



Symposium on

Evidence-based Design in the Built Environment

held at CABE HQ, London

23 November 2006

Report on Group Discussion sessions

prepared for the
Sustainability Forum by

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Executive Summary

In November 2006, CABE and Constructing Excellence hosted a symposium, sponsored by the Sustainability Forum, on **Evidence-based design in the built environment**. At the symposium, participants were asked, at the beginning a series of presentations about evidence-based design at range of spatial scales from urban planning to the selection of building materials:

What do we want from evidence-based design?

At the end of the symposium, they were asked:

What do we see as the unresolved issues?

This report documents the shared responses that emerged from group discussions of these two questions.

Those who attended were by no means representative of the UK development or construction industries as a whole. But the symposium did give voice to the concerns of five key constituencies that need to be involved in the formulation, implementation and evaluation of evidence-based design in the UK:

- central government** clients/departments who make policy and who will, hopefully, subsequently evaluate its outcomes
- public sector** (clients) organisations who have to implement it and then live with its consequences
- design consultancies** who have to respond to and act on this 'new' set of requirements
- researchers** who are responsible for providing part of the evidence base and who may also be employed to undertake evaluations of its impact and outcomes, and
- advisory organisations** who are responsible for advising both clients and designers how to cope with this 'newly emergent' demand.

Collectively, the participants at the symposium want evidence-based design to:

- apply robust, accessible information based on sound research/good quality R&D
- reflect existing knowledge about existing and planned spaces
- provide clear guidelines, for instance, on how to add value
- create a shared understanding for clients and designers about 'what works'
- lead to community-based aspirations and consensual decisions
- deliver a post-construction, interpretative tool that explains both visual and physical outcomes using a range of tangible measures
- demonstrate causality and address the issue of determinism
- make accurate predictions
- be adequately funded and made mandatory
- be applied to the design process by all professions, and

accurately reflect the reality of the situation and the market context/ requirements by being integrated into the wider context.

Collectively, participants want evidence-based design to be applied *comprehensively*:

at a high government level, through future regulations

to:

all aspects of the built environment

every type of project that has an impact on how we live

from individual buildings to the communal scale

the public realm, schools, health, housing and neighbourhoods

all the way through from strategy to execution

in order to

prove that good, innovative design doesn't cost more, through the use of Whole Life Costs,

bearing in mind that "people are conservative and not sure what they want."

They want evidence-based design to impact on:

the quality of our surroundings, particularly public buildings

the quality of people's lives – their schools and education, their health and well-being, and their sense of belonging

what actually happens in buildings – how we live, work, travel and enjoy life

public policy and its outcomes

contracts and funding mechanisms

the design professions

how research is shared

how theory is transformed into reality

in order to

promote the development and use of buildings, and

deliver better decisions and better briefing

by

escaping from (expert, departmental and sectoral) information silos, and

exploring evidence across the board, made available to the people who need it."

Clearly, participants have very high aspirations for what evidence-based design should achieve. Not least amongst these, they want it to be a vehicle for delivering not just the sustainable development of the built environment itself but sustainable communities accommodated within it. However, they see many constraints and hurdles in the way. Participants presented:

how evidence-based design should be defined and applied

as the most frequently cited unresolved priority. Almost half the shared responses made by the groups dealt with these two issues: (twice as many as the next most frequently cited priority area).

Under this heading, they expressed anxieties about the impact of focusing on evidence by calling for an avoidance of a bureaucratic over-reliance on it. Instead they want a broad, pluralist approach that will not stifle innovation. They asked for a better definition of evidence-based design whose effectiveness and transparency is ensured by a quality system with common standards. But they also want the

evidence base to be capable of evolving through monitoring, with explicit criteria against which success can be measured, across sectors and disciplines. And, although the evidence base should be accessible, they also want its sources to be protected in order to avoid blame. There are also fears that the collection and use of evidence will slow down design so participants called for ground rules to reconcile the need for consultation with effective delivery. They also want evidence-based design to be regularized, with its own independent place in the RIBA's Plan of Work, and to become mainstreamed as routine part of 'normal services', rather than a specialism, by focusing on benefits v. costs. Some expressed a desire that this should lead not only to better briefing but also to the conversion of feedback into feed forward.

The second most frequently set of unresolved issues were:

□ ***the accounting/investment/funding regimes***

under which evidence-based design should operate.

There are clear concerns here that the current division between capital and operating costs will work against 'spending to save', with a hope that alternative accounting techniques -whole life costing, payback/environmental impact measured using NPV, or the 1:5:200 ratio, can be used to counter this by creating a business case for the added value of good design.

Participants also expressed concern about:

□ ***the nature and accumulation of evidence***

They clearly see a need for more evidence, at all spatial scales. But they also warn against over-dependence on research as the source of such evidence, pointing instead to other sources such as craftsmanship, practical experience and vernacular solutions. Deciding what constitutes evidence will also require, they signal, consensus on issues such as qualitative v. quantitative data, robustness, independence, and other assessment criteria.

The concerns expressed above point to the need, participants suggest, for

□ ***collaboration and consensus building***

on evidence-based design. Differences between (vested) interest groups need to be resolved. Public decision-makers need to be persuaded of the value of good design. Client understanding needs to be raised to provide better briefing. Stakeholders, at all levels in the production and use of the built environment, need to be convinced so that they pay attention to and act on evidence. All this points, they signal, to the need for tools to facilitate the engagement required to make this happen.

Introduction

In November 2006, the Commission for the Built Environment (CABE) and Constructing Excellence (CE) jointly hosted a free symposium on **Evidence-based Design in the Built Environment** sponsored by the Sustainability Forum and held in London at CABE's HQ, see Appendix 1 for flier. Attendance was by invitation only, with invitees drawn from CABE's and CE's mailing lists. Places at the symposium were limited to 60 because of the size of the venue. All the places at the event were taken within 4 days of the invitations being issued and a waiting list for attendance set up. On the day 44 people attended, not including speakers and organisers.

At the event, besides presentations about evidence-based design at a variety of spatial scales from urban design to materials selection - see programme in Appendix 2 and http://www.constructingexcellence.org.uk/zones/sustainabilityzone/EB_Symposium.jsp for presentations - participants were asked to work in groups to consider two questions. Early in the symposium, they were asked to consider:

- What do we want from evidence-based design?***

Towards the end of the symposium, after the presentations, they were asked to identify:

- What do we see as the unresolved issues?***

This report contains 'first cut' analyses of the participants' responses. These analyses have only been conducted on the shared responses elicited from participants working in groups. Further analysis will be conducted later on participants' individual replies to these questions in support of a book, based on the Symposium, being prepared by Eclipse Research Consultants.

The symposium participants

44 people attended the symposium. 41 provided details about the type and size of organisation in which they work, see Table 1.

Table 1 Types of organisations represented at the symposium

Types of organisation	Size of organisation				Totals	Combined totals
	Micro 1-10 staff	Small 11-249	Medium 250-499	Large >500		
Developer						
House builder						
Contractor				1	1	
Specialist contractor						
Supplier						
Consultant	4	3	1	4	12	
Research organisation	3	1		1	5	9
Higher education				4	4	
Further education						
Training agency						
Professional institution						
Trade association						
Advisory organisation	1	5			6	
Government department				7	7	
Regional development agency			1		1	4
Local authority		1		2	3	
Public sector client				1	1	
Private sector client						
Regulatory body						
NGO/voluntary body						
Other (unspecified)				1	1	
Totals	8	10	2	21	41	

Broadly, most participants fell into one of five groups. Ranked by number of participants, these were:

1. **consultants:** mainly architects but also engineers and surveyors, with micro and small firms outnumbering large ones
2. **researchers:** in combination, came from research organisations and higher education.
3. **government officials:** from a range of central government departments - the Treasury, the Home Office, the Department for Communities and Local

Government, the Department of Trade and Industry, and the Department for Education and Science

4. **the public sector:** a regional development agency, local authorities and a public sector client, and
5. **advisory agencies:** primarily from CABE and Constructing Excellence – the two hosts of the symposium - plus BSRIA.

Contractors were under-represented. Many other demand and supply side stakeholders – such as developers, house builders, private sector clients, and professional institutions - were not represented at all.

More than half of the participants came from large organisations; (mainly as a result of the attendance of participants from central government, higher education institutions, and from large consultancies). However just under half came from micro and small organisations. From a size perspective, the participants were polarised into two groupings:

- small** organisations: mainly consultants, research and advisory organisations, and
- large** ones: mainly central government departments, higher education, and consultants.

Medium sized firms were conspicuously absent.

In summary, the participants were representative of neither the demand nor the supply sides of the construction industry in the UK: both of which, in terms of numbers – as opposed to spend/value of work undertaken – are predominantly made up of small to medium organisations. But the symposium did give voice to the concerns of five of the key constituencies that need to be involved in the formulation, implementation and evaluation of evidence-based design in the UK:

- central government clients/departments who make policy and who will, hopefully, subsequently evaluate its outcomes
- public sector (clients) organisations who have to implement it and then live with its consequences
- design consultancies who have to respond to and act on this ‘new’ set of requirements
- researchers who are responsible for providing part of the evidence base¹ and who may also be employed to undertake evaluations of its impact and outcomes, and
- advisory organisations who are responsible for advising both clients and designers how to cope with this ‘newly emergent’ demand.

