

# Post Occupancy Evaluation

**James Parker**

Senior Research Engineer

BSRIA Sustainable Buildings Group

# **Post Occupancy Evaluation OR Building Performance Evaluation**



# Why do POE?

- Can be used:
  - For fine-tuning and de-bugging new buildings
  - To analyse existing buildings
  - To investigate buildings with known problems
- What you get
  - Unlocks hidden information to allow:
    - Improved energy efficiency
    - Improved occupant comfort
  - Can feedback to designers
  - Identify good areas for new designs
- Included in BREEAM & Soft Landings



# BSRIA's approach to POE

- Falls into three elements
  - A “forensic” walkthrough
  - An Energy Survey
  - Assessment of Occupant satisfaction

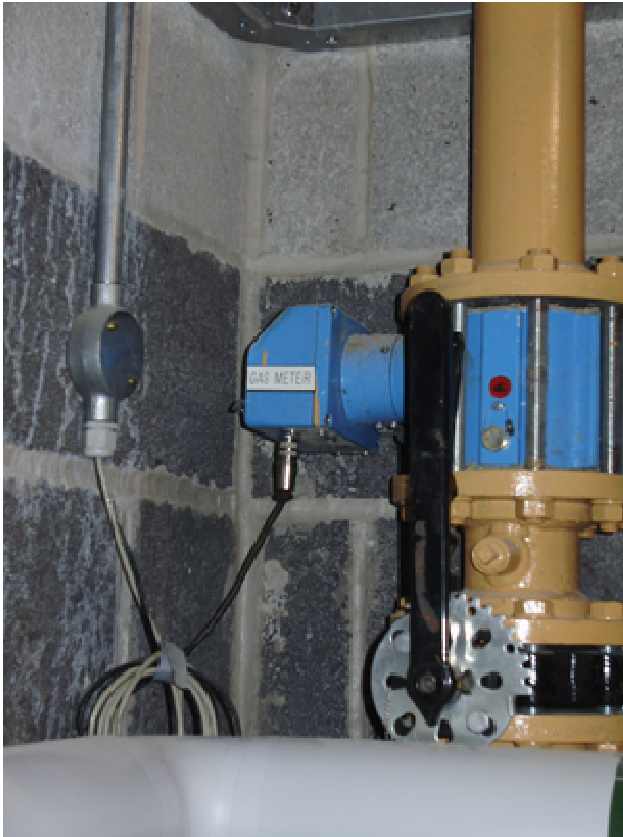


# The Walkthrough

- An inspection to check:
  - The building's operation
  - Emerging problems
  - Wasteful operational practice
- Can find obvious problems missed

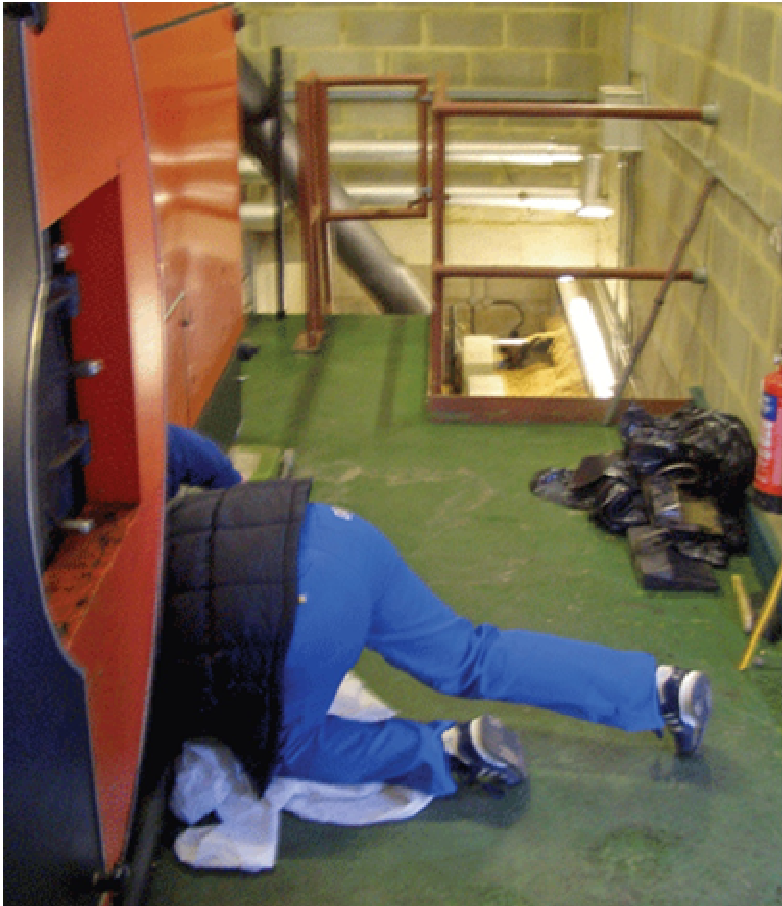


# Typical Problems Found



# Other Problems

## Maintenance Access



## User interfaces



# Energy Surveys

- Breaks down the energy used in the building by consumption type, for example:
  - Heating
  - Air conditioning
  - Lighting
  - Small power, etc
- Data from meter readings
- Or specific monitoring

