

**Building Performance  
CFCE annual conference  
2 October 2014**

**Building performance in use:  
The great unknown?**

**Bill Bordass**

*the* **USABLE BUILDINGS TRUST**  
[www.usablebuildings.co.uk](http://www.usablebuildings.co.uk)

*bilbordass@aol.com*

---

## Structure of the talk

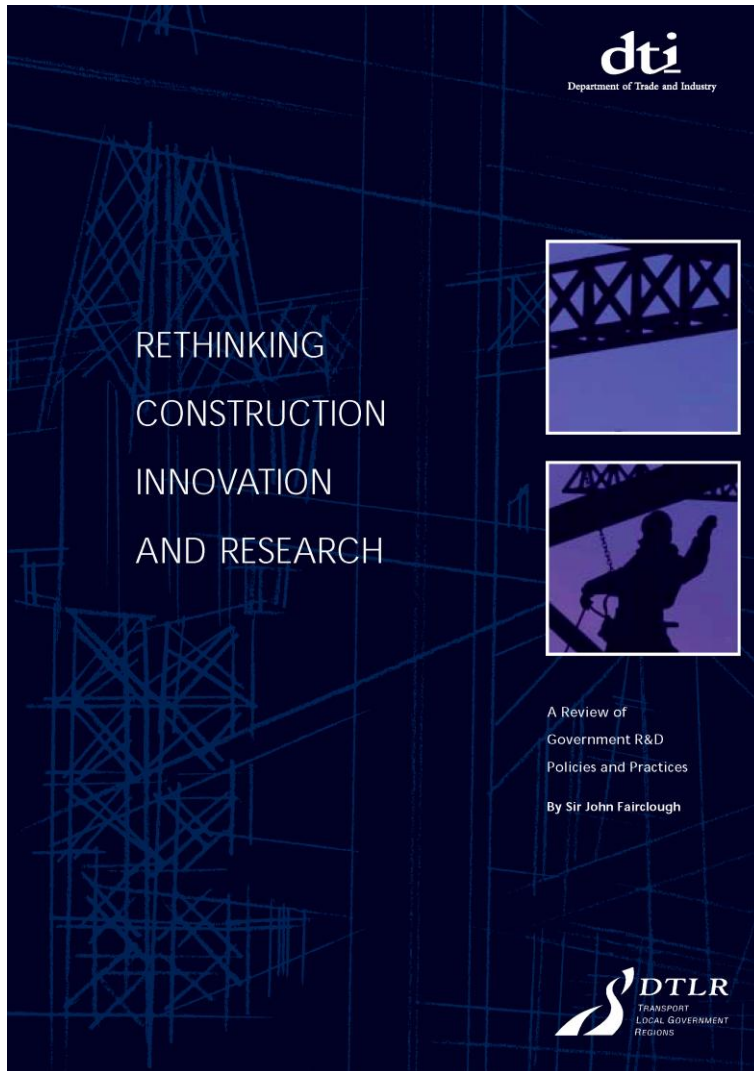
- 1. The great unknown?**
  - 1. Building in ignorance?**
  - 2. Doing better building-related projects.**
-

