Building Performance Evaluation

- £8m funding between 2010 & 2014
- Individual buildings & developments
- Identify factors that encourage good performance
- Explore lessons learnt
- Case study investigations
- Domestic & non-domestic
- Expose activities that contribute to poor performance

https://connect.innovateuk.org/web/building-performance-evaluation
Non-domestic: 48 projects (55 buildings)
- 8 “Early occupation” projects
  - 6 months assessment of handover
- 40 “In-use” projects
  - 2 years detailed performance monitoring and occupant assessment

Domestic: 53 projects (350 homes)
- 23 “Early occupation” projects
  - 6 months assessment post construction & initial occupation
- 30 “In-use” projects
  - 2 years detailed performance monitoring and occupant assessment
Energy consumption is often much higher than design calculations suggest

- A lot of data has been gathered
- Design teams have been reformed to investigate the building
- Occupants have been involved
- Procurement methods have been reviewed
- We can now look beyond the numbers

Where is the performance gap occurring? And who is responsible?

https://connect.innovateuk.org/web/building-performance-evaluation
Where is the performance gap occurring?

2013 RIBA Plan of Work

- 0 & 1 Strategy & brief
- 2 – 4 Concept to technical design
- 5 & 6 Construction & handover
- 7 In use

Modelling to practical completion?

https://connect.innovateuk.org/web/building-performance-evaluation
Where is the performance gap occurring?

2013 RIBA Plan of Work

0 & 1
Strategy & brief

2 – 4
Concept to technical design

5 & 6
Construction & handover

7
In use

Modelling to 1st year of operation?
Where is the performance gap occurring?

2013 RIBA Plan of Work

0 & 1 Strategy & brief

2 - 4 Concept to technical design

5 & 6 Construction & handover

7 In use

End of design evaluations to operation?

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Where is the performance gap occurring?

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Where is the performance gap occurring?

2013 RIBA Plan of Work

0 & 1  Strategy & brief

2 – 4  Concept to technical design

5 & 6  Construction & handover

7  In use

Procurement?

https://connect.innovateuk.org/web/building-performance-evaluation
Where is the performance gap occurring?

2013 RIBA Plan of Work

- Capture of design intent
- Arrangements for managing delivery of design intent
- Review of design data & metering strategy
- Review of handover process & data
- Review of commissioning plans & procedures
- Inspection of build quality (photos & tests)
- Review of arrangements for aftercare, operation & maintenance
- Structured reviews with occupants & management
- Assessment of annual energy use
- Investigation of issues arising

Early occupation projects

In use projects

https://connect.innovateuk.org/web/building-performance-evaluation
Key themes
Lack of client engagement

Activities occur throughout the build that can adversely effect the final building performance
• procurement tends to focus on cost not value
• value engineering
• tends to see certain key items removed without fully recognising the consequences
• certification planned at design is not achieved in use

Clients are not getting the benefit of the measures they are paying for

https://connect.innovateuk.org/web/building-performance-evaluation
Commissioning and handover activity is inadequate or overlooked

• Commissioning and reconciliation of systems rarely carried out
  – strategies not fully understood, implