping away from discussion of design and buildings until very late in the day when ideas about learning had been properly explored’**

Writhlington business and enterprise specialist school was selected as a BSF one-school pathfinder. A very successful school operating in poor accommodation, the school and local authority were looking for an effective way to develop the school vision that would involve as many stakeholders as possible.

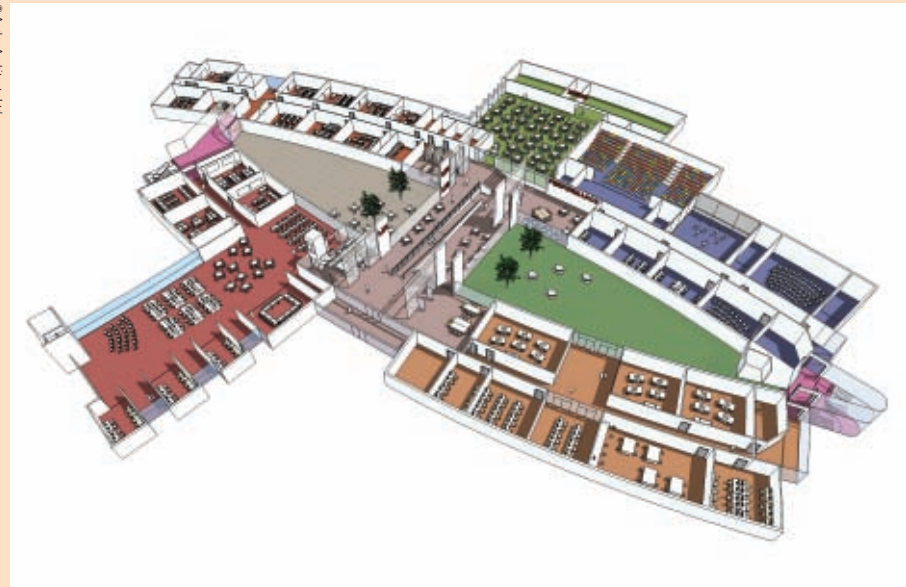
The local authority contracted education advisor Key Educational Associates (KEA), to help the school develop its vision and to involve as many stakeholders as possible.

Because of unusual time constraints, the visioning process was completed in a matter of weeks, starting with initial meetings with the school and the local authority to set the programme and agree protocols.

Each of the stakeholder meetings was held independently and all ideas were captured and recorded to be fed into a central pool. Questionnaires were also completed which indicated the level of understanding and involvement with the process and with BSF as a concept.

Project	<b>Writhlington Business and Enterprise Specialist School</b>
Client	<b>Bath and North East Somerset</b>
Architect	<b>Aedas Architects Ltd</b>
Contractor	<b>Not confirmed</b>

© Aedas Architects Ltd



Writhlington School proposed building



Writlington School existing building

Parent and other stakeholder meetings were facilitated by a small team from KEA working with an architect facilitator who was able to set the scene with what is possible in design by drawing on visual images of existing new builds. The staff, again facilitated by a KEA team, spent a whole day developing their ideas, working in randomly selected and subject-based groups. They concentrated on developing the vision by keeping away from discussion of design and buildings until very late in the day when ideas about learning, personalised learning and interdisciplinary learning had been properly explored.

A programme for the whole student body was developed so that tutors

could deliver it in a half-day session. Again the focus was on learning and not on buildings. Students were encouraged to explore the ways and the environments in which they were best able to learn and work. These ideas were then developed into the sort of 'workplace' they would like to have.

When all the stakeholder data had been collected and collated it was returned to the school. A small group from the school then formulated the vision with the assistance of the KEA team as a critical friend. The same architect who had provided the initial stimulus then critiqued the document.

This process when completed was very much the school's own vision and written in a way that was easily accessible to the school, the local authority and the bidders.

This solution proved to be very cost effective. Maximum stakeholder involvement had been achieved at minimum cost. Because all staff and students were involved instead of a sample, the school retained ownership of its own vision and had not handed it over to a third party.

# Case study 9 – the use of feasibility studies in Tower Hamlets

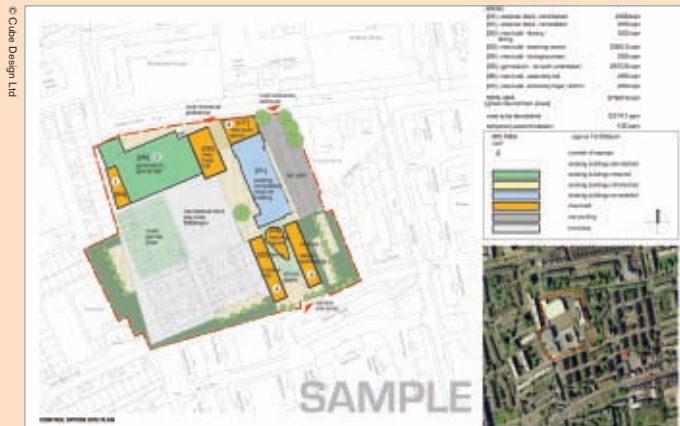
**‘The feasibility study work is not intended to be prescriptive – bidders will be encouraged to come up with their own inovative solutions – but it does provide a valuable benchmark’**

The Tower Hamlets BSF project comprises over 20 schools and Cube Design was appointed as client design advisor to do feasibility studies for all of them. From this comprehensive overview of the whole project, four schools were selected to be part of the first wave. The architect produced option appraisals and detailed feasibility studies for these to obtain reliable cost estimates for the outline business case (process diagram – see Appendix 4 page 130). These estimates formed the bid for funding in the outline business case, and therefore it was vital that the figures were robust and, if approved, provided adequate funding to carry out high-quality projects with excellent design standards.

The diagrams below show some of the option appraisals for one of the sites, looking at alternative combinations of refurbishment, remodelling and new build. The option of new build was not possible on this site because of the absence of any suitable decant accommodation or an alternative site.

The work involved looking at a number of detailed issues to ensure that the cost estimates made provision for a number of exceptional items of work. These included consideration of:

- physical constraints and opportunities for each of the sites



Control option



Option appraisal A

- detailed surveys of the building fabric, including looking for problems such as 'concrete cancer'

- planning and heritage constraints (outline planning consent was obtained for the final scheme to provide certainty on these issues)

- analysis of the circulation routes within the school before and after improvements

- phasing and the possible decanting strategies for the site, including analysis of temporary accommodation, play areas, social areas and also main hall spaces

- assessment of existing building capacity, overall area of each of the buildings, consideration of massing and form

- suitability of the solution for curriculum delivery

- the potential for flexibility and future adaptability.

These studies and the various options were discussed at length with the staff and governors of the schools, and considered alongside their vision. Significantly, the cost per square metre of floor area for this refurbishment was estimated to be three or four times more expensive than the DCSF baseline figure. So had all this detailed work, carried out to demonstrate the funding required to construct the works to a good standard not taken place, the project might have proceeded with an inadequate budget. This could have resulted in undesirable compromises over quality or even an unviable project.

The feasibility work, including details of all the options considered, will be provided to all the bidders at the competitive dialogue stage to help

them understand the project more quickly and to avoid them wasting time looking at the same issues again. The feasibility study work is not intended to be prescriptive – bidders will be encouraged to come up with their own innovative solutions – but it does provide a valuable benchmark against which options can be tested. It also provides confidence to the council that an acceptable solution is available within the budget.



Option appraisal B



Option appraisal C

## 3.5 Important issues to consider early on

School design has changed very little over the last century. Most schools built over that period comprise a series of classrooms and other basic spaces linked by corridors. However, rapid changes in technology and the potential it creates for personalised learning make the requirements for the schools of the future less clear. There can be no certainty about group sizes for teaching or about the need for private study areas or the extent of remote working from home or other locations. School buildings therefore need to be adaptable.

### Adaptability and flexibility



The folding classroom screen at **Bishops Park College** enables the creation of different sized teaching spaces.

Making a building highly flexible – for example, with large numbers of moveable walls – is generally very expensive and can only be justified where the changes are likely to be frequent and essential. There is little point in putting in a large, sliding, soundproof partition if it is only going to be moved once a year. On the other hand, it is wise to avoid structural systems, such as having load-bearing cross walls between classrooms, which make it difficult and expensive to move walls and change room sizes at a later date. A timber, concrete or steel framed building will generally be much more adaptable in the future.

So it is important to determine how much short-term flexibility is required at the stage of preparing the brief. Where it is considered necessary to have accommodation that can regularly be changed to create different sized spaces, perhaps to allow a particular educational pedagogy, then high-quality, moveable partitions may be appropriate. But in other situations it may be possible to provide rapid adaptability by simply dividing up a large space with office-style free-standing screens.

Scope for alterations in the longer term can be created by using lightweight partitions, such as steel framed walls or demountable, office-style partitions that can be removed or repositioned in a few days, perhaps during the school holidays.<sup>1</sup> It is worth noting that, although moving the partitions may be fairly straightforward, changes to lighting and power circuits, switch positions and mechanical ventilation, can make these alterations much more expensive unless they have been planned for at the initial design stage.

## Sustainability

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Sustainability needs to be considered very early in the development of a school building project, whether it is new build or refurbishment. Some of the fundamental decisions made early on, such as orientation of the building or landscaping, can have a major impact.

Here are some points worth considering early on:<sup>2</sup>

- passive design (natural ventilation and daylight)
- using building materials from renewable or low impact sources
- using materials with low embodied energy – for example, aluminium from non-recycled sources uses 126 times more energy to produce than timber
- minimising the use of fossil fuels – by maximising insulation, by providing access to recycled water and by utilising energy from renewable sources such as solar energy, biomass or wind turbines
- reducing wastage of material – it is possible to avoid wastage on site, to use recycled materials, and to consider the refurbishment of existing buildings
- reducing transport movement of materials during construction
- considering the buildings and grounds as a teaching resource – providing facilities for measuring energy consumption, and encouraging biodiversity with landscaping and green roofs.

Many of these are not add-ons – they must be a fundamental part of the design approach. Some have financial implications and may impact on the whole-life costing. The budget must be adequate if all the client's sustainability ambitions are to be achieved. It is therefore essential that the approach to sustainability issues is confirmed at the outset.

<sup>1</sup> But note the effect this may have on thermal mass – see 4.5

<sup>2</sup> See DfES, *Design of Sustainable Schools: Case Studies*, The Stationery Office, 2006

## Refurbishment projects



**Parliament Hill School**, Camden  
The refurbishment of this Victorian classroom has created a high-quality learning environment with good daylighting.  
Architect: Haverstock Associates.

Construction work taking place in or close to an operational school presents some real challenges. Building is almost always a noisy process and it can be dirty, dusty and dangerous. It often brings large numbers of the contractor's staff and operatives into the school site and even into the buildings, together with many other subcontractors and visitors. Bulky building materials will need to be delivered in large vehicles and then stored. Building sites often attract vandals and thieves and therefore security is paramount. In addition, to compound all these issues, a major building project can last up to two years, or more when there are several phases.

There are, regrettably, instances where building projects at schools have caused so much disturbance that there have been increased behaviour problems and falls in pupil achievement levels. However, this is not inevitable and there are other projects where careful planning and an excellent relationship between the school and the building contractor have turned the potential problems into a positive experience.

The following points should be taken into account, particularly in refurbishment and remodelling projects, to minimise the risk of problems:

- **Plan ahead – and programme realistically.** When working in operational schools, it is very important to plan the project very carefully, even at the feasibility stage. It may be necessary to carry out work in several phases, to empty part of the building at various times and to provide temporary decant accommodation. All these moves take time, absorb school staff time, and are expensive. Therefore pre-planning is vital to ensure viability of the process as well as the design. Noisy building work may need to be put on hold at times, for example during the main examination weeks.
- **Make the most of the school holidays.** They provide a good opportunity to carry out particularly disruptive work but this requires detailed pre-planning to ensure that the maximum amount of work is carried out during that time. Delays can have disastrous knock-on effects so allow time for unforeseen extra work.





© Kilian O'Sullivan

**Charter School**, Southwark, London  
Recladding the 1960s block has given the school a completely new visual image, as well as improving the quality of the internal rooms.  
Architect: Penoyre & Prasad.

- **Conduct thorough surveys.** This is particularly important for refurbishment projects, as unforeseen items can lead to serious delays and extra costs. It may be necessary to plan for (and provide a budget for) destructive testing, when walls, floors or roofs are opened up and reinstated to see the full extent of construction problems.
- **Prepare a detailed budget.** Costs can be almost limitless on refurbishment projects, depending on how much work is carried out, and the standard of finish required. It is therefore worth working out a detailed cost plan identifying priorities and cost limits for different elements. If the budget is limited, rather than trying to spread the funds thinly across the whole building, you might want to concentrate on certain areas of the building which are in the worst condition, perhaps rebuilding them completely so that they will last for up to 50 years. The remaining funds could be used to refurbish other areas of the building to give them a more limited life of 10-15 years, for example.
- **Allow for contingencies.** It is vital to allow realistic contingency sums in the cost plan on refurbishment projects. Cost consultants will certainly advise this but, when costs are constrained, it is tempting to take risks and reduce them. This approach to budgets can be very short-sighted, and in reality reductions to the amount of building work made at the planning stage will give significantly larger savings than if they are made whilst work is in progress.
- **Pick a good contractor.** The choice of building contractor is always important and is even more so on refurbishment projects. A good contractor, with high-calibre staff and a good understanding of the issues involved in running a school, is likely to manage the process far better, resulting in fewer problems arising. Where the contractor has not already been appointed as part of an LEP, there should be a meticulous selection process, involving interviews, visits to other projects and references from other schools.

- **Ensure decisions can be made quickly.** As described in section 2.6, having capacity within a school to manage a building project can have a significant effect on design quality and user satisfaction. The need for a school liaison or project manager can be particularly crucial in refurbishment projects. Far more planning will be needed and extensive liaison will be required between school and contractors during building works. No matter how much pre-planning has taken place, as works on site proceed, many decisions will need to be taken quickly to respond to unforeseen issues. If you do not make decisions quickly, you will incur further considerable delays that will result in additional costs and possibly added disruption to the school.

## Landscape

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Schools can play a significant role in delivering the *Every child matters* outcomes, providing safe and stimulating environments where children and young people can learn, explore, play and grow, regardless of their educational needs. The quality of the school landscape is as important in achieving this as that of the buildings. Schools normally have extensive grounds and outdoor learning and physical education are an important part of school life. The outdoor classroom is an important learning tool, creating opportunities for all areas of the curriculum. External areas are important for students' socialising and the quality of the landscape design impacts on the biodiversity in a neighbourhood. In addition, the servicing needs of the school – parking, deliveries, waste storage – need to be carefully thought through and properly designed. A whole site approach is essential to the design of schools.<sup>3</sup>



Peacehaven Community School,  
East Sussex. Architect: architecture plb.

One of the most limiting and challenging factors for inclusion is likely to be the existing physical environment and topography of the site. A number of aspects need to be taken into consideration, such as the existing and required levels, gradients, roadways, approach and operational issues.

<sup>3</sup> For more information see DfES, *Schools for the future: Designing school grounds*, The Stationery Office, 2006

Schools are multi-functional places which utilise the whole of their site and will require access to all services provided by them. The inclusion requirements will influence the position and siting of the building/s and should be considered early in the process incorporating agreement on the principles of levels and locations of key functions. This should take into account not only arrival, departure, parking and drop-off but also access on to and across the site, to and between other buildings and functions such as sports pitches and play areas.

**Caroline Chisholm**, Northampton  
Architect: BDP



## 3.6 Learning from the experience of other schools

The most effective decisions are based on thorough knowledge. To know what is achievable, you need to understand what others have been able to achieve. Although each project has unique features, best practice examples can act as an inspiration, as well as providing benchmarks to check how well you are doing. Even looking at the less successful aspects of projects can provide valuable lessons of potential pitfalls and it is useful to know what you do not want.

The rapid increase in investment in school buildings has created a large pool of recently constructed projects to learn from. However, it has also created a surge in interest from people wanting to visit these schools and random visits which are unstructured and unfocused can waste valuable time. So you need to think carefully about how to get the most out of visiting other projects, in your role as client or stakeholder. Here are some suggestions:

- **Research examples first.** There are many sources of information, such as the CABE digital library,<sup>4</sup> DCSF schools for the future books, and the public architecture website.<sup>5</sup> There are further references to books and journals in Appendix 2 on page 119. It is worth looking beyond Britain – some very innovative schools have been built in Scandinavia and Australia, for example.
- **Think about which aspects of school design you want to investigate further.** Does your school vision involve an innovative educational pedagogy and are there examples that are particularly relevant to this? Are you interested in alternatives to a conventional dining hall for providing school meals?
- **Plan your visit carefully so that you get the most out of it.** The timing of visits is crucial. Visits early on at vision stage can raise aspirations and open stakeholders' eyes to new innovations in school design and new patterns of learning which they think may work with their school. Visits at briefing stage should be more structured around looking at specific elements of schools, such as approaches to circulation, or toilets. Try to get plans in advance so that you understand the building better when you

<sup>4</sup> See [www.cabe.org.uk/casestudies](http://www.cabe.org.uk/casestudies)

<sup>5</sup> See education base at [www.publicarchitecture.co.uk](http://www.publicarchitecture.co.uk)

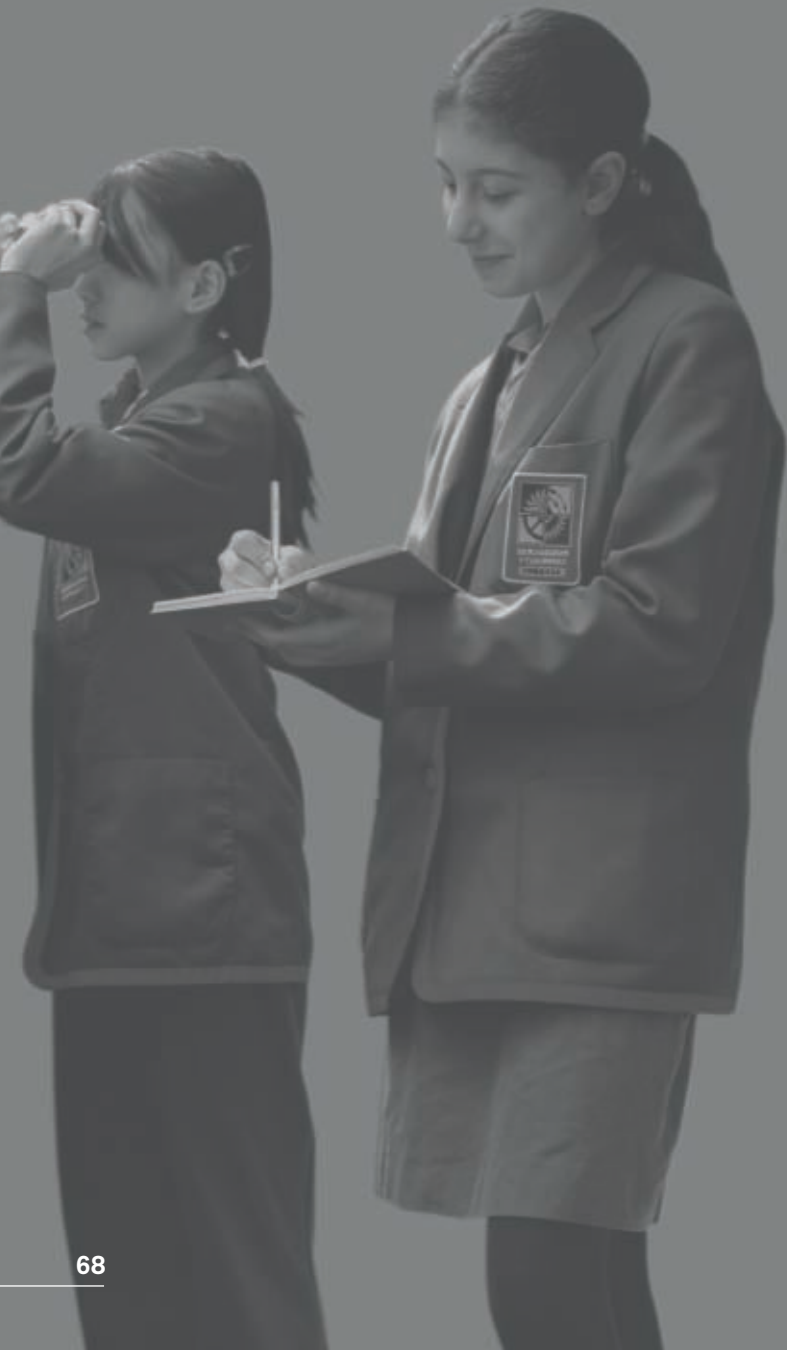
## ‘Your local architecture centre may be able to help organise and facilitate visits’

get there. Prepare questions you want to ask, and record the answers. Write up notes of what you have seen and take photographs of interesting details as well as general views (but do not take photographs that include students without permission). Talk to the users of the building and get their views on what works, what they like about it, and what processes they went through during the design and construction. A great way to structure the visit is to take a range of stakeholders on a visit and ask them to think about the DQI statements while they are going around. This will help to encourage people to look at the building in more detail and it will prepare them for when they need to go through the DQI statements at briefing stage.

- **Take your design team with you – if they have already been appointed.** It will help them understand your aspirations more clearly, they may be able to point out interesting technical details and it will give you a common reference for future discussions.
- **Report back to other people in the school and other stakeholders.** This could be in the form of an illustrated report or a presentation and is another useful way of promoting debate about schools, design and the impact on education.
- **Seek help with your visits.** Your local architecture centre may be able to help organise and facilitate visits. You can find out who they are by contacting the Architecture Centre Network.<sup>6</sup>
- **Consider visiting buildings other than schools.** You may be able to get useful ideas or get inspiration from other types of buildings and spaces. For example, you could look at different toilet designs in other public buildings, look at multi-purpose performance spaces in community buildings, or look at learning resource centres in art galleries, colleges or universities.

<sup>6</sup> See [www.architecturenetwork.net](http://www.architecturenetwork.net)

# 4 Developing the brief



# 4.1 How briefs secure design excellence

**‘A high-quality brief is one of the tasks that the client can never give away to someone else to produce on their behalf’**

A high-quality brief is the vehicle by which clients achieve good communication with the rest of the project team and it forms the foundation of a successful design. It is one of the tasks that the client can never give away to someone else to produce on their behalf.

The brief should build on the outcomes of the feasibility studies and option appraisals. It will also be informed by the cost estimates produced by the quantity surveyor – ensuring the brief is realistic and financially viable. However, it should not be too prescriptive, nor fix the form of the building. Rather it should provide a clear framework that allows the design teams to achieve, or even exceed, the client’s needs and aspirations. A good brief can also be an evolving document, reaching greater levels of completeness and detail as needed.

So how do you go about preparing a good brief?

- **School visits** will help stakeholders understand what they want and don’t want for their school in terms of design and it will help them develop their vision. Talking to teachers at the school, ideally including the head teacher, will enable them to find out about the development of the design from vision to brief and from brief to completed building.
- **Design quality indicator for schools (DQIfS)** can help schools reach decisions about what level of quality they aspire to (see section 4.6). They can be used to identify the stakeholders’ priorities in the design of the new school and then help them to reach a consensus about their requirements.
- **Design festivals** for schools look at the design of buildings in general and might include visits to interesting new buildings within their locality. The outcomes can then inform the building project for their school.<sup>1</sup>
- **A design workshop**, perhaps an intensive day for a wide variety of stakeholders, looking at the issues facing the school, can help in learning from good practice elsewhere and developing a vision for the new or refurbished school.

<sup>1</sup> See Goddard, T, ‘Creating an Excellent Brief’, *Century 21 Schools Magazine*, Edition 1, Nov 2005

## 4.2 Detailed brief development

Once the vision is established, the client should produce a written document that explains exactly how the school will operate in the future and what the various parts of the building need to provide to allow this to happen. The document should include the following information to assist the preparation of the brief:

- a description of a typical day in the life of the school at the moment and how it will change with the transformation agenda
- the organisational structure of the school, including management, departments, pastoral support and so on
- the ethos and values of the school
- activities to be accommodated within the school, including out of hours community uses and the type of accommodation they require
- the frequency of the different activities – the usage levels of the different types of accommodation
- required adjacencies between different activities, departments etc
- arrangements for community access and the required security levels
- ways in which the school might change in the near future to account for new and different pedagogical systems, pastoral organisation and teaching methods.

All this information is extremely useful to the designers of the school and should therefore be included in the detailed brief as background information.



## 4.3 The detailed accommodation schedule

**‘Producing a detailed accommodation schedule is complex and will require expertise including curriculum analysis’**

Once all these issues have been established, the next stage of writing the brief is to produce a detailed accommodation schedule (spreadsheet listing all the spaces required). This is a complex job, and will require someone with expertise in the subject, including an understanding of curriculum analysis. For a larger project where a client design advisor has been appointed, this person is ideal for carrying out the task. Where there is no client design advisor, someone from the children’s service development or property team may be suitable, or an in-house architect with experience of schools.

This schedule will list exactly the number of rooms required and their minimum sizes. Further information about individual rooms is listed in what are usually called room data sheets. The schedule will add up to an overall target area for the building to ensure that cost limits are not exceeded, and this is likely to be based on *Building bulletin 98 (BB98)*, which contains guidance on briefing and area guidelines.<sup>2</sup>

BB98 gives recommended minimum areas for a variety of spaces, including general classrooms and specialist teaching spaces. Minimum total floor areas are recommended for different categories of space for any secondary school, based on their age range and pupil numbers.<sup>3</sup> The DCSF suggests that a well-designed school can be created within the total of these overall areas, plus a further ‘float’ to allow for the specialism or individual requirements of each school. However, additional space will be needed for activities such as extended school services during the school day. These area guidelines are used by the DCSF to calculate budgets for schools; therefore, if the brief requires total areas above these guidelines without an increase in the budget, there is a risk that undesirable reductions in the quality of construction or finishes will be needed to make compensatory savings.

<sup>2</sup> *Building Bulletin 98: Briefing guide for Secondary School Projects*, DfES, available at: [tinyurl.com/2h6ccb](http://tinyurl.com/2h6ccb)

<sup>3</sup> The guidelines apply only to mainstream schools, and not schools for children with special educational needs.

It is important to appreciate that these areas are guidance rather than rules. Local authorities and schools may wish to deviate from the traditional schedule of rooms, but still work within these overall recommendations for the number and types of teaching spaces where they have different pedagogies. It is the job of the architect and the rest of the design team to create a building that will cater for all the required activities in rooms and spaces that are well designed for their needs. A good team will use their skill and imagination to come up with an elegant design solution that satisfies all the functional requirements and at the same time is an inspiring piece of architecture. If this results in exceeding the DCSF guideline area, but can be achieved within the cost limits and without compromising build quality, then this is quite acceptable. However, this should not become a justification for wasting areas in the planning of the building, nor for creating spaces that cannot be put to beneficial use.

The following is a checklist of some of the important information that should be included in the detailed brief or output specification:

- special equipment and fittings
- finishes and furnishing
- access and security requirements, including any provisions for special needs
- dining arrangements and kitchens
- exam facilities – which should not be assumed to be in the sports hall
- social and circulation spaces
- toilets and washing facilities
- provision for community and out of hours use
- sustainability targets and whole life costs
- requirements for flexibility and future adaptability.

## 4.4 Involving stakeholders in brief development

**‘Stakeholders need to be kept informed about the impact of their involvement’**

The key to involving stakeholders successfully in the design and building process is to structure their input in a realistic and effective way. They need to be:

- involved at the right time
- prepared so that they can participate in a meaningful way
- given appropriate issues on which to comment or provide an input
- kept informed about the impact of their involvement.

Failing to do any of these can lead to disillusionment and even hostility to the project.

Whitmore High School © Moley von Sternberg



## Case study 10 – building the student perspective into design in Bradford

**‘The students have done a super job. I don’t think we could have done it any better. In fact I think we would probably have done it less well’**

One of the great strengths of Bradford’s approach to BSF was the close involvement of its students from the start. It was one of the imperatives for the schools that students should have a voice in developing ideas for the new learning environments. While there were fears that students’ expectations would be raised to unrealistic levels and that only ‘impossible’ ideas would result, the authority and schools were

confident that the perspective offered by the young people would be grounded and focused.

Before the formal procurement process began, the city’s three schools were offered the opportunity to collaborate with School Works in a DfES-sponsored demonstration project to harness the student perspective. A two-day design festival in a local art gallery included students participating in

Project	<b>Buttershaw High School</b>
Client	<b>Bradford LA</b>
Architect	<b>Architecture plb</b>
Contractor	<b>Educo consortium</b>

### **Buttershaw High School**

An architect explains his thinking to the student design evaluation group (right)

A student group at the design festival develops ideas for external social spaces (below)



© Alan Jarvis



© Alan Jarvis

workshop sessions dealing with a wide range of design issues including how to:

- give students a sense of ownership of their schools
- make the schools environmentally friendly
- address issues of space, light and colour
- design out bullying
- create stimulating learning spaces both indoors and outdoors.

© Alan Jarvis



#### **Buttershaw High School**

Model of the proposed school by Bradford's selected bidder (above)

A year 11 pupil explains her ideas for an outdoor learning space to an architect (below)

© Alan Jarvis



An eclectic team of facilitators was assembled, including architects, a broadcaster, an educational psychologist, drama teacher, learning mentor, deputy head, performance specialist and an assistant head with responsibility for inclusion. They worked with a cross section of students in terms of age, ability and background to produce a report.

A wide-ranging staff group from the same three schools gathered to hear the report and give an adult perspective on it. Their view was summed up by Buttershaw's head of science: 'The students have done a super job. I don't think we could have done it any better. In fact I think we would probably have done it less well!'

The report from the student workshops was hugely influential in shaping the output specification. The descriptions of acoustic performance were taken directly from the students' suggestions. The storage strategy was greatly influenced by students' criticisms of clutter in classrooms. And, in trying to define how corridors should be designed, students talked about 'rounded corners' to improve sightlines and suggested that corridors might taper from a wide entry point to ease congestion.

The next stage offered the schools a direct relationship with Bradford's three shortlisted bidders. The bidders developed an extensive programme of consultation with the student body. Buttershaw High School decided it wanted a single group of students to participate in work with all three bid teams. It hoped this would help to focus thinking as the process unfolded and that students would be able to assess and respond to a range of different design solutions.

The student design evaluation group was hand picked from students of every year group who had expressed an interest in design. In each case, members were asked to seek the views of their own forms and others in their year group via the year councils. Discussion in form groups took place in tutorial time, so that, when meeting the bid teams, members of the group were focused and well informed on a range of student perspectives.

## 4.5 DCSF building bulletins and guidance

There is a considerable amount of design advice available that can help you to write a brief. The design team of the DCSF has produced guidance on many aspects of school building design. These wide-ranging publications (see Appendix 2 on page 119 for a full list) usually come in one of the following formats:

- design guidance for all types of school, including building bulletins covering most subject areas in secondary schools and schools for the future books. Both contain very valuable advice based on many years of schools design experience and up-to-date case studies
- design standards within schools covering areas such as environmental considerations and acoustics and linked to legislation such as the building regulations. These are usually set out in other building bulletins, which are technical documents with useful detailed information about designing schools.

They are all based on extensive research – in the UK and sometimes overseas – and cover a wide range of issues. They can be an excellent starting point for making decisions about the content of the brief.

Horseshoe seating arrangement at Jo Richardson Community School



© Construction Photography

Local authorities and schools should note that this design guidance is not mandatory and does not relieve them from the need to consider many important decisions about a building project.

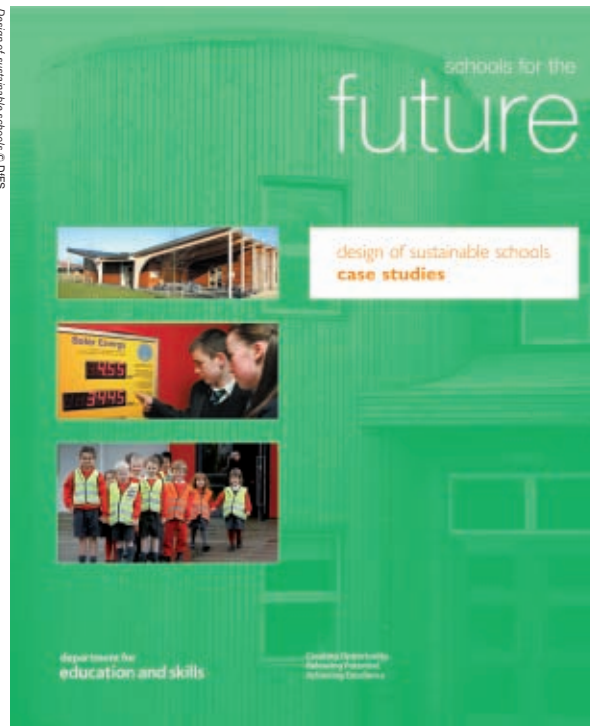
This is demonstrated well by an issue like the size of a general classroom. *Building bulletin 98: Briefing guide for secondary school projects* recommends that a floor area of between 56 and 63 square metres should be provided for a standard classroom of up to 30 pupils. There are good reasons for not going below the recommended minimum, in terms of being able to accommodate 30 young people, plus a teacher, teaching assistant, disabled pupil/s and associated support worker/s as well as the space to accommodate

**‘DCSF building bulletins can be an excellent starting point for making decisions about the content of the brief’**

a wheelchair user/s in a large motorised chair. However, one local authority in London was able to source extra funding for classrooms to be larger (at least 75 square metres), so that all students could sit in a single horseshoe arrangement (see photograph) and has found that this improves achievement. Another school might have a high level of inclusion of pupils with disabilities and therefore might decide to provide additional space for several wheelchairs in one large classroom in each department.

Schools should assess the likely pupil demographics to establish the numbers of disabled pupils and their relative disabilities and allow for the appropriate levels of space, equipment and future flexibility for alterations as user changes dictate.

Design of sustainable schools © DfES



## Case study 11 – creating a comfortable environment

**‘During the summer the building fabric cools down at night and acts as a cooling surface during the day’**

Kingsley High School, London Borough of Harrow, is a secondary school for children with special educational needs and was constructed under a PFI scheme with Investors in the Community and Carillion in 2006. The teaching spaces are light and airy, with generous windows opening on to protected outdoor areas. The landscaping has been carefully designed to give varied sensory experiences as it matures.

The building has been designed to make the greatest possible use of passive ventilation as well as natural lighting. It has been constructed with heavy materials, including brick external walls, which contribute to thermal stability and give good acoustic separation between rooms. The use of heavy materials in this way is often described as creating ‘thermal mass’.

Project	<b>Kingsley High School</b>
Client	<b>London Borough of Harrow</b>
Architect	<b>Nicholas Hare Architects</b>
Contractor	<b>Carillion</b>

*Kingsley High School by Nicholas Hare Architects © Andrew Beard*





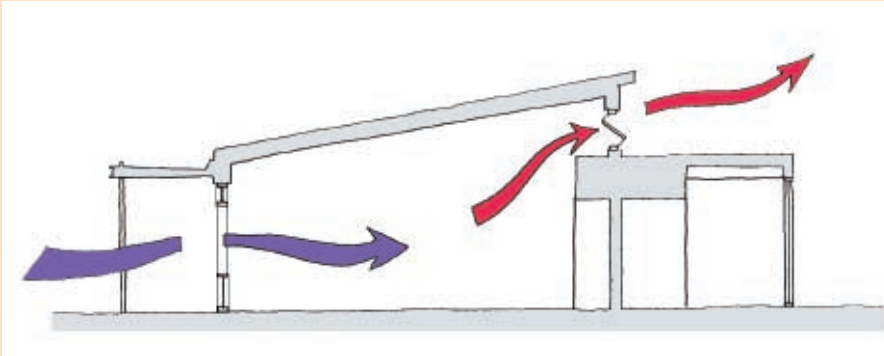


Diagram to show natural daytime convection

The monopitch roofs are ideal for achieving passive cross-ventilation in the classrooms. On windy days, the pressure differential between the two sets of windows drives ventilation across the rooms. On still days, the difference in height between the windows creates a stack effect, generating convection within the room and thus ventilation.

Thermal mass has been created by using heavy construction materials, including a concrete roof formed from precast planks. The building fabric temperature lags behind the air temperature, so that during the summer the building fabric cools down at night and acts as a cooling surface during the day. The process can be enhanced by 'night time cooling' ventilation, in which some of the windows are used to create a flow of air that tracks across the underside of the roof slabs.

Because the surface of the concrete planks is exposed, to aid absorption or dissipation of heat, there could be a problem with a rather reverberant ('echoey') acoustic. This has been overcome by using special light fittings with a sound absorbent casing.

Cross-ventilation for the ground floor special curriculum classrooms is provided by ventilation chimneys that lead to louvres between the first-floor north-facing windows. An added benefit of using passive systems is that they are 'low tech' and easily understood and controlled.



Typical classroom showing monopitch sloping roof, with concrete surface exposed internally, and suspended light fittings with acoustically absorbent casings



The double height entrance hall has good daylighting, and provides a welcoming arrival to the school.

# 4.6 Design quality indicator for schools (DQIfS)

Design quality should be discussed, specified, evaluated and checked at various stages throughout the design and procurement process. This will relate to things that can be scientifically measured, such as the level of daylight in a classroom, or to more subjective aspects such as the attractiveness of the building or how it makes you feel. At the outset of the project there are many factors to be considered and many individual views

to be taken into account – not least the views and aspirations of the school community. Once established, these objectives will become reference points during the competitive tendering process. Ultimately, they should be used to test the success of the building once it is occupied and in use (as part of a post-occupancy evaluation – see section 7.3).

DQIfS is a tool consisting of 111 statements under three headings: functionality, building quality and use. The statements cover many of the critical issues in the design of a school and the process involves a group of stakeholders working through each statement in turn and giving it a weighting. The scores are then processed to provide both individual and combined objectives for different aspects of the design, together with views on their relative priorities.

The DQI for schools is mandatory in BSF.

Online page from DQIfS



## DQI statements

The experience of doing a DQI enables a conversation between stakeholders about design and the design process, can help communicate and share values and will clarify design strengths and weaknesses and identify opportunities for improvement.

The tool is designed for use at three stages in the school building project:

### Stage 1 – Briefing

A trained DQI facilitator (see case study 12) will chair a workshop where the stakeholders will weight each of the DQI statements according to how they

**‘The experience of doing a DQI enables a conversation between stakeholders about design and the design process’**

want their school to be designed and what they want it to feel like. This will form part of the brief for the school.

### **Stage 2 – Mid-design**

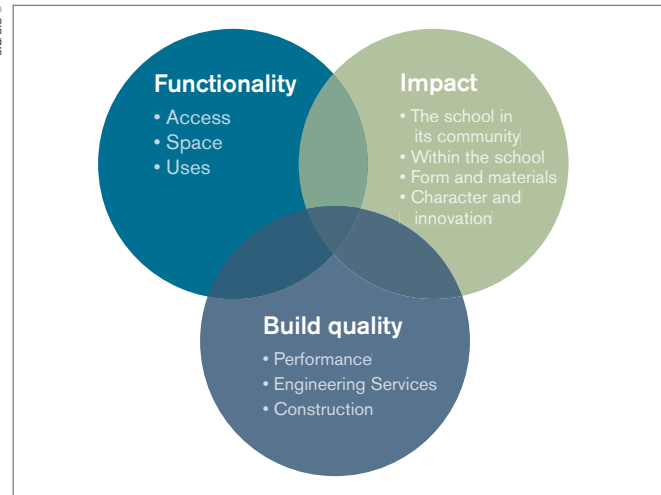
At this stage a DQI can be used to check how the design is progressing and to evaluate the proposal against the original aspirations.

### **Stage 3 – Occupation**

Carried out after completion and a period in use; at this stage DQI can inform the client and the design team about how well the building is performing.

A range of stakeholders representing the wider views of the school will use the tool. It is therefore important that they are adequately prepared for stage 1 by going on visits to other buildings, so that they understand the implications of each of the statements and have a good understanding of what the school wants in terms of design quality.

© CQIPRS



Design quality indicator for schools: three factors working together

## Case study 12 – using DQI for schools

**‘The DQI process is not about finding the right answers or producing standard solutions. It is a useful tool that allows schools to discover what is important to them’**

Schools in the London Borough of Waltham Forest plan to use the DQI for schools as part of the authority’s £99 million BSF programme from the inception stage through to preferred bidder. At the time of writing, the DQI had been used at stages one and two.

The first three sample schools were part of the process to select a preferred bidder. Each had quite different characteristics:

- Walthamstow School for Girls has a listed historic building at the heart of the school grounds and unusual landscape features and is to be extended and refurbished.

- Kelmscott School is next to a large leisure centre and currently suffers from a lack of visibility from the street. It is also to be refurbished and extended.

- Warwick Boys and Aveling Park Schools will be brought together to form a new school on a former industrial site as a completely new project. The new site is also slightly removed from the main road and is adjacent to a railway line.

The first DQI session (held separately with each school) introduced the concepts of fundamental, added value and

People using DQI online



excellent and was led by a trained facilitator.

The most important lesson learned during these first sessions was that each school is different. The DQI process is not about finding the 'right' answers or producing standard solutions for schools. It is a useful tool that allows schools to discover what is important to them and decide what will be special about their school in the future.

The DQIs can then be set up to communicate these special qualities to bidding teams. Later on they can be used to assess the success of the project – for example after completion and occupation and after a settling-in period.

### The terms

- **Fundamental** – the things that are essential to allow the school to function properly. The technical advisors should be responsible for delivering them.
- **Added value** – areas beyond the basic that enhance the school and allow it to fulfil its particular vision – the things that are especially important to the school.
- **Excellent** – things that may not necessarily be achieved but would really help the school perform to a high level.

These terms help people to prioritise and emphasise what is particularly critical to the success of the school.

Although the three schools at Waltham Forest had much in common at the **fundamental** level, they were defined by the aspects of their project that they thought would bring **added value** or could be **excellent**.

Once the DQIs had been customised during the initial sessions, they were used halfway through the bidding process to assess how successful each of the bidders had been in responding to them.

A DQI day was set up, with each bidder presenting their scheme to each school at different times. The bidders were asked to take the added value and excellent DQIs and explain how successfully their scheme addressed each one. This allowed all members of the audience to understand how well the bidders complied, how much effort they were making, and whether they seemed genuinely interested<sup>4</sup>.

Using the DQI process made possible a reliable comparison of quite complex information as presented by the three bidders and allowed all those taking part in the selection process to understand the difference between the qualities of the three bids.



People using DQI online

<sup>1</sup> Aspects regarded by the school as fundamental were considered non-negotiable. They were therefore not discussed but checked by officers and client design advisors in a separate exercise

## 4.7 Establishing sustainability objectives



Bicycle storage at **Rye Hills School**, Redcar

The CABE schools design audit found that recently built school buildings performed very poorly in terms of sustainability. Many basic issues of energy performance had been overlooked, including the potential to minimise requirements for mechanical ventilation by use of passive ventilation approaches and to reduce electricity use for lighting by ensuring natural light within the buildings. These are fundamental aspects of school design and need to be considered at brief stage.

**BREEAM** (Building Research Establishment environmental assessment method) is a tool for measuring the sustainability of a design.<sup>4</sup> It is a comprehensive methodology that assesses the environmental impact of a school's design and construction. The standard is intended to guarantee a minimum level of environmental performance for school building designs without specifying particular solutions. A design scores points for meeting various sustainability criteria. The DCSF requires that all new schools and refurbishment projects register for a BREEAM assessment if the total project costs are above a threshold.<sup>5</sup> Registered schools are expected to achieve a minimum BREEAM rating of 'very good'. Partnerships for Schools (PfS) is responsible for ensuring that BSF schools comply with these standards.

BREEAM assesses the performance of buildings in:

- management: overall management policy, commissioning site management and procedural issues
- energy use: operational energy and carbon dioxide (CO<sub>2</sub>) issues
- health and well-being: indoor and external issues affecting health and well-being
- pollution: air and water pollution issues
- transport: transport-related CO<sub>2</sub> and location-related factors
- land use: greenfield and brownfield sites
- ecology: ecological value conservation and enhancement of the site
- materials: environmental implication of building materials, including life-cycle impacts
- water: consumption and water efficiency.

<sup>4</sup> The guidelines apply only to mainstream schools, and not schools for children with special educational needs.

<sup>5</sup> See [www.breeam.org](http://www.breeam.org)

Credits are given against each of these points and then weighted to give a single overall score. The building is then rated on a scale of *pass*, *good*, *very good*, or *excellent*.

If the building is to be used as an environmental learning tool, then it will also be very helpful to identify in the brief specific activities that have been planned. For example, electronic display panels for electricity generation from photovoltaic panels or windmills, or for water collections from rainwater, can be used for teaching a variety of topics and making pupils conscious of their environmental impact.

Landscaping at The Academy of St Francis of Assisi



A person wearing a white shirt, a striped tie, and a dark V-neck sweater is shown from the chest up. Their hands are held together in front of them, palms facing each other, in a gesture of offering or selection. The background is a solid teal color.

## 5 Selecting the team to design and build your school



# 5.1 Different methods for different procurement routes

The choice of the team is possibly the decision that has the greatest impact on design quality. Integrated working of clients, designers and contractors is essential for the successful delivery of an inspirational design. The method of appointing the design team varies according to the type of procurement involved, as does the stage at which appointment takes place.

## Traditional procurement

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In traditionally procured projects, the architect and the rest of the design team can be appointed at the beginning and can work on the project for its whole life from feasibility study right through to completion. There are several ways the client can begin the process of selecting the design team:

- contact RIBA client services, which will provide a list of suitable architectural practices and draw up a short-list of designers that have worked successfully on similar projects<sup>1</sup>
- prepare your own short-list, by contacting schools or local authorities that carried out projects that you like, and finding out who the designers were
- run an architectural competition – the RIBA competitions office can organise this for you.<sup>2</sup>

Once you have prepared a shortlist, it is worth researching all the practices carefully, including requesting brochures, visiting their completed projects, meeting the people involved and talking to previous clients.

## BSF

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BSF projects are much more complex. The design team, building contractor, facilities managers and the ICT provider will all come as one consortium. The design team are normally subcontractors of the building contractor and they will be appointed before the submission of an expression of interest. Each bidder may have more than one architectural practice so that they have the range of skills and the capacity to design all the schools for that local authority. Sample schools will have to work with each of the three competing teams until the preferred LEP partner has been selected – at the end of the initial competition stage.

For the post-LEP schools in a BSF project, the design team(s) will already have been appointed by the private sector partner in the LEP but there may be an opportunity to select an architect from a panel retained by the contractor.

<sup>1</sup> See 'find an architect' at [www.architecture.com](http://www.architecture.com)

<sup>2</sup> See competitions page at [www.riba.org](http://www.riba.org)

## 5.2 BSF – getting the design message across

In a BSF project, as explained above, the bidding contractors or consortia appoint the design team. So if the local authority makes it clear that design is high on the agenda, these contractors will be encouraged to pick high-calibre designers. They are likely to select a design team soon after seeing the advertisement in the Official Journal of the European Union (OJEU), prior to submitting their expression of interest. It is therefore important to get the message across as early as possible.

**Hellerup Skole**, Copenhagen  
Innovative school design in Denmark



Hellerup Skole by Arkitema © Hellerup Skole

## 5.3 Shortlisting

**‘You should obtain a short statement from the practice on, say, their approach to school design and their proposed method of working’**

Whatever type of procurement is used, the process of evaluating different design teams will be similar and a range of relevant information is required. The indicators below are all useful and together can be analysed to create a rounded view. All of these criteria can be scored separately to provide an overall figure, if necessary:

- details of the practice, including size, the office from which the work will be done and CVs of individuals that would work on the project(s)
- examples of previous projects, both in the education sector and other building types, to demonstrate the ability to achieve design excellence, with information on the client, dates, services provided, contract value and procurement route (the practice may have provided only part of the overall design service)
- details of design awards received and dates
- names of previous clients who will give references – a telephone call to the client’s project manager and/or school can reveal a lot of useful information
- a short statement from the practice on, say, their approach to school design and their proposed method of working.

## 5.4 Evaluating proposals, bids or submissions

**‘It is important that evaluations are carried out by experts who have a lot of experience of school design as well as by stakeholders and users’**

The need to review designs can occur at several points during the design process. At one end of the spectrum the review may be an informal one after the design team has produced its initial sketch design. At the other extreme, in BSF projects it is necessary to carry out formal reviews of designs from competing bidders and to give scores for each, to inform the selection of the preferred bidder for the LEP.

It is important that evaluations are carried out by experts who have a lot of experience of school design as well as by stakeholders and users. However, similar techniques can be used in most situations, possibly with some modification to suit the particular circumstances. The following factors are worth considering:

- **Schools design assessment panel.** This has been established by CABE to help local authorities evaluate the design quality of projects, support bidders in meeting brief requirements and refining their proposals and ensure that design quality remains consistently high for all BSF schools. The panel is drawn from a pool of around 30 expert advisors from England’s architectural and built environment community and each panel includes specialist schools experts.
- **Checklists.** These can operate in a similar way to a DQI, identifying a whole series of design issues against which comments can be organised. The 10 subheadings of DQI can be a useful way of organising the criteria. Different people can use the checklist to review a design independently or they can review it as a group. The group review can be very useful, since it encourages different stakeholders to discuss their views on designs, and form a well-reasoned response. The CABE 10 key points for a well-designed school (see 1.3) is a useful checklist for evaluating any design proposals.
- **BREEAM.** The evaluation process and scoring (described in 4.7) needs to be carried out by trained BREEAM assessors.

- **DQI for schools.** If stakeholders are using this, then at the mid-design stage they should check the designs against their original aspirations.
- **Scenario testing.** This is a very useful way of checking that a design will function well in many different circumstances. For example, what happens when a pupil has an accident in a science laboratory? Where will they be taken, how will they get there, are there any obstacles along the route? Or what happens at lunch times on a rainy day? Where will all the pupils congregate? Will they obstruct pupils queuing for lunch? Will they disturb any children studying or taking exams? How many (disabled) people are arriving and by what means: walking, cycle, bus, minibus, taxi or car? And so on.<sup>3</sup>

It should be noted that both DQI and BREEAM require facilitation and the host organisations for both systems (the Construction Industry Council and Building Research Establishment) operate a list of facilitators.<sup>4</sup>

Different evaluation processes for design apply in BSF before and after the formation of the LEP. Before LEP (for sample schools):

- stakeholders review designs against DQI for schools at the mid-design stage
- a trained BREEAM assessor will review the designs at the end of the design period
- the local authority uses a scoring matrix to evaluate designs at the end of the design period
- CABE's schools design assessment panel will review the designs against the 10 key points for a well-designed school (see 1.3) and their own set of criteria.

It is important to appreciate that in BSF projects design is one of many different factors that need to be taken into account when selecting a partner to form a LEP. These include crucial factors such as legal and financial proposals, ICT provision and facilities management arrangements.

<sup>3</sup> See the Mace exemplar design proposals at [tinyurl.com/3bns1k](http://tinyurl.com/3bns1k)

<sup>4</sup> See [www.tinyurl.com/2robm4](http://www.tinyurl.com/2robm4) and [www.breeam.org](http://www.breeam.org)

However, there is a strong case for establishing a minimum design quality threshold to ensure that very high scores for other factors do not outweigh design and result in a bidder with poor or mediocre designs being appointed.

After LEP (for remaining schools):

- Stakeholders review designs against DQI for schools at the mid-design stage
- A trained BREEAM assessor reviews the designs at the end of the design period
- CABE's school design assessment panel may<sup>5</sup> review the designs against the 10 key points for a well-designed school (see page 7).

Another aspect of design review evaluation is to check the financial viability of proposals. The project quantity surveyor or cost consultant will do this in a conventionally procured project. An independent quantity surveyor working for the client would check this aspect for a competitive bid in BSF.

The amount of time needed for a thorough evaluation of design proposals should not be underestimated. If a large number of stakeholders are involved in a large, complex scheme, it may take a few weeks to collect together all the views and combine them into a report with useful feedback to hand to the design team.

<sup>5</sup> Schools design assessment panel will not be reviewing all post-LEP schools but will select a representative sample across all BSF projects

## 5.5 Involving stakeholders during evaluation

**‘There can be advantages in bringing the stakeholders together to evaluate all the school designs at the same time’**

Where several schools are being designed as part of a larger project such as BSF, there can be advantages in bringing the stakeholders together to evaluate all the school designs at the same time. Although this is inevitably more time consuming, it does have the advantage that the group get to see a number of different designs and can learn from these and the views of other stakeholders. In addition, where a group of designs by a consortium have to be selected, it encourages the group to consider the quality of all the designs together, rather than just that of their own school, thus helping to achieve a consensus view (see case study 12 on page 82).

Matthew Academy, Romsgate © David Barkour/BP



## 5.6 Maintaining design standards

**‘All the bidders should be required to reach a standard that is not just acceptable but is excellent, since in the final stages of the selection process factors other than design may become crucial’**

In competitive processes, such as the initial stages of BSF when bidders are asked to design sample schemes, it is vital that the competition is continued until a high standard of design has been achieved. All the bidders should be required to reach a standard that is not just acceptable but is excellent, since in the final stages of the selection process factors other than design may become crucial in the decision (for example, the affordability of the bid). A design quality threshold should also be established, below which a bidder's proposals would be disqualified. This mechanism can help to prevent bidders with unsatisfactory design proposals being selected as preferred bidders.

The design of the sample schemes needs to be of the highest possible standards for several reasons:

- These projects will act as a **benchmark of quality** throughout the rest of the BSF project, after the setting up of the LEP. The schools designed and built after the formation of the LEP will be the product of negotiations between the school and the consortium and it will be much easier to demand high standards in this non-competitive situation if the precedent set by the sample schemes demonstrates excellent design quality.
- After selection of the preferred bidder, the **influence of the design team** within the consortium will significantly diminish. During the competitive phase, the contractor relies heavily on the design team to produce imaginative designs that will give its bid the edge over other bidders. During this phase, the design team themselves have a degree of power and can argue strongly for high design quality. Once the competition has ended, power shifts and there is a tendency for the building contractors within the consortium to press for economies and reductions in standards. Whilst some of these changes may be a welcome design development – helping to achieve improved value for money and quicker construction – there is a danger that design quality can be compromised during the process. For this reason, it is essential that the designs are of an exceptional standard at preferred bidder stage, since it is likely that any improvements after this stage will only be offered at significant additional cost.



There is normally an extended period of negotiations with bidders between the submission of bids and the announcement of preferred bidder. This has been formalised in the European Union's 'competitive dialogue' process for procurement<sup>6</sup>. This is an opportunity for the client to secure improvements in the initial bid designs, through a continuation of the negotiations and dialogue between the design team, schools and other key stakeholders. The design teams need to get detailed feedback on the initial evaluation of the bid designs and this is normally coordinated by the client design advisor through a series of 'clarification questions' submitted simultaneously to each bidder. For this process to be most effective, and the greatest design improvements to be achieved, the schools will need to examine proposals very carefully and thoroughly and document their comments clearly and quickly. This process can be time consuming but potentially has substantial benefits in terms of the eventual design quality achieved.

#### **Peacehaven Community School**

Vigilance by schools throughout the negotiation stages will help to secure high quality buildings

Peacehaven Community School by architecture plus © Andrew Beard



<sup>6</sup> See PFS Guidance Note on How to Conduct a Competitive Dialogue Procedure, available at [www.p4s.org.uk/guidance.htm](http://www.p4s.org.uk/guidance.htm)

## 5.7 Checking and testing – the role of advisors

**‘It is the job of the client design advisor and technical advisor to check all this information and identify any anomalies or issues of concern’**

When bids are submitted in a competition, such as the initial phase of a BSF project, they will be accompanied by large quantities of very detailed information, often in the form of technical specifications and diagrams. This is crucial information and it can have a significant impact on the design quality of the final buildings. It should demonstrate that the proposed buildings comply with all the requirements of the output specification – but it should never be assumed that they will. Bids are put together at great speed and mistakes can be made. Sometimes bidders decide to aim for a lower standard to improve the affordability of their proposals.

It is the job of the client design advisor and technical advisor to check all this information and identify any anomalies or issues of concern. Areas where problems frequently arise are:

- the provision of adequate ventilation to teaching spaces
- adequate daylighting for the full depth of rooms
- acoustic performance of large spaces such as halls or circulation areas.



## 6 Design development and construction



# 6.1 The importance of getting the detail right

**‘If you put effort into getting the detail as well as the basic design right, the building is likely to be far more successful’**

The basic design – the plans, elevations and sections showing how all the spaces work – has been agreed. Why not relax and leave the experts to sort everything else out?

Bad idea: as with any complex building project, the devil is in the detail. All three components of design quality – functionality, build quality and impact – are significantly influenced by the detailed design. If you put effort into getting the detail as well as the basic design right, the building is likely to be far more successful.

School buildings are used intensively every day. Large numbers of students and staff are constantly circulating around the buildings and classrooms. The level of use is much greater than for offices and the level of activity is more like an airport. The buildings will inevitably receive very heavy wear and tear and the quality of finishes must take account of this. Two of the most common problem areas in newly built schools are door ironmongery and toilet fittings. Typically, ironmongery represents one per cent of the building cost but accounts for 80 per cent of the post-occupancy defects and complaints. Wall, floor and ceiling finishes are another important area; they need to be durable, attractive and easy to maintain. It is vital that their selection is both appropriate and fit for purpose.

Once the design has been agreed, the design team will start to develop the design in much more detail and start preparation of the final design and production information. As the structure is designed in detail, some of the dimensions may be adjusted. Materials and building components will all be selected. The engineers will design the electrical and mechanical services in detail and the visual impact of this can be very significant if not managed carefully through the design development process. Fitted and loose furniture and equipment will all be designed or selected from manufacturers’ standard ranges. The position of the furniture and equipment together with numerous fittings such as lighting, power and data outlets, radiator positions, controls and alarms will all be identified. Once construction work has started on site, it will be difficult, time consuming and expensive to change any of these items.

It is therefore essential that schools and other key stakeholders are involved in a regular dialogue with the design team throughout the design development period. It is also vital that the design development and review process keeps ahead of the phases of construction. There are a number of simple strategies that can be adopted to make this stage of the work run smoothly and, whatever methods are selected, they need to be decided upon early, and communicated clearly to everyone involved in the project:

- Have a single point of contact – **a school representative** – within the school through which all communications with the design team are channelled.
- At the outset, agree a timetable for decisions about different matters to enable the school representative to plan consultation with teachers, administrative staff, laboratory technicians, and so on. The design team should be able to work this out in advance from its own work programmes.
- Keep a careful record of all decisions requested, and the answers provided.
- Make sure that the school representative is involved in the regular design team meetings so that they are fully aware of design progress and decisions that may be needed in the future.
- Adopt a formal sign-off procedure by the school representative for detailed drawings, schedules, specifications etc.
- If the school representative is in doubt about anything, they should ask! They should not feel intimidated by technical terms or jargon. Ask to have questions fully explained and the implications of any choices fully described to you. Ask to see samples of proposed materials and fittings. The client design advisor should be able to help with the interpretation of technical information where necessary.
- Establish mechanisms within the school for consulting with different stakeholders about issues that may affect their particular area of the school. Involve school students in decisions that impact on them. This will engender a much stronger sense of ownership and is likely to foster greater respect for the new building (see case study 6 – Bedminster Down School).

Throughout this process it is important not to make undesirable compromises. Hard decisions will doubtless be needed but ensure that the detailed design does not compromise your original vision and design concept in any way. The client design advisor should help you with this.

The time and effort required in being involved in the detailed design can be considerable and at times it may seem very onerous and rather uninteresting. However, this is time very well spent and the benefits of increased user satisfaction, and understanding of why design choices have been made, will make it all worthwhile.

Innovative design for toilets at **Bedminster Down** developed in close consultation with students.

© Andrew Beard



## 6.2 Importance of contractual documentation

Various forms of **design and build** contract are now a common feature of building projects because of the certainty they provide in terms of price and completion date. design and build contracts are a feature of both PFI and non-PFI procurement in BSF.

Under design and build, the building contract contains the detailed design drawings, specifications and any particular details that the client and design team consider necessary to guarantee the quality of the final project. The essential fact to be aware of is that *if something isn't included in the contract, then providing it may incur additional costs*. If the contract does not state that the walls are to be plastered, then the building contractor can choose to leave the walls with an ordinary painted blockwork finish. If it does not require electrical and other wiring to be concealed, it can be distributed in exposed trunking (metal tubes fixed on the surface of the wall or ceiling). These issues can all have significant visual and operational implications for your school.

Whatever the form of procurement, it is essential that schools are aware of the level of detail included in the contract documentation and what it all means. The client design advisor is well qualified to check and explain all this to the school and other client stakeholders. Where the detailed internal design is an essential aspect of achieving high design quality, then the client should ensure that detailed drawings have been included in the contract. For example, it is worthwhile having a drawing showing the floor plan, the elevations of all the walls and the ceiling plan for typical classrooms, indicating how wiring is concealed, how sockets are provided, where white boards and display boards and cupboards are located, or whether any of these are moveable, and so on. This will help to establish the design standards for detailing that are required throughout the school.



## 6.3 BSF – maintaining quality after selection

**‘It is essential that the local authority and the school maintain vigilance throughout all stages of the negotiations’**

In BSF, after the selection of the preferred bidder there is a period of negotiations prior to finalising all the design detail in the contract. Similarly, after the formation of the LEP, detailed designs will be negotiated with the consortium. There is a risk that the contractor may try to reduce the quality of their original proposals, perhaps to reduce its costs or to make the construction process more straightforward. Or there may be other unforeseen circumstances that require the local authority to seek reductions in costs, for example to improve affordability or to compensate for increased finance costs.

In these circumstances, it is essential that the local authority and the school maintain vigilance throughout all stages of the negotiations. The following points should help to ensure that negative effects on design quality are minimised during these negotiations:

- Request **regular reports** from the client design advisor on progress and any design changes throughout the negotiation period.
- Establish in advance which are **the most important features of the design** – the ones that are the highest priorities and non-negotiable. This can ensure that the integrity of the original design is maintained.
- Ask for a **breakdown of costs** when reductions are being considered, and request alternatives so that any changes can be weighed up against each other, enabling those that save the most money with the least impact on the design to be selected.

## 7 After completion



# 7.1 User manuals and training

**‘Training should be provided when the buildings are first occupied and simple user manuals should be provided for all new staff’**

Modern schools are complex buildings containing a variety of sophisticated components and engineering systems. These cannot be expected to operate smoothly without regular maintenance and adjustment. Some of them will be the responsibility of the building managers and caretakers – either from the school or an external facilities company – but others will undoubtedly require input from school staff and sometimes from students. For the building systems to operate effectively and efficiently, everyone needs to receive training on how to use them.

The building contractor is obliged to provide user manuals that explain how to operate buildings safely so that the construction design and management coordinator (see section 4) can produce a health and safety file for the building owner. In addition, the contractor should provide user manuals detailing all the materials that have been used, the maintenance they require, the equipment that has been installed and how it operates and so on. Generally, this will be specialist, technical information.

In many buildings, there will also be manual systems that require control directly by the users. For example, the effective operation of natural ventilation systems in classrooms may require an understanding by the teachers of the controls and the optimum settings to use during different seasons. Training should be provided when the buildings are first occupied and simple user manuals should be provided for all new staff.

Evacuation of disabled people and the management of specific equipment such as loop systems will require training and ongoing maintenance. There might also be the need for agreed maintenance contracts to ensure continual access to some equipment and times for servicing that do not interfere with the running of the school.

## 7.2 Monitoring costs and sustainability outputs

In an era of devolved school budgets it is important that you keep the cost of running your premises to a realistic minimum so that you can maximise the resources available for teaching and learning.

Although it is to be hoped that your school buildings will have been planned to be as sustainable as possible during operation, optimum economy will depend on effective control systems for heating, ventilation and lighting, and effective resource management within the school. Careful monitoring of energy and other running costs is therefore essential if all these issues are to be well managed.

Some sustainability features will depend on awareness of all the building's users. This can be achieved by educating all users of the building in conservation principles and explaining how sustainability can be maximised. Electronic panels and display material can be used to communicate energy consumption information to them. All this information can be incorporated into teaching material and practical work in a variety of subjects.

Without careful monitoring and raised awareness of the issues, the potential of a well-designed, sustainable building is unlikely to be fully achieved. For these aspects of a school design to be successfully achieved, all users of the building and its grounds need to feel a sense of responsibility.

A recent study<sup>1</sup> of five 'low-energy' schools in the UK showed that predicted CO<sub>2</sub> savings have not been consistently achieved. Although heating energy consumption for these buildings was successfully reduced, electrical energy consumption was much greater than in the schools they replaced. Obvious causes are an increase in the use of IT in schools and more stringent internal air quality standards. Less obvious causes are a lack of building management training for more technically complex 'intelligent' buildings, new ways of using the buildings and control strategies that default to equipment and lights being 'ON' rather than 'OFF'. The study calls for more post-occupancy evaluation to ensure that genuine 'low-energy' buildings are produced.

<sup>1</sup> Pegg, I, Cripps, A, Kolokotroni, M, 2007, *Post-occupancy performance of five low-energy schools in the UK*, AshRAE transactions, Long Beach, June 2007

## 7.3 Post-occupancy evaluation

**‘Evaluations need to be conducted carefully and thoroughly if they are to provide robust and comprehensive results... it may cost up to £10,000 per school’**

Carrying out a detailed analysis of how a new or refurbished building is performing after it has been in use for at least a full academic year can be a very valuable exercise. Post-occupancy evaluation can:

- inform future developments – if the school is part of a larger BSF project, lessons from successes and any problems can help to increase the quality of later designs
- assess the extent to which a new building is supporting the school’s educational transformation agenda and identify where barriers remain
- inform subsequent changes to improve the environment in the school – and help to distinguish which issues are to do with the spaces and which are about how the spaces are managed
- differentiate in a systematic way the reaction of all the different users and stakeholders to the new building – and thus identify how well different groups are catered for.

Evaluations need to be conducted carefully and thoroughly if they are to provide robust and comprehensive results. They therefore require significant resources, both in terms of the time of school users and money to pay researchers to undertake the work, analyse and report it fully. It may cost up to £10,000 per school.

The process of conducting an evaluation may involve:

- questionnaires to teachers, staff, pupils, parents and community users – they should be simple and highlight what works well, and what works less well
- analysis of questionnaires and identification of key issues
- a series of focused workshops or discussions on the key issues to identify the cause of problems and gather ideas on solutions
- communication to the whole school community on outcomes
- repetition at regular intervals – say every one or two years.

It may be a good idea to hold separate workshops for different groups as they could each have different views about successes and concerns. For example, groups could be held for each year group of pupils, for teaching and for non-teaching staff, and so on. Sessions should balance positives with negatives and should celebrate what is good about the school and the new or improved buildings.

An alternative method is to use the DQI for schools (see section 4.6), which is designed for use after occupation of a building as well as at briefing and mid-design stages. This tool can also be used by different groups of stakeholders and analysed separately, as well as to provide an overall, combined view. The results of a post-occupation DQI for schools can be compared with the results at the briefing and mid-design stages to provide an assessment of how well the building has performed against the original objectives.

## Design quality method

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Another evaluation tool for completed schools was developed by the Building Research Establishment (BRE) in 2002 to assess the design quality of new schools for the Audit Commission.<sup>2</sup> BRE's premise in developing the design quality method was that an experienced team of construction professionals could assess operating buildings against objective performance measures.

The method originated from applying a balanced scorecard approach to post-occupancy evaluation to measure the whole performance of buildings. It relies on user opinion, professional judgement and scientific measurement where possible (for example, lighting levels, air quality and acoustics). The surveys are visual and non-intrusive, allowing economic valuation of large portfolios of buildings. Moderation of the results against the experience of a large pool of BRE experts reduces the subjective nature judgements to make as objective a process as possible.

<sup>2</sup> See Cook, M, *The design quality manual*, Blackwell Publishing, 2007



## Case study 13 – the School Works post-occupancy evaluation

**‘Where users felt they had been fully involved they were happier with the finished building’**

Although post-occupancy evaluation is often used for commercial buildings and on schools abroad, there are few examples of it being used for recently built schools in the UK. However, School Works conducted a pilot exercise on 11 schools for the DfES in 2004.

The pilot developed a simple methodology and demonstrated the value of the process in identifying some common successes and failures in school design at the time. Important lessons included:

– **Briefing:** The briefing process and the involvement of school users in it are critical to the success of the building project. Where users felt they had been fully involved, they were happier with the finished building.

– **Environment:** Ventilation and temperature were raised as important issues in all of the pilot schools. Often users felt spaces were too hot or too cold and they could not always regulate their own environment.

Bristol City Academy by Faulstich Chigg Bradley © Simon Dainton







- **Lighting:** Users wanted natural light but this had not always been provided to the extent they would have liked. In some cases internal offices and teaching spaces had no natural light at all.
- **Corridors and circulation spaces:** Too often there were pinch points in circulation which caused problems for user flow around the building. These resulted from corridors which were too narrow, loss of area through cut-outs in corridors and walkways, narrow stairways and inadequate signage.
- **Fixtures and fittings:** Too often floor finishes were not durable enough, chairs were uncomfortable and door furniture was not robust.
- **Security:** CCTV, both inside and outside the school, was often popular with pupils and adults. It was seen to promote a safe environment and reduce cases of crime and vandalism.

- **Entrances:** Most of the pilot schools were seen as welcoming to users. However, signage both to and around the school was highlighted as less satisfactory in a number of the pilots.
- **Social spaces:** Staff rooms were often badly located in the school, making them inaccessible to parts of the school community. Careful thought needs to be given to the location of staff social spaces and their purpose. Pupil social spaces worked well where they had been planned into the design and allowed pupils to sit and relax with friends (often from different years).
- **Dining areas:** These were often a problem in the pilot schools, either being too small or difficult to manage. They often worked best where pupils could spill out and eat in more flexible areas either inside or outside the school.

- **External spaces:** These were generally poor in the pilot schools with little effective landscaping, little shelter for wet play and too little designated spaces for quiet and active breaks.
- **Learning spaces:** Generally, learning spaces had a positive response. However, provision of adequate storage, acoustics and environmental issues were seen as problem areas.
- **Toilets:** Large toilets were seen to provide spaces for bullying. However, management seemed to be the most important issue. If they were not clean, were vandalised or were dark and poorly ventilated, pupils would not use them.



# Appendices

# Appendix 1 – glossary

## General glossary of terms

### **Abnormals**

Extra costs that are a consequence of particular site or location factors.

### **Accommodation schedule**

Document that outlines the number of rooms, their optimum or minimum sizes, and any special internal requirements.

### **Adjacencies**

The relationship of rooms or departments to each other within a building.

### **Brief (outline or detailed)**

The outline brief is an initial description of the client's goals and requirements. The detailed brief is a development of this with input from users and the design team.

### **CABE enabler**

Enablers are built environment professionals, normally architects, who are allocated by CABE to provide client side advice to public sector projects.

### **Client design advisor (for a schools project)**

Architect skilled in designing education buildings. They are responsible for advising the local authority and the school stakeholders on all design issues.

### **Consortium/consortia**

In PPP/PFI the teams bidding for the contract are known as the consortia. They normally consist of funders, facilities management and construction companies. Design teams are subcontractors to the construction companies.

### **Building contractor**

The team that constructs the building.

### **Department for Children, Schools and Families (DCSF),**

**formerly Department for Education and Skills** Government department responsible for education.

### **Design and build**

Procurement route where the building contractor is partly or entirely responsible for design development and for construction.

**Design champion**

Senior member of client organisation who advocates good design.

**Design team**

Responsible for designing the building. Usually led by the architects, the team also includes landscape architects, structural and service engineers and quantity surveyors/cost consultants.

**Design quality indicator for schools (DQIfS)**

A process for evaluating the design quality of school buildings from the inception of the project through the design stages and once the building is complete.

**Detailed design**

The last stage in design development.

**Exemplar designs**

Designs developed by 11 leading architectural practices for the DCSF. The designs are intended to develop a shared vision of what are 'schools for the future'.

**Furniture, fixtures and equipment (FF&E)**

All of the tables, chairs, technical items and machinery required to run the school.

**Information and communication technology (ICT)**

Computers, white boards and software used for learning and processing information in a school.

**Official Journal of the European Union (OJEU)**

Publication where contract notices for procuring projects over a certain value must be advertised.

**Options appraisal**

Examining alternative strategic design options at the beginning of a project by looking at the relative merits of new build, remodelling, refurbishment or a combination of these.

**Private finance initiative (PFI)**

Procurement route that requires a private sector consortium to raise money to fund the project, carry out construction and manage the building, typically for 25 years.

**Procurement**

Process of selecting the contractor who offers the most favourable offer for the delivery of goods or services.

**Public private partnership (PPP)**

Procurement methods where the up-front costs of the project are met by the private sector and the public sector client pays back a 'mortgage' over an agreed period.

**Project manager**

The person who has responsibility for organising a project and coordinating the work of others to secure the achievement of the project objectives.

**Technical advisor**

Coordinates the technical aspects of projects.

**Tender**

A proposal, with costs, to enter into a contract to undertake a defined piece of work.

**Traditional contract**

Design and construction teams are chosen separately and engaged independently by the client. The design is worked up first by the design team and used by the contractors to price their construction cost.