1

**THE GREAT UNKNOWN?**

---

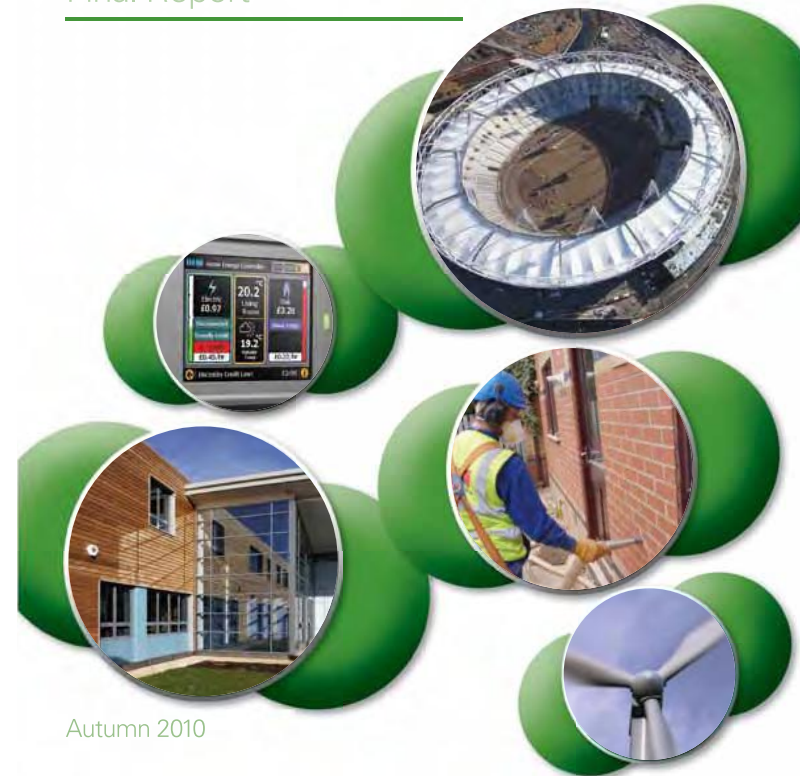
# Government has seen the Construction Industry as responsible for building performance



 HM Government

Low Carbon Construction  
Innovation & Growth Team

Final Report



# But most designers and builders know little about performance in use - *they're not paid to!*

*“in theory, theory and practice are the same, in practice they aren't.”*

*A EINSTEIN*

*“Missing feedback is a common cause of system malfunction”*

*DONELLA MEADOWS*

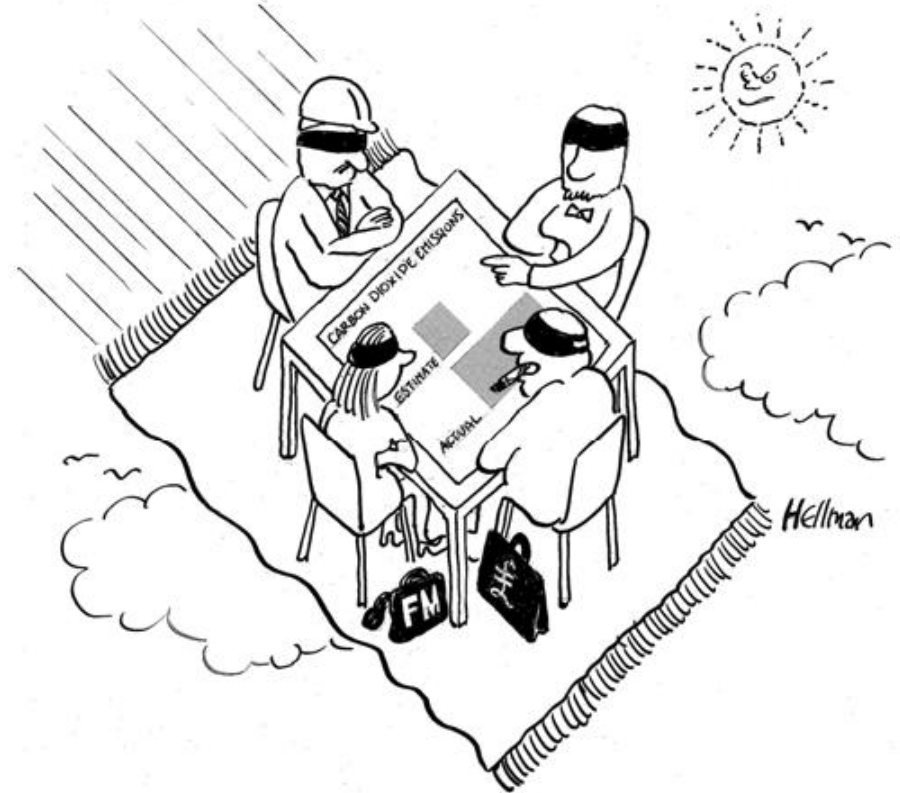
*“designers seldom get feedback, and only notice problems when asked to investigate a failure.”*

*ALASTAIR BLYTH*

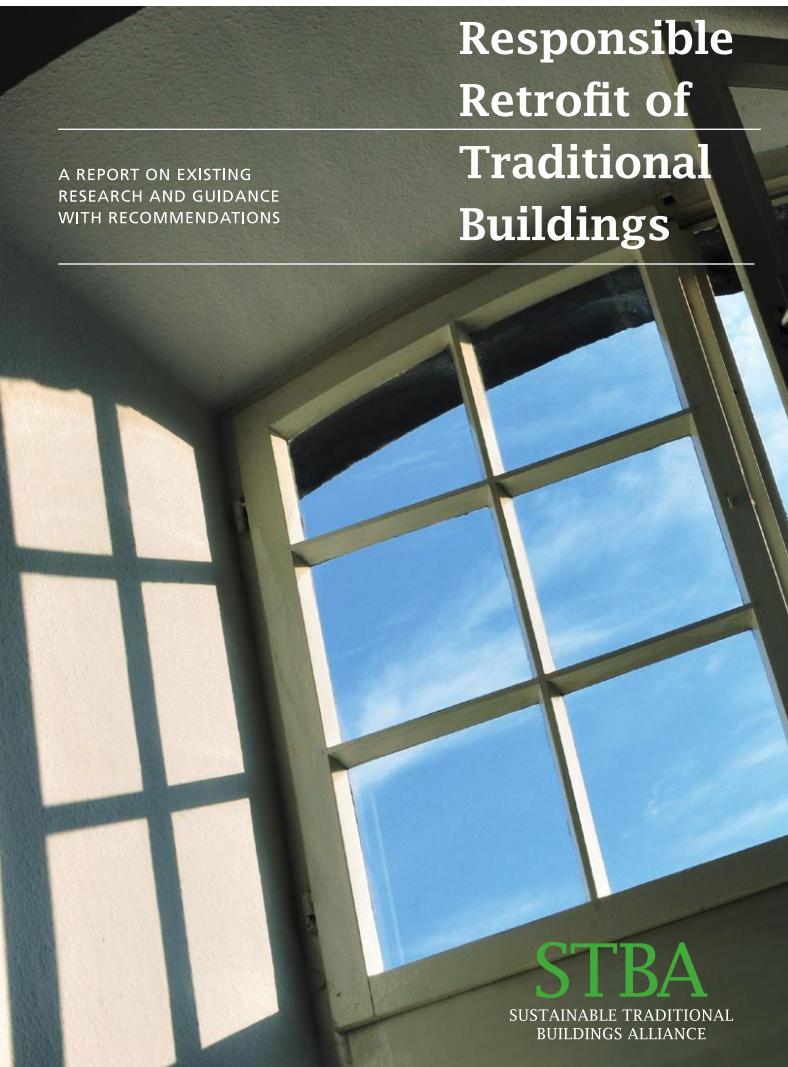
*CRISP Commission 00/02*

*“I've seen many low-carbon designs, but hardly any low-carbon buildings”*

*ANDY SHEPPARD, Arup, 2009*



# Gaps in understanding are not solely for new buildings, *e.g. Knowledge base for retrofit*



## Responsible Retrofit of Traditional Buildings

A REPORT ON EXISTING  
RESEARCH AND GUIDANCE  
WITH RECOMMENDATIONS

**STBA**  
SUSTAINABLE TRADITIONAL  
BUILDINGS ALLIANCE

## **SOME CONCLUSIONS**

Industry and policy lack understanding of traditional building performance.

Poor connection between research intelligence and guidance procedures.

Significant uncertainty in application of models and software.

Some methods used are inappropriate.

A systemic approach is necessary to avoid unintended consequences.