¹ “The evidence base isn’t just about the latest research – it’s about the knowledge inherent in craftsmanship, practical experience, historically pragmatic and vernacular solutions”, see Table 3, page 12.

What do participants want from evidence-based design?

Table 2a What do we want from evidence-based design?

We want evidence-based design to be

robust, [with] clear guidelines, integrated into the wider context, accessible, acknowledged and made mandatory, based on sound research, and appropriately funded

[about] value, availability information, demonstrating causality, interpretation and application, improvement

a more interpretative, post-applied tool that explains both the visual and physical outcome with a range of tangible measurements: it should address the issue of determinism

based on the realities of expectations of the situation and the market context

R & D [based] good quality and legislative evidence-based design [with] market research on requirements

[about] providing a clear definition with a shared understanding for designers and decision-makers

[about] knowing what works, creating community-based aspirations: a tool for consensual output, making accurate predictions and communal decisions

[based on] existing knowledge, briefing project teams, post-construction evidence, applied to the design process by all professions

[about] guidance for client groups on existing and planned spaces: we don't want pseudo-intellectual bullshit

Although the statements listed above are disparate, they can be collated into a coherent and consistent portmanteau definition. This expresses what, collectively, participants want from evidence-based design.

“We want evidence-based design to:

- apply robust, accessible information based on sound research/good quality R&D
- reflect existing knowledge about existing and planned spaces
- provide clear guidelines, for instance, on how to add value
- create a shared understanding for clients and designers about ‘what works’
- lead to community-based aspirations and consensual decisions
- deliver a post-construction, interpretative tool that explains both visual and physical outcomes using a range of tangible measures
- demonstrate causality and address the issue of determinism
- make accurate predictions
- be adequately funded and made mandatory
- be applied to the design process by all professions, and
- accurately reflect the reality of the situation and the market context/requirements by being integrated into the wider context.”

Of course, none of the participants called upon evidence-based design to deliver against all of these criteria. But, were it able to do so, it would meet the collective aspirations of those who attended the symposium - even though some participants might want to buy into only part of what was on offer.

Table 2b What do we want from evidence-based design?

We want evidence-based design to be applied to

communal scale, built environment, social behaviour, high government level

proving that good, innovative, design doesn't cost more, [with] a real commitment to Whole Life Costs, connected to CAPEX¹ and OPEX²

the built environment and the buildings within it, Whole Life Costs, and future regulations

comprehensively to the wider built environment – the public realm, schools, health, community and neighbourhoods

all the way through from strategy to execution

every type of project

all aspects of the built environment

everything, bearing in mind that people are a) conservative and b) not sure what they want

All projects that have an impact on how we live, especially schools, housing, health and the public realm

1. Money spent to acquire or upgrade physical assets such as buildings and machinery. This tends to be a very large expense for companies with significant manufacturing facilities, and usually much less of an expense in the services sector, **also called** capital spending or capital expense, see <http://www.investorwords.com/5437/capex.html>
2. The day-to-day expenses incurred in running a business, such as sales and administration, as opposed to production, **also called** operating costs.

Again it is possible to combine these statements to assemble a collective, portmanteau definition of what participants want evidence-based design to be applied to and why.

"We want evidence-based design to be applied *comprehensively*:

at a high government level, through future regulations

to:

all aspects of the built environment

every type of project that has an impact on how we live

from individual buildings to the communal scale

the public realm, schools, health, housing and neighbourhoods

all the way through from strategy to execution

in order to

prove that good, innovative design doesn't cost more, through the use of Whole Life Costs,

bearing in mind that people are conservative and not sure what they want."

Table 2c What do we want from evidence-based design?

We want evidence-based design to impact on

the development and use of buildings, sharing research, transforming theory into reality, and policy
better decisions and better briefing

the quality of our surroundings, particularly public buildings

the quality of people's lives – school and education, health and well-being, sense of belonging
policy

contracts and funding mechanisms

public policy outcomes and the design professions

what actually happens in the building: working, learning, healing, living

how we live, work, travel and enjoy life

We also want evidence-based design to be

about getting out of silos of information (experts, departments, sectors); need to explore(?) evidence
across the board

made available to the people who need it

As before, these statements can be assemble into a collective, portmanteau definition of what participants want evidence-based design to impact upon and why.

“We want evidence-based design to impact on:

- the quality of our surroundings, particularly public buildings
- the quality of people's lives – their schools and education, their health and well-being, and their sense of belonging
- what actually happens in buildings – how we live, work, travel and enjoy life
- public policy and its outcomes
- contracts and funding mechanisms
- the design professions
- how research is shared
- how theory is transformed into reality

in order to

- promote the development and use of buildings, and
- deliver better decisions and better briefing

by

- escaping from (expert, departmental and sectoral) information silos, and
- exploring evidence across the board, made available to the people who need it.”

Clearly, participants have very high aspirations for what evidence-based design should achieve. Not least amongst these, they want it to be a vehicle for delivering not just the sustainable development of the built environment itself but sustainable communities accommodated within it.

Table 3 What do we see as the priority unresolved issues

We see these as

Accounting/investment/funding regimes

'Spend to save' paradigm: audit the 1.50.200 ratio and use the evidence

The resolution of volume pay off between full-life and initial capital costs – building less – but who is left out? Will down-the-line savings really be fed back into accelerating capital investment?

How long are we building for? Life of buildings against changing policy – different evidence – can we keep flexibility?

Renewable energy – broaden SME base to deliver pluralist solutions based on payback /environmental impact (NPV calculations?)

Cost and expense: does this process improve value for money?

Create the 'value' in the bean counters language – i.e. creating the business case for good design

Definition and application of EBD

Allowing evidence base to assist improvement and not just being bureaucratic.

Evidence-based approach must be broad enough to support pluralist approach

Defining the ground rules between consultation and effective delivery

Robust briefing process for major building types – understanding the need for new buildings rather than RMI

A better definition of EBD and the context in which it is used

Over-reliance on EBD could potentially stifle new innovations

Monitoring: the evidence base needs to evolve with the process of monitoring

Ensure quality system of evidence is transparent and effective

Access to evidence – protecting sources: need to avoid blame

Using the knowledge base we have to produce a better brief – with the rigour that we would write a research specification – with a view of what we know, what the constraints are, or what we're trying to test: feedback into feed forward

How does this get applied, especially given the various different stakeholders and balancing the issues

Creation of the right conditions for EBD to occur: a) funding within the contract independent of defects and liability (Stage M), b) making EBD routine (focus on benefits vs costs), and c) EBD is good practice not a specialism

Further developing evidence base across sectors/disciplines and, in so doing, ensuring that there are common standards that can be applied to this evidence

Development of evidence-based criteria against which success can be judged

Nature of evidence

The evidence base isn't just about the latest research – it's about the knowledge inherent in craftsmanship, practical experience, historically pragmatic and vernacular solutions

Requires consensus on evidence (subjective vs objective), values and criteria, robustness and independence

Clarity on aims and the evidence needed to support these

Accumulation of evidence

Collect more evidence

More work on materials research, focusing on recyclability, embedded energy, emissions production, etc.

Need for evidence at all spatial levels

Collaboration/consultation/consensus building

Need to resolve differences (language/culture/motivations) between interest groups, including issues with vested interests

How to persuade public decision-makers about good design, e.g. planners and neighbourhoods

Adequate client understanding so that briefing is better.

How to get anyone to pay attention to the evidence

More facilitating tools

Need for all levels of the built environment sector to understand, accept and act upon the evidence

Participants in the workshop presented:

how evidence-based design should be defined and applied

as the most frequently cited unresolved priority. Almost half the shared responses made by the groups dealt with these two issues (twice as many as the next most frequently cited priority area).

Under this heading, they expressed anxieties about the impact of focusing on evidence by calling for an avoidance of a bureaucratic over-reliance on it. Instead they want a broad, pluralist approach that will not stifle innovation. They asked for a better definition of evidence-based design whose effectiveness and transparency is ensured by a quality system with common standards. But they also want the evidence base to be capable of evolving through monitoring, with explicit criteria against which success can be measured, across sectors and disciplines. And, although the evidence base should be accessible, they also want its sources to be protected in order to avoid blame. There are also fears that the collection and use of evidence will slow down design so participants called for ground rules to reconcile the need for consultation with effective delivery. They also want evidence-based design to be regularized, with its own independent place in the RIBA's Plan of Work, and to become mainstreamed as routine part of 'normal services', rather than a specialism, by focusing on benefits v. costs. Some expressed a desire that this should lead not only to better briefing but also to the conversion of feedback into feed forward.

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on evidence-based design. Differences between (vested) interest groups need to be resolved. Public decision-makers need to be persuaded of the value of good design. Client understanding needs to be raised to provide better briefing. Stakeholders, at all levels in the production and use of the built environment, need to be convinced so that they pay attention to and act on evidence. All this points to the need for tools to facilitate the engagement required to make this happen.