**Whole-life cost**

The full cost of a building over its life, usually taken as 25 to 30 years. This includes all capital, running, replacement and maintenance costs.

**Public Private Partnerships Programme (4ps)**

An organisation providing advice to (and funded by) local government on public/private partnerships. Provides support to local authorities for the BSF programme, through its expert client programme.

**Building Schools for the Future (BSF)**

Government investment programme to rebuild or renew every secondary school in England over a 10-15 year period.

**Competitive dialogue**

A procurement process using on-going negotiations to secure bids for complex contracts such as BSF.

**Expression of interest (EOI)**

Submissions by consortia who wish to be short-listed to tender for a BSF project.

**Invitation to negotiate (ITN)**

The document issued to short-listed bidders which details all the requirements for a project.

**Invitation to participate in the dialogue (ITPD)**

The document which invites participants who have pre-qualified to participate in a competitive dialogue.

**Invitation to continue dialogue (ITCD)**

Bidders will be short-listed to continue dialogue with the authority, based on their responses to the ITPD.

**Invitation to submit final tenders (ITSFT)**

The document which invites remaining participants to submit final tenders once the dialogue phase has been concluded.

**Local education partnership (LEP)**

A delivery mechanism developed specifically for BSF which allows local authorities to procure all the requirements of their local BSF projects through a single long-term partnership with a private sector partner and PfS in a joint venture company called a local education partnership.

**One school pathfinders (OSP)**

Single school project funded by BSF capital, aimed at those local authorities not due to start the full BSF programme until waves 10 to 15

**Outline business case (OBC)**

Document which sets out in detail the scope, costs, affordability, risks, procurement route and timetable of the project.

**Output specification**

A detailed description of the functions that the new accommodation must be capable of performing.

**Partnerships for schools (PfS)**

Non-departmental public body set up to deliver Building Schools for the Future.

**Pre-qualification questionnaire (PQQ)**

Sent to bidders expressing an interest in the project advertised in the Official Journal of the European Union (OJEU). It obtains information about potential bidders' capacity and ability to deliver the project.

**Preferred bidder**

The consortia which win the bid and which will, subject to the satisfactory conclusion of negotiations, form part of the LEP.

**Special purpose vehicle (SPV)**

The company that will be established by the LEP to operate and manage individual tranches of the BSF project.

**Strategy for change**

The document which sets out 'what is to be done' and 'how it will be done', in terms of transforming education and the school estate simultaneously within the authority.

**Wave**

Funding for BSF is being introduced in phases, or 'waves'. Each wave provides funding for approximately 12 local authorities. Each local authority will receive funding for approximately 10 schools in each wave.

**Sample schools**

In BSF a local authority will choose (usually) two or three schools as samples which the bidders must design in the competitive stage, and which become the first projects to be carried out by the LEP.

**Non-sample schools**

The school projects that are designed and constructed following negotiations after the establishment of the LEP.



# Appendix 2 – guidance

## Design

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### ***Picturing school design***

A visual guide to secondary school buildings and their surroundings using the design quality indicator for schools. The CD presentation and booklet show some of the common pitfalls in school design and shows some suggested solutions.

[www.cabe.org.uk/publications](http://www.cabe.org.uk/publications)

### ***Better public building***

Provides the arguments and the evidence that good design makes places work better. It offers practical advice for creating new public building that is value for money, sustainable and a source of civic pride. And it sets out the steps that public bodies need to follow if they are to ensure that all those who use public services benefit from good design.

[www.cabe.org.uk/publications](http://www.cabe.org.uk/publications)

### ***21st century schools: learning environments of the future***

Publication that explores the relationship between the physical school environment and the teaching that it contains. It draws together the arguments around the need for change within the sector and identifies some of the issues driving such change.

[www.cabe.org.uk/publications](http://www.cabe.org.uk/publications)

### ***Building bulletins***

BB101: Ventilation of school buildings

BB98: Briefing guide for secondary school projects

BB95: Schools for the future

BB94: Inclusive school design

BB93: Acoustic design of schools (web only)

BB92: Modern foreign languages accommodation

BB88: Fume cupboards in school

BB87: Guidelines for environmental design in school (revised 2003)

BB81: Design and technology accommodation in secondary schools: a design guide (revised 2004)

BB80: Science accommodation in secondary schools: a design guide (revised 2004)

BB77: Designing for pupils with special educational needs and special schools 2005

BB71: The outdoor classroom

Download from [www.tinyurl.com/ypb005](http://www.tinyurl.com/ypb005)

### **Schools for the future publications**

Transforming schools: an inspirational guide to remodelling secondary schools

Classrooms of the future

Design of sustainable schools: case studies

Designing schools for extended services

Exemplar designs: concepts and ideas

Inspirational design for PE and sport sciences

Learning environments for pupil referral units

Schools for the future: designing school grounds

Available free from Prolog – call 0845 60 222 60 – or available to purchase from The Stationery Office 0870 600 5522

### **BSF**

Introduction to Building Schools for the Future

Jointly published by 4ps and PfS, April 2007. Frequently asked questions and answers about BSF projects, and the implications for school governors.

[www.4ps.gov.uk](http://www.4ps.gov.uk)

### ***Building Schools for the Future: the client design advisor***

This publication explains the requirement for, role and appointment of experienced architects as client design advisors within the BSF programme.

[www.cabe.org.uk/publications](http://www.cabe.org.uk/publications)

***Building Schools for the Future: introducing the CABE schools design quality programme***

An introduction to CABE's new schools design quality programme, which is supporting the £45 billion BSF initiative.

[www.cabe.org.uk/publications](http://www.cabe.org.uk/publications)

Guidance notes on BSF are available to download from the Partnerships for Schools website.

[www.pfs.gov.uk](http://www.pfs.gov.uk)

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**Consultation**

***Being involved in school design***

A guide for school communities, local authorities, funders and design and construction teams to being involved in the school building process. Its 10 case studies provide examples of efficient involvement across a range of school building projects.

[www.cabe.org.uk/publications](http://www.cabe.org.uk/publications)

***Joinedupdesignforschools – the Sorrell Foundation***

Reviews several British school design projects in which students and designers co-operated to create improved facilities in classrooms, restrooms, cafeterias, and lockers.

[www.thesorrellfoundation.com](http://www.thesorrellfoundation.com)

***A-Z sketchbook for school build and design***

A visual guide in cartoon format illustrating the key areas that must be considered when renovating or building a school. The drawings are organised in chapters according to school room or space type, design issue, or amenity. The purpose of the publication is to help students and others participate in the school design process.

[www.school-works.org/publications.asp](http://www.school-works.org/publications.asp)

***The learning environments campaign prospectus***

Learning in the UK's schools is evolving fast, but the environments where that learning happens are essentially the same as they were 100 years ago.

Change is long overdue and this prospectus points the way to making it happen.

[www.designcouncil.org.uk](http://www.designcouncil.org.uk)

***The school I'd like: children and young people's reflections on an education for the 21st century***

In 2001 *The Guardian* newspaper launched a competition called 'The school I'd like' in which young people were asked to imagine their ideal school. This book presents material drawn from the competition and is illustrated by children's essays, stories, poems, designs, pictures, photographs, and plans.

Catherine Burke and Ian Grosvenor, RoutledgeFalmer,

[www.routledgefalmer.com](http://www.routledgefalmer.com)

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**Other useful publications**

***Assessing secondary school design quality***

Report on CABE's audit into the design quality of half the schools built between 2000 and 2005.

[www.cabe.org.uk/publications](http://www.cabe.org.uk/publications)

***2020 vision – report of the teaching and learning in 2020 review group***

This report presents a vision for personalising teaching and learning. It draws upon a wide range of evidence and practice, and makes recommendations about what changes to the school system should be considered in order to make its vision of what schools will look like in 2020 a reality.

[www.dcsf.gov.uk](http://www.dcsf.gov.uk)

***Learning by design – England***

***Learning by design – London***

Two publications showcasing newly designed exemplar schools in England and London.

[www.londonopenhouse.org](http://www.londonopenhouse.org)

***Sustainable schools – getting it right***

Discussion paper intended about sustainability in our schools.

[www.bcse.uk.net](http://www.bcse.uk.net)

***Global learning environments summit – ideas book***

This book gives a flavour of the first global learning environments summit where over thirty expert speakers from the UK and across the world gave presentations on what makes a quality learning environment.

[www.bcse.uk.net](http://www.bcse.uk.net)

***Design and construction of sustainable schools – lessons from schools buildings in Norway and Germany***

Commissioned by the Scottish Executive, Gaia Architects led a tour of educationalists and architects to visit school buildings in Germany and Norway. These books, in two volumes, document the tour and the discussions on how and if the lessons could be transferred to Scotland.

[www.scotland.gov.uk](http://www.scotland.gov.uk)

***Developing school buildings: a guide for governors and client groups***

[www.riba.org](http://www.riba.org)

***Which places work***

This is a website which has been developed for pupils in secondary education at key stage 3 and 4 to use in class to discuss design quality and what it means. It is based on the DQI for schools and can be used online by pupils to discuss the design quality of a building they are in. It is principally aimed at schools undergoing a rebuilding programme and teachers of the construction and the built environment GCSE syllabus. But it is also valuable for teachers of design and technology, art and design and geography and citizenship.

[www.whichplaceswork.org.uk](http://www.whichplaceswork.org.uk)

***How places work: teacher's guide***

How places work is CABE's programme of facilitated visits to buildings and spaces for secondary schools designed to inspire young people to learn about the built environment through first-hand experience. This guide offers teachers advice and ideas for making visits stimulating and informative.

[www.cabe.org.uk/publications](http://www.cabe.org.uk/publications)

## Government strategies

### **Every child matters**

[www.everychildmatters.gov.uk](http://www.everychildmatters.gov.uk)

### **Children's Act 2004**

[www.everychildmatters.gov.uk/strategy/guidance](http://www.everychildmatters.gov.uk/strategy/guidance)

### **Children's Fund**

[www.everychildmatters.gov.uk/strategy/childrensfund](http://www.everychildmatters.gov.uk/strategy/childrensfund)

### **Youth matters**

[www.dfes.gov.uk/publications/youth](http://www.dfes.gov.uk/publications/youth)

### **Extended schools**

[www.everychildmatters.gov.uk/ete/extendedschools](http://www.everychildmatters.gov.uk/ete/extendedschools)

[www.teachernet.gov.uk/wholeschool/extendedschools](http://www.teachernet.gov.uk/wholeschool/extendedschools)

### **Academies**

Schools sponsored by business faith or voluntary groups

[www.standards.dfes.gov.uk/academies](http://www.standards.dfes.gov.uk/academies)

### **Play strategy**

The Children's Play Council is a national voluntary organisation – under the aegis of the National Children's Bureau – promoting children's right to play.

Contracted by the Department of Culture Media and Sport to carry out research, develop policy and good practice

[www.ncb.org.uk/cpc](http://www.ncb.org.uk/cpc)

# Appendix 3 – useful organisations and websites

## **Architecture Centre Network (ACN)**

A network of Architecture and Built Environment Centres (ABECs) throughout the country who work with communities, public, professions and the government to explore and interpret the historic and contemporary built environment through compelling, innovative programmes of education, exhibition, empowerment and advice.

[www.architecturecentre.net](http://www.architecturecentre.net)

## **Bog Standard**

A campaign organised by Education and Resources for Improving Childhood Continence (ERIC) to promote better toilets for pupils in schools in the UK.

[www.bog-standard.org](http://www.bog-standard.org)

## **British Council for School Environments (BCSE)**

Membership organisation made up of local authorities, schools, construction companies, architects and others involved in, and concerned about, the design and build process in the education sector.

[www.bcse.uk.net](http://www.bcse.uk.net)

## **British Research Establishment environmental assessment method (BREEAM)**

Method of assessing the performance of buildings in the following areas – management, energy use, health and well-being, pollution, transport, land use, materials, and water.

[www.breeam.org](http://www.breeam.org)

## **Commission for Architecture and the Built Environment (CABE)**

The government's advisor on architecture, urban design and public space. The DCSF funds CABE's enabling team to provide free advice to all local authorities in the BSF programme. The CABE website has case studies of new buildings, publications and information on built environment education projects.

[www.cabe.org.uk](http://www.cabe.org.uk)

### **Construction Industry Council (CIC)**

Representative forum for the professional bodies, research organisations and specialist business associations in the construction industry. CIC has a register of trained facilitators who have achieved a level of competency with the DQI, and can provide advice on choosing a facilitator.

[www.cic.org.uk](http://www.cic.org.uk)

### **ConstructionSkills**

An organisation which works with construction employers, training providers and government to tackle the skills and productivity needs of the construction industry in the UK. It has produced a booklet called *Being involved in school construction*, supported by the Construction Skills regional education teams, to help schools make the most of construction projects.

[www.citb-constructionskills.co.uk](http://www.citb-constructionskills.co.uk)

### **Department for Children, Schools and Families (DCSF), formerly Department for Education and Skills**

Information on government policy and key design guidance for school buildings.

[www.dcsf.gov.uk](http://www.dcsf.gov.uk)

[www.teachernet.gov.uk](http://www.teachernet.gov.uk)

### **DQI for schools**

A process for evaluating the design quality of school buildings from the inception of the project through the design stages and once the building is complete. It can be used by everyone involved the development process to contribute to improving the quality of our schools.

[www.dqi.org.uk/schools](http://www.dqi.org.uk/schools)

### **Groundwork UK**

Aims to build sustainable communities through joint environmental action. Groundwork Southwark focuses on the development of school grounds and provides curriculum support materials.

[www.groundwork.org.uk](http://www.groundwork.org.uk)



**National College of School Leadership (NCSL)**

The National College for School Leadership's BSF programme aims to support school leaders in developing their vision for future learning and managing the change. It is aimed at providing timely support for school leaders to develop the unique skill set required to inform and strategically lead transformation enabled through the BSF capital investment.

[www.ncsl.org.uk](http://www.ncsl.org.uk)

**Royal Institute of British Architects (RIBA)**

Its mission is to 'advance architecture by demonstrating benefit to society and promoting excellence in the profession'. RIBA client services is a free service that provides long lists of architects (including those experienced as client design advisors) for clients.

[www.riba.net](http://www.riba.net)

[www.architecture.com](http://www.architecture.com)

**Learning through Landscapes**

Charity promoting effective use of school grounds. It produces school grounds toolkits and provides free advice to schools through the DCSF-funded school grounds of the future programme.

[www.ltl.org.uk](http://www.ltl.org.uk)

**Participation Works**

Participation Works is run by the Carnegie young people initiative and provides advice on involving young people in decision-making processes.

[www.participationworks.org.uk](http://www.participationworks.org.uk)

**Ultralab**

Learning technology research centre based at Anglia Polytechnic University.

[www.ultralab.net](http://www.ultralab.net)

**Partnerships for Schools (PfS)**

PfS is responsible for delivering the BSF programme.

[www.partnershipsforschools.org.uk](http://www.partnershipsforschools.org.uk)

### **The Sorrell Foundation**

An initiative created in 2000 which explores how good design can improve quality of life in schools by listening to the consumers of education, the pupils.

[www.thesorrellfoundation.com](http://www.thesorrellfoundation.com)

### **Sport England**

Sport England is committed to creating an active nation through sport. As part of its work to sustain and increase participation in sport and active recreation, it invests in a range of projects across the country. It administers the Sports Lottery Fund through its regional offices.

[www.sportengland.org](http://www.sportengland.org)

### **School Works**

An independent, non-profit making organisation that believes that it is possible to use existing resources differently to create beautiful places designed to raise educational achievement and support lifelong learning in local communities. Their work is focused on the particular issues faced by secondary schools.

[www.school-works.org](http://www.school-works.org)

### **4ps**

Local government's project delivery specialist body. 4ps is funded by DCSF to support BSF authorities through its expert client programme.

[www.4ps.gov.uk](http://www.4ps.gov.uk)

## **Magazines**

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### ***Century 21 schools***

Bi-monthly best practice magazine on new schools and the processes involved.

[www.century21schools.co.uk](http://www.century21schools.co.uk)

### ***School building***

Bi-monthly magazine featuring best practice case studies of new schools and other educational buildings.

[www.schoolbuilding.co.uk](http://www.schoolbuilding.co.uk)

### ***Building schools journal***

Bi-monthly magazine with feature articles and case studies, focussing on BSF in particular.

[bsj@exposureevents.co.uk](mailto:bsj@exposureevents.co.uk)

### **360°**

CABE's tri-annual magazine explores built environment education across England. Including reviews of projects, resources, events, funding, the latest built environment education news and a pullout ready to use education resource.

[www.cabe.org.uk](http://www.cabe.org.uk)

## **Websites**

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**[www.bsf.gov.uk](http://www.bsf.gov.uk)** The official website of Building Schools for the Future programme.

**[www.bsf-culture.co.uk](http://www.bsf-culture.co.uk)** This website shows the success of combining BSF with the promotion of culture and sport in schools. Focused on Yorkshire and Humber, there are some interesting case studies that offer top design tips as well as news of upcoming events and advice on securing funding for projects.

**[www.teachernet.gov.uk/sustainableschools](http://www.teachernet.gov.uk/sustainableschools)** The DCSF sustainable schools website is designed to support schools on their journey to sustainability, introducing the principles of sustainable development and offering guidance on how to embed these principles into the heart of school life.

**[www.designshare.com](http://www.designshare.com)** A comprehensive website that offers useful information on everything to do with designing schools. It is packed with inspirational case studies and has a very useful directory. It also offers an international dimension.

**[www.edfacilities.org](http://www.edfacilities.org)** National Clearinghouse for Education Facilities Provides information on planning, designing, funding, building, improving, and maintaining safe, healthy, high performance schools. Although this website is from the United States, it has useful case studies, research on education facilities and lists of international design guidance.

# Appendix 4 – BSF competition process

## Preparation

Stage	Strategy for change	Outline business case
<b>Description</b>	<p>In partnership with schools and other delivery partners, local authorities set out the plans and aspirations for delivering greater diversity of provision, choice and access in their secondary education schools. It should combine the educational vision with strategic asset planning and outline the costs, risks and expected outcomes of the project.</p> <p>It is submitted in two parts:</p> <p>Part 1: Challenges and objectives This is the 'what is to be done' part and contains:</p> <ul style="list-style-type: none"> <li>– Table/chart of existing schools</li> <li>– Strategic overview of provision and proposals for change</li> <li>– Impact on schools and further education estate.</li> </ul> <p>Part 2: Details and delivery This is the 'how it will be done' part and ties together local education and estate strategies – thus encouraging the local authority to focus simultaneously on the two principal elements of the BSF programme.</p>	<p>Summarises the scope of the whole project and goes into more detail about the sample schemes being put to the market for procurement.</p> <p>Sets out the cost, scope, affordability, risks, procurement route and timetable.</p> <p>More detailed information about the phasing and prioritising of schools and the level of investment (new builds or refurbishments).</p>
<b>Key decisions made</b>	Strategy for transforming education within the authority.	<p>Which schools will be refurbished and which will be rebuilt. Budgets for projects determined.</p> <p>Stakeholders from each sample school will use the design quality indicator for schools (DQIfS) to establish some standards for design that the bidders' designs will later be measured against.</p>
<b>What the schools need to do to ensure high design quality</b>	Engage with stakeholders and the wider school community to develop a vision for the school. Begin process of learning about school design issues and developing design aspirations. Participate in appointment of client design advisor.	Contribute to feasibility studies and option appraisals preparation and advise on which is the most appropriate for the school. Establish and document design aspirations for the school. Contribute to the output specification to ensure it reflects the school's aspirations and requirements. Establish design standards for the school using DQIfS and BREEAM.
<b>What help is available for schools</b>	<p>Organisations such as School Works and local architecture centres may be able to arrange design festivals, workshops and school visits.</p> <p>The National College of School Leaders' BSF leadership programme supports school leaders in developing their vision for future learning and managing change. It aims to provide timely support for school leaders to develop the skill set to inform and strategically lead transformation enabled through the BSF capital investment. Five school leaders from each school in the local authority wave will receive five days of training in three stages.</p>	<p>More school visits may be required to look at more specific elements of design.</p> <p>The client design advisor will help develop the output specification and schedule of accommodation.</p> <p>Trained facilitators will help to establish design standards for DQIfS and BREEAM.</p>

This table shows the standard formal process undertaken by a local authority to choose a partner from the private sector to design and construct all the schools in their locality under BSF. A small number of sample schools in each authority are used by the competing teams to demonstrate the abilities needed to deliver and possibly maintain the new and refurbished buildings. This table is relevant only to schools in this small sample.

## Procurement

Advertising the project in OJEU	Selecting a longlist of bidders	Designing solutions	Selecting a preferred bidder
<p><b>Stage 1: Issue OJEU.</b> Notice is posted in the Official Journal of the European Union (OJEU) which advertises the project to potential bidders. This may be written up simultaneously while the outline business case is being developed, but it cannot go out until the OBC has been approved.</p> <p><b>Stage 2: Return of expressions of interest/pre-qualification questionnaires (PQQ).</b> Bidders expressing an interest in the project advertised in the OJEU are issued with a pre-qualification questionnaire that will obtain information about the potential bidders' technical capacity and ability, economic and financial standing to deliver the project.</p>	<p><b>Stage 3: Evaluation of PQQs and selection of longlist.</b> LA draws up longlist of bidders, based on the information provided in the PQQ and they will be invited to tender for the work. This is called an invitation to participate in dialogue (ITPD).</p> <p><b>Stage 4: Invitation to participate in the dialogue (ITPD).</b> The ITPD contains questions which provide potential bidders with the opportunity to present their case for being selected for the shortlist. The shortlist is selected based on the bidders' responses to those questions. Shortlisted bidders are invited to continue dialogue (ITCD).</p>	<p><b>Stage 5: The dialogue phase.</b> The aim of the dialogue phase is to 'identify and define the means best suited to satisfying [the contracting authority's] needs'. It gives the authority and school the opportunity to talk around solutions, develop ideas and explore options as part of the tender process. All aspects of the project can be discussed in meetings, formal presentations, written bid type phases, development of design, formal clarification and negotiations of solutions and contract terms. This phase should therefore continue until the local authority is satisfied, at which point they will conclude the dialogue.</p> <p>Mid-way through the dialogue phase the sample schools, with the help of the client design advisor, will assess the designs against their aspirations as set out in the design quality indicators for schools (DQIfS) at briefing stage. By evaluating designs mid-way through the dialogue phase and providing detailed feedback, the bidders will be given a chance to respond to any suggestions for improvement made by the schools during the rest of the dialogue phase.</p> <p><b>Stage 6: Call for final tenders.</b> Remaining bidders are invited to submit their final tenders based on the solution(s) identified during the dialogue phase.</p>	<p><b>Stage 7: Submission and evaluation of final tenders.</b> Final tenders are assessed on the basis of the award criteria stated in the OJEU notice. CABE's school design assessment panel reviews the sample schemes that the bidders have designed and advises the local authority on the design quality of the schools.</p> <p><b>Stage 8: Appointment of preferred bidder.</b> Once the preferred bidder has been selected, the designs come before the CABE panel again to check that design quality is not compromised once the preferred bidder has been appointed.</p>
<p>Clarification of criteria for evaluating the final bids.</p>	<p>Longlist of bidders drawn up, then shortlist.</p>	<p>Design solutions developed by designers in consultation with the schools.</p> <p>Schools refer back to the DQIfS to see if they are getting what they asked for.</p>	<p>Final bids assessed and preferred bidder selected.</p>
<p>Participate in bidders briefing day and articulate aspirations for design excellence.</p>	<p>Comment on quality of design teams in potential shortlisted consortia.</p>	<p>Participate in dialogue with bidders' design teams to ensure schools aspirations and requirements are being properly interpreted. Mid-way through the dialogue phase, each sample school, with the help of the client design advisor, will evaluate the bidders' designs for their school using the DQIfS. Detailed feedback should be provided to the bidders following this evaluation.</p>	<p>Contribute to the evaluation of proposals. Test bidders' proposals against the school's original vision/design aspirations. Feedback on experiences with different design teams.</p>
<p>The client design advisor will help to facilitate the discussions between schools and bidders.</p>			

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Every secondary school in England will be rebuilt or renewed by 2020 in the biggest capital investment in education for 50 years. But how do you ensure that your new school is as well designed as possible? Will it be able to cope with changes in teaching and learning methods? How do you make sure staff, students and the wider community have a say? And what's the best way to deal with architects, contractors and consultants? This guide from C A B E, the government's advisor on architecture, takes you through the whole process and tells you what you need to know about achieving design excellence for your new school.

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