There are good opportunities, but some need approaching in rather different ways from those currently advocated.

# Feedback on building performance is in the public interest ...

*but government has outsourced its feedback loops*

Some examples:

- Property Services Agency
- Central Electricity Research Laboratories
- British Gas Research Laboratories
- Research and technical units in Ministries
- Local government design and works departments
- Building Research Establishment
- Energy Efficiency Best Practice programme
- Partners in Innovation research programme - *but from 2010 we have had work by the Technology Strategy Board (renamed Innovate UK)*

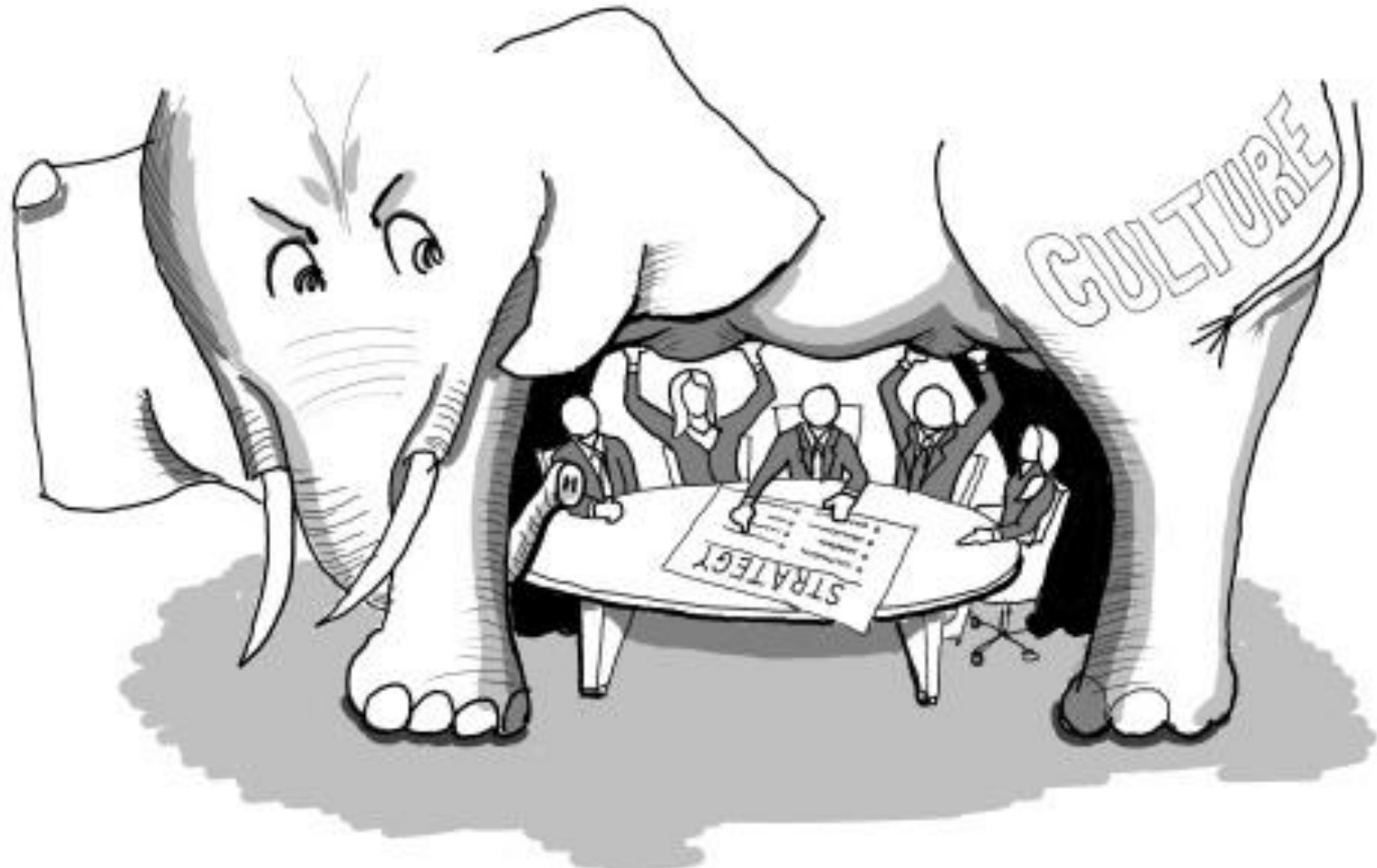
*People and firms who specialise on work to traditional buildings tend to know rather more about building performance in use.*

*But many that used to work almost exclusively on new buildings have also been entering the traditional buildings area.*

---



The elephant isn't in the room,  
*IT IS THE ROOM!*



**WE HAVE A SYSTEMIC PROBLEM: Blindness to performance in use**  
*It's not just the construction industry, it's the way we all go about things*



# 2

## **BUILDING IN IGNORANCE?**



# Why haven't we taken more account of *the evidence under our noses?*

*"... unlike medicine, the professions in construction have not developed a tradition of practice-based user research ...*

*Plentiful data about design performance are out there, in the field ...*

*Our shame is that we don't make anything like enough use of it"*

*FRANK DUFFY, past President RIBA*

- Designers and builders cut the tape and run away.
- Government and institutions haven't closed the feedback loop.
- To many people wants to bury bad news ... *or point the finger.*
- Evidence from case studies has been dismissed as anecdotal.

***Where is the institutional memory?***

***What happened to Rothschild's intelligent government customer?***

# Case studies of new non-domestic buildings: *What have we tended to find, for many years now?*

**They often perform less well than predicted,** especially for energy and occupant satisfaction.

**Design intent is seldom communicated clearly** to users and operators.

**Buildings are seldom tuned-up properly.** Controls are often difficult to understand.

**Unmanageable complication** is the enemy of good performance.

**Modern procurement systems make it difficult to pay attention to critical detail.**

***“The English spare no expense to get something on the cheap”***  
**... NIKOLAUS PEVSNER**



In spite of the warnings in the 1990s,  
*complication has burgeoned in recent years*

- **Technical complication**
- **Legislative complication**
- **Contractual complication**
- **Bureaucratic complication**
- **Tick-box procedures: feature creep**
- **Complication for building users and managers**

***So less money to spend on basics***

***The complication disease has now spread to housing too!***

**AND NOTHING JOINS UP PROPERLY!**

*“Complexity is profitable, [it] makes people believe you understand it.”*

**JON DANIELSSON**



## So what can we trust?

### **BUILDING PHYSICS:** *Heat, air, moisture, energy*

- Do we understand it? Are we applying it correctly?
- Do we appreciate the risks?

### **ENVIRONMENTAL CONTROL SYSTEMS:**

- Are they appropriate? Are they necessary? Will they be put in right?
- Were they considered as whole systems?
- Will they work? Will anyone understand them?
- What will they really cost to run? (*not just energy, but support*).

### **PEOPLE:** *Individuals, organisations*

- Are their needs accommodated (*e.g. in controls design*)?
- Do we understand what they are likely to do?

### **PROCUREMENT OF BUILDING WORK:**

- Do we have the right skills and processes?
-

## Existing buildings - our laboratories

- We can learn a lot quickly by finding out what is already happening, *e.g. energy use, system reliability, ergonomics, the fabric, people, and how things are changed by interventions.*
- Monitoring need not be complicated if you plan for it. *You can learn a lot from a little, and go into more detail only where necessary. Much of the evidence is right under our noses.*
- Performance is full of unexpected and unintended consequences, *particularly when there is insufficient understanding of systemic performance, including socio-technical issues.*
- The theories or assumptions we have been using can often be found wanting, *sometimes by large margins.*
- Case study research is often under-rated, *while people ask for big statistics or theories of everything. These are delaying tactics.*



# 3

## **DOING BETTER BUILDING-RELATED PROJECTS**

---

# Proposed strategic interventions: *with potential to snowball over time*

We need not just technical “solutions”, but cultural adaptations that can help to promote virtuous circles of continuous improvement.