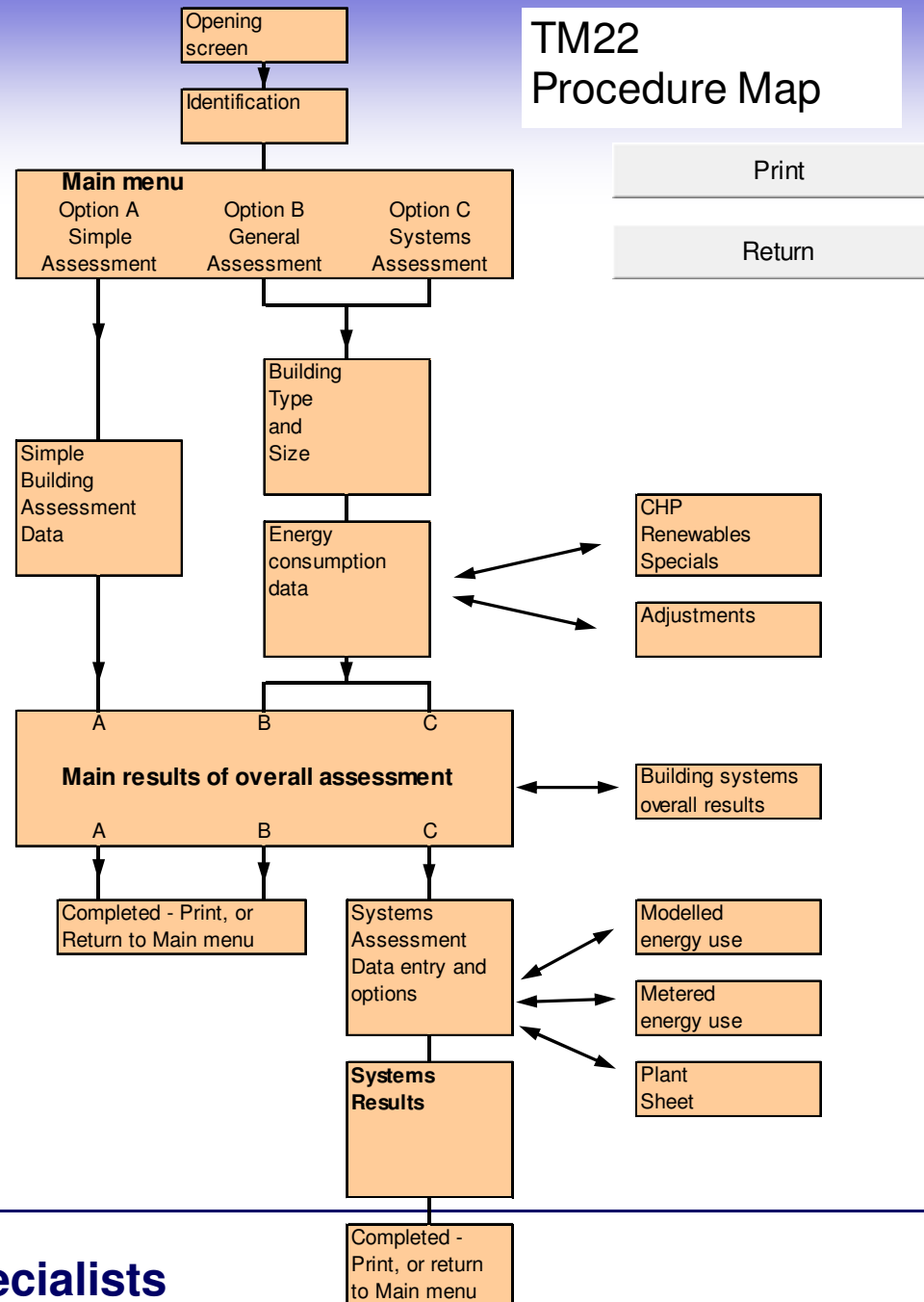


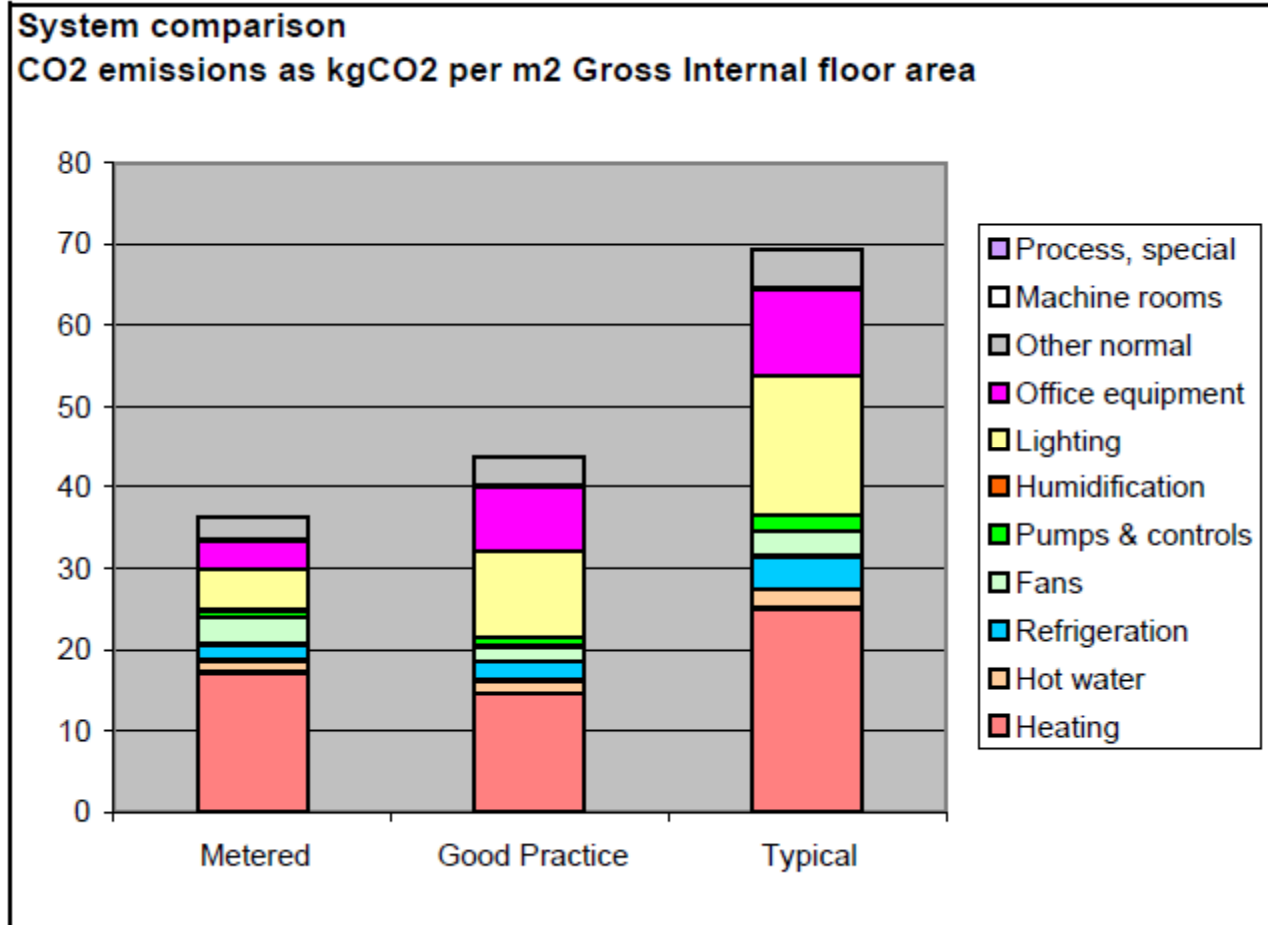
# Methods

- CIBSE TM22 – Energy assessment and Reporting tool
- Has three levels
  - Option A – Simple Assessment
  - Option B – General Assessment
  - Option C – Systems Assessment
- Calculates CO<sub>2</sub> emissions and estimated costs
- Allows benchmarking for comparing buildings