² A corrected ratio of 1:1.5:15 (NPV) has been proposed for London offices in Ive, G. (2006) Re-examining the costs and value ratios of owning and occupying buildings, **Building Research & Information**, 34(3), 230–245. See also 1:3:30 (undiscounted) cited as the general ratio between Capex, 20-year Opex and 20-year occupier value added cited in Chapter 6, Saxon, R. (ed.) (2005) **Be Valuable: a guide to creating value in the built environment**, Constructing Excellence.

Appendix 1. Symposium flier



Commission for Architecture
and the Built Environment



**CONSTRUCTING
EXCELLENCE**
in the built environment

Evidence-based design in the built environment: what are we looking for?

A one-day symposium at CABE, 1 Kemble Street, London WC2B 4AN

09.30 to 16.30, 23 November 2006

"... we know that good design provides a host of benefits. The best designed schools encourage children to learn. The best designed hospitals help patients to recover their spirits and their health. Well-designed parks and town centres help to bring communities together." (*Better Public Buildings* campaign leaflet, 2000)

The Better Public Buildings campaign signalled rising awareness of the potential of the built environment to influence social, economic and environmental outcomes. Well-designed environments are increasingly recognised as contributing to health, productivity, neighbourly behaviour and civic pride. Equally, poorly designed, neglected or unsafe environments are associated with poor social relationships, disadvantaged occupants and greater demands on policing and healthcare.

How strong is the evidence to support these associations? To what extent is it reflected in policy making? Are those responsible for commissioning buildings aware of it? Do designers explicitly use known evidence?

The symposium will seek answers to a series of questions:

1. What do we mean by evidence-based design?
2. What is the purpose of evidence-based design?
3. How is success measured?
4. In which areas of procurement is evidence-based design most advanced?
5. What examples are there of good practice in evidence-based design?

In particular, the symposium will examine what sort of evidence is needed in the built environment, at a range of spatial scales (urban, neighbourhood, buildings, materials and components), about the impact on social, economic and environmental outcomes to persuade a range of key stakeholders to invest in good design: For example:

- financial evidence that is persuasive to the Treasury;
- political evidence that is persuasive to the electorate (especially locally at the neighbourhood level);
- scientific evidence that is persuasive to the scientific and research communities;
- commercial evidence sufficient to persuade house-builders and commercial developers.

The symposium, which is jointly hosted by CABE and Constructing Excellence, is being sponsored by the Sustainability Forum. It will be chaired by Richard Saxon. Speakers will include Professor Alistair Adair, Ulster University; Caroline Davey, Salford University; Jan Stensland, Kaiser Permanente; Ziona Strelitz, ZZA; Elaine Hall, Newcastle University, Sandy Patience, GreenSpec. The symposium will include facilitated workshop sessions.

Registration is being managed by Constructing Excellence - please register at:

<http://www.constructingexcellence.org.uk/events/eventdetails.jsp?id=1001>

Appendix 2. Symposium programme



Evidence Based Design Symposium

09.30 – 16.30pm, 23rd November, CABE

AGENDA

09.30	Registration	
09.50	Chair's Introduction	Richard Saxon
10.00	Evidence based delivery of the built environment and the OGC	David Adamson, OGC
10.25	The evidence base for design innovation	Richard Turkington, The Housing Vision Consultancy
10.50	What do we want from evidence-based design? Group discussion session	Facilitated by Ian Cooper, Eclipse Research Consultants
11.15	Coffee	
11.30	<i>Urban scale</i> The evidence base for investment in urban regeneration	Professor Alistair Adair, School of the Built Environment, Ulster University
11.55	<i>Neighbourhood scale</i> The evidence base for design against crime	Andrew Wootton and Caroline Davey, University of Salford
12.20	<i>Local context</i> User-based evidence to guide workplace evolution: buildings and their settings	Ziona Strelitz, ZZA
12.45	Lunch	
13.45	<i>Building scale (1)</i> The impact of buildings on health, well-being and productivity	Jan Stensland, Inside Matters
14.10	<i>Building scale (2)</i> The evidence base for building performance/added value in schools	Elaine Hall, Centre for Learning and Teaching, University of Newcastle
14.35	<i>Materials scale</i> The evidence base for materials performance and selection	Sandy Patience, GreenSpec
15.00	Tea	
15.15	Unresolved issues – what are the priorities? Group discussion session:	Facilitated by Ian Cooper
16.05	Plenary session	Chaired by Richard Saxon
16.30	Concluding remarks	Sunand Prasad, President Elect, RIBA