## 1. MAKE IN-USE PERFORMANCE CLEARLY VISIBLE

In ways that will motivate people to strive to improve it.

## 2. BRING TOGETHER KNOWLEDGE AND UNDERSTANDING

Develop building performance as an independent knowledge domain, with the authority to inform clients, practice and policymaking:

***AN INSTITUTE OF BUILDING PERFORMANCE?***

## 3. REVIEW PROFESSIONAL ETHICS AND PRACTICES

Appeal to individual building-related professionals to work in the public interest and engage properly with outcomes: ***NEW PROFESSIONALISM.***

# Building projects: from inputs to outcomes

## *Getting started: the Five Ps*

### **PEOPLE – Who you use**

Leadership is key

### **PROCESS – What they do**

Soft Landings can help teams to focus on outcomes

### **PRODUCT – What you get**

Keep it as simple as possible (*but not more so*) and do it well

### **PERFORMANCE – How it really works**

Need for understanding, fine tuning, reflection and feedback

### **PROFESSIONALISM – The broader view**

Reaching the parts that rules and markets can't.

---

# The role of the building professional needs re-defining

- **There's a big job to do,**  
*in making new and existing buildings more sustainable.*
  - **We're short of money:**  
*we can't afford to spend it on the wrong things; needs better evidence.*
  - **Institutions require members to practise sustainable development:**  
*surely this must mean evaluating outcomes?*
  - **We can't change everything tomorrow ...**  
*but we can change our attitudes to what we do.*
  - **It's not a question of whether we can afford to change**  
*We can't afford not to!*
  - **Current procurement systems are not fit for purpose:**  
*we must do things very differently.*
-

# Soft Landings can help to maintain the “golden thread” *from client and design intent to reality*

It augments the duties of the project team and client representatives), especially:

1. During the critical **briefing** stage.
2. Closer forecasting & **reality-checking** of predicted performance during design and construction.
3. Greater involvement of **users and operators**, or *their proxies*, with special attention to pre-handover.
4. **Aftercare**, with an on-site presence during settling-in.
5. **Monitoring** and review for the first three years in use.

EACH STAGE HAS A CUSTOMISABLE WORKPLAN

It can run alongside **ANY procurement process**; and

- Create a fast track to improving performance in use.
- Provide more customer focus.
- Improve client relationships and user satisfaction.
- Build recognition that some debugging is necessary.



*the* **SOFT LANDINGS FRAMEWORK**  
for better briefing, design, handover and building performance in-use



# Soft Landings:

## *Findings from trials over recent years.*

### **STAGE 1 – INCEPTION AND BRIEFING**

Client leadership is key.

Champions need to be designated.

### **STAGE 2 – DESIGN AND CONSTRUCTION**

Clients must not drift off.

Regular reality-checking is essential.

A question of attitude – no additional costs.

### **STAGE 3 – PREPARATION FOR HANDOVER**

Dialogue with occupiers needs more care.

### **STAGE 4 – INITIAL AFTERCARE**

Difficult to get the right kind of support.

Easy for contractors to revert to type.

### **STAGE 5 – MONITORING AND REVIEW**

Requires some independent input.

Needs funding outside the building contract.



*the* **SOFT LANDINGS FRAMEWORK**  
for better briefing, design, handover and building performance in-use





## Improving client capabilities

- **Better briefing**, *with more focus on outcomes.*
  - **Manage the brief**, *as understanding develops during the process.*
  - **Seek to ensure that proposals will be usable, manageable and affordable in operation.**
  - **Beware the false promises of technology:**  
*watch out for unmanageable complication and hidden costs.*
  - **Never be afraid to ask stupid questions.**  
*Many things cannot be taken for granted.*
  - **Don't break the golden thread from intent to reality**  
or outsource your feedback loops.
-

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

---