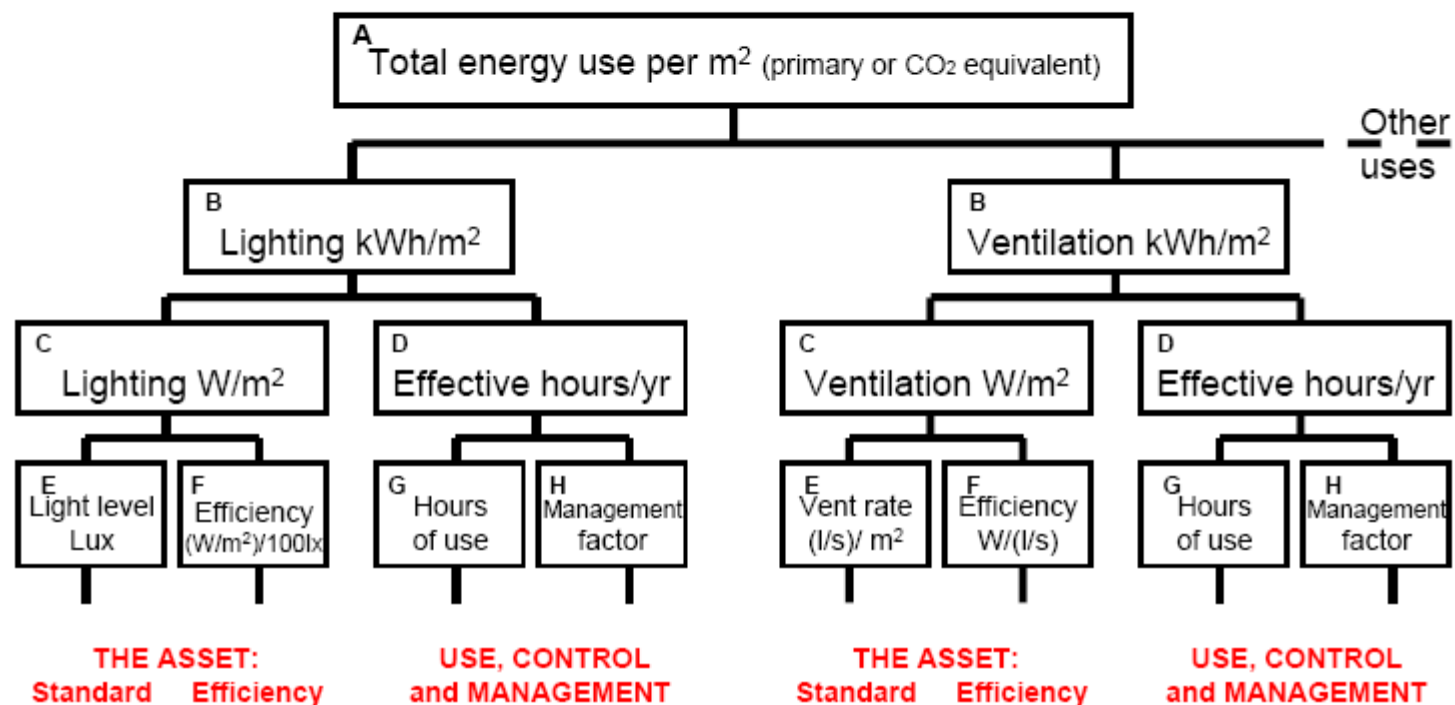
## TM22 Procedure Map



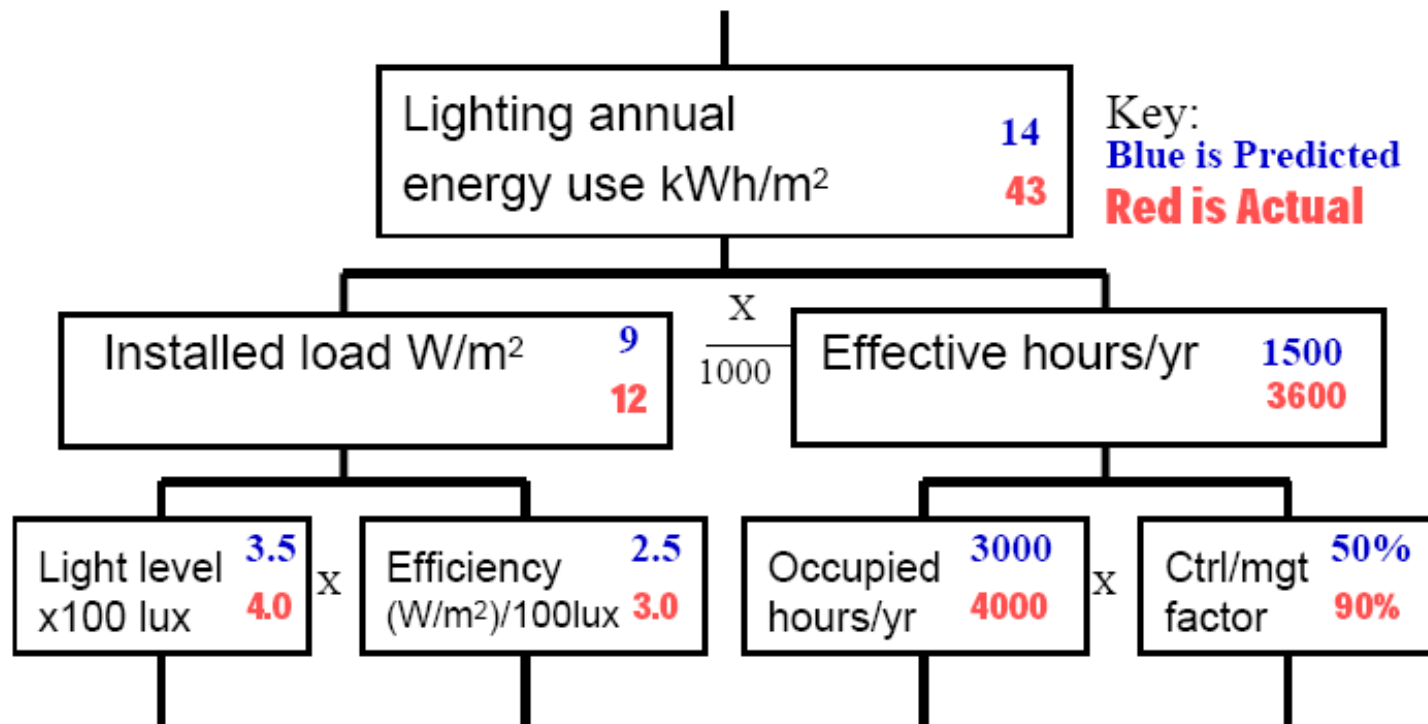


**“Tree diagram” analysis of building energy consumption and service provision**

*Each box can be considered as a benchmark*



# Comparison of elements of predicted and actual energy use



# Occupant satisfaction

- Statistical not scientific, so difficult to set targets for
- Many survey methods out there, few with good benchmarks, even fewer with public domain benchmarks, only one method that is established and credible
- The results of a survey needs expert analysis – a deep understanding of the inter-dependency of perceived comfort factors (two significant variables: speed of response to problems, and occupant density)
- Clients are often more interested in staff comfort than energy issues

## Building Evaluation

This survey is being conducted to help with future planning and design of buildings. The information collected will be treated as completely confidential by the survey team. Survey reports will use summaries of information and not reveal the identities of individuals.

Please answer for this building only. Please fill in as many questions as you can. Write any further comments in the spaces provided or on a separate sheet. Thank you for your help.

**Queries**  
If you have any queries please contact:  
Email: Roderic.bunn@bsria.com

### Background

Please note: We are not responsible for any matter that may arise from the use of this survey.

What is your age...? Please

... and your sex? Please

Please give your name ... Surname, ... and Department

Department

Is this building your normal base? If No, why?

Please tick Yes 1 2 No

Is your office or work area ...? No

Do you sit next to a window at your normal workspace?

How long have you worked in this building?

How long have you worked in your present work area?

How many days do you spend in the building in a normal working week?

How many hours per day do you spend in the building on a normal working day?

How many hours per day do you spend at your desk or normal work area on a normal working day?

How many hours per day do you normally spend working with a computer screen (VDU)?

## Needs

In the building as a whole, do the facilities meet your needs?

Unsatisfactory 1 2 3 4 5 6 7 Satisfactory

Comments about needs overall

## Space

In the building as a whole, do you think that space is used ...?

Ineffectively overall 1 2 3 4 5 6 7 Effectively overall

## Image

How do you rate the image that the building as a whole presents to visitors...?

Poor 1 2 3 4 5 6 7 Good

### Suitability of storage arrangements

Unsatisfactory 1 2 3 4 5 6 7 Satisfactory

Comments about storage

Comments about meeting rooms

Days per week in building

Hours per day in building

Hours per day at desk

Hours per day at VDU

### The building overall

#### Building design

All things considered, how do you rate the building design overall?

Unsatisfactory 1 2 3 4 5 6 7 Satisfactory

Comments about design overall

### Your work

Please briefly describe the work that you carry out in this building ...?

Work description

### Facilities

work that you carry out, how well do the facilities ...?

poorly 1 2 3 4 5 6 7 Very well

What are the things which can hinder effective working ...?

What are the things which usually work well ...?

### Work area

How do you rate the usability of the furniture provided at your desk or normal work area ...?

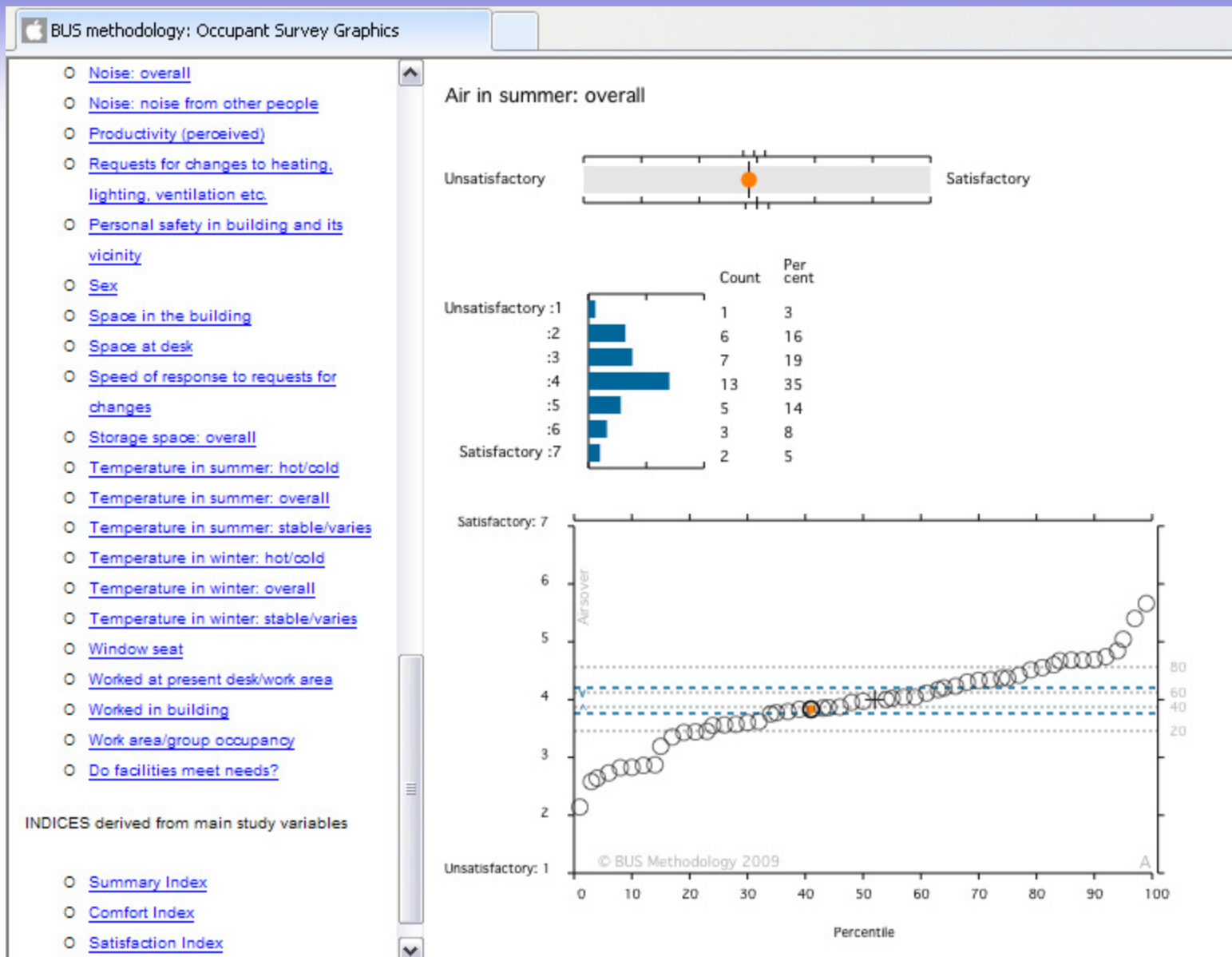
Very poor 1 2 3 4 5 6 7 Very good

### Space at desk

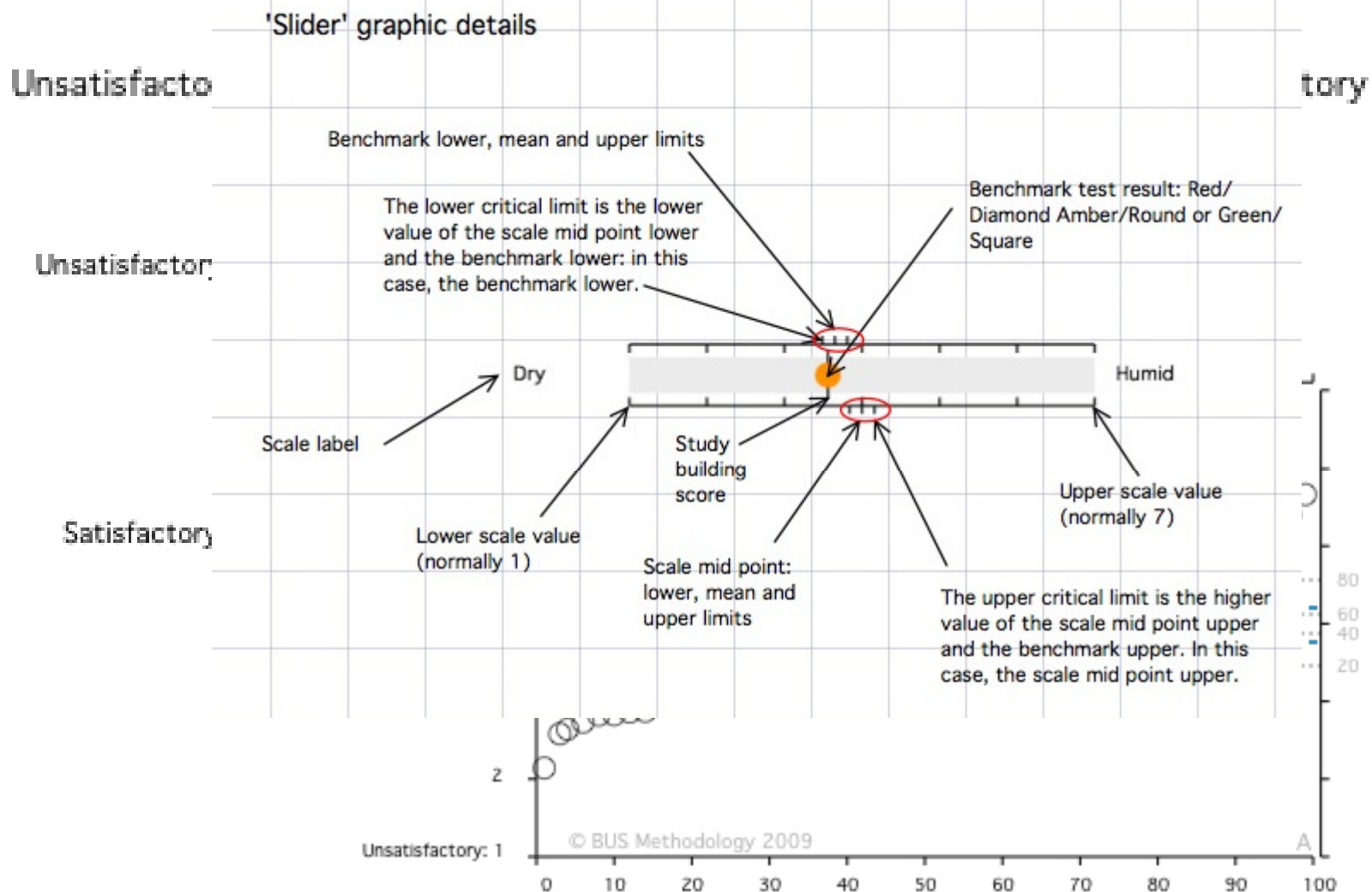
Do you have enough space at your desk or normal work area ...?

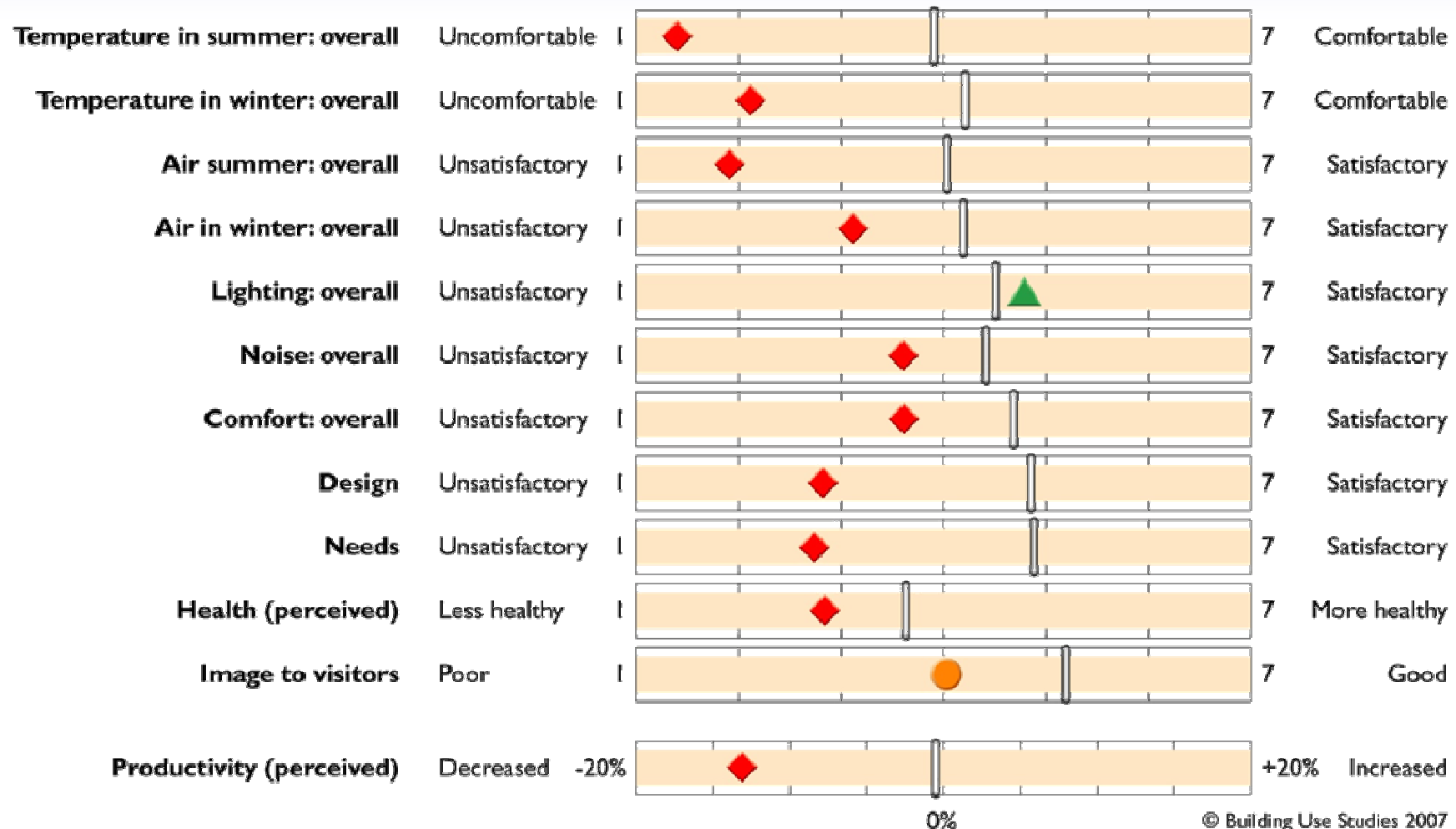
Too little 1 2 3 4 5 6 7 Too much

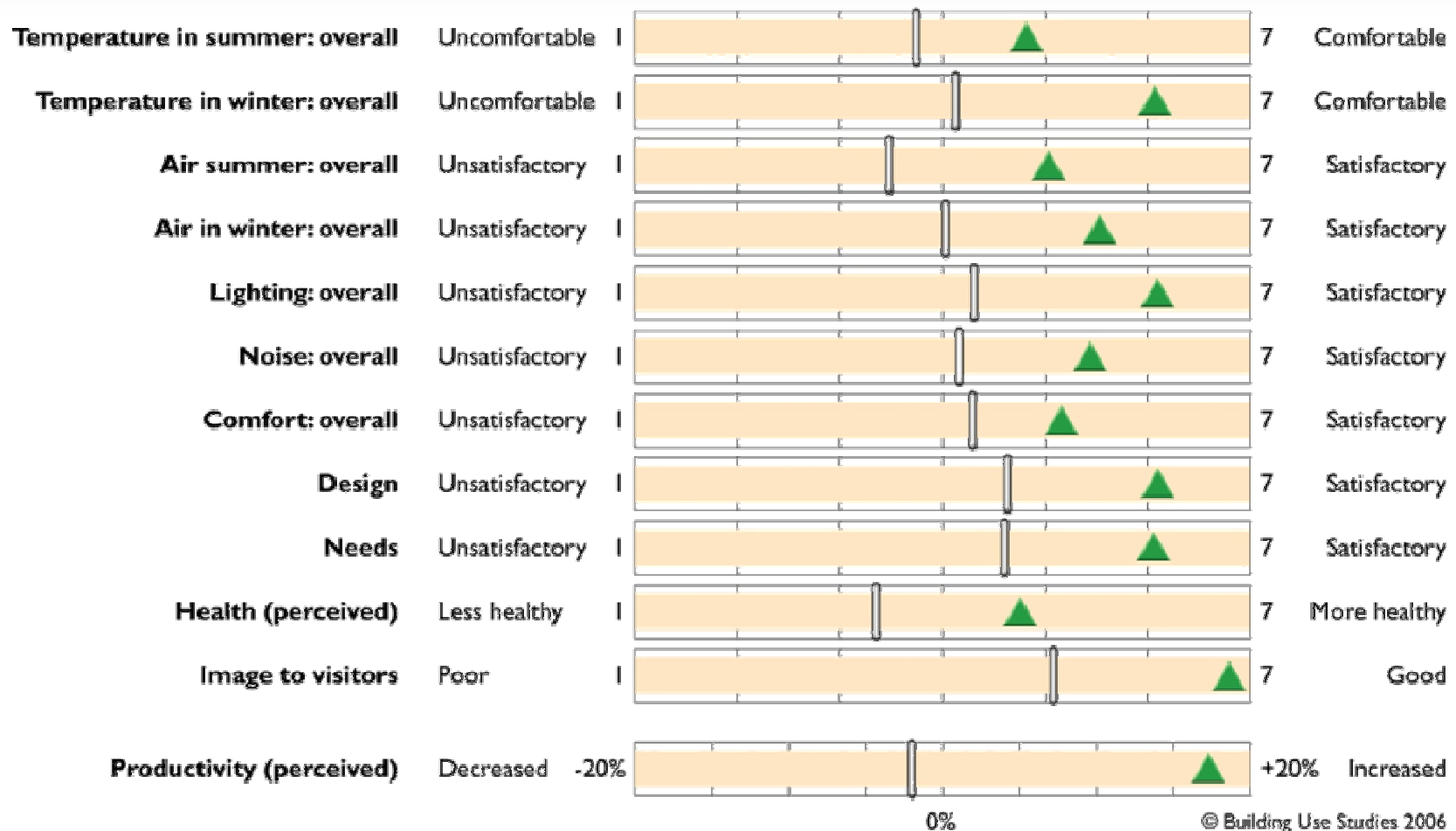
Comments about your desk or work area











## Anecdotes underpin the statistical response

*“It’s a beautiful work of art, but we have to keep going outside for air”*

*“It’s nice to look at, but not friendly to work in”*

*“It’s very beautiful and fun to show school groups around, but it’s not work or user friendly”*



---

**Built environment specialists**

- **Late 1990s:** devised as 'Sea Trials' for new buildings, by architect Mark Way. Soft Landings developed on a subsequent project for Cambridge University
- **2004** scope of service documentation developed with construction industry sponsorship
- **2008** Open-source documentation developed into a Framework by industry task group led by BSRIA
- **2009** The *Soft Landings Framework* authored by BSRIA and the Usable Buildings Trust. The Soft Landings User Group established by BSRIA to support early adopters
- **2011** Soft Landings included in BREEAM 2011



# How it works

- It's a framework of activities for the entire project team
- Drives for clarity at inception and briefing about client needs and operational outcomes
- Requires the early setting of performance targets (such as energy use) and a method of reality-checking them
- Places greater emphasis on building readiness
- Requires a Soft Landings team to be on site during the initial settling-in period
- Requires the project team to be involved for up to three years to fine-tune the building and monitor its performance



**Stage 1: Inception and briefing** *Clarify operational outcomes in the client's requirements*

**Stage 2: Design development & construction** *Review past experience, agree performance metrics, agree design targets, regularly reality-check*

**Stage 3: Pre-handover** *Prepare for occupation, train FM staff, demonstrate control systems, review monitoring strategy of occupants and energy use*

**Stage 4: Initial aftercare** *Support staff in first few weeks of occupation, be resident on site to respond to queries and react to emerging issues*

**Stage 5: Long-term aftercare** *Monitor, review, fine-tune, and perform periodic feedback studies for up to three years*





# For more information

- Softlandings – [www.bsria.co.uk/goto/softlandings](http://www.bsria.co.uk/goto/softlandings)
- james.parker@bsria.co.uk
- 01344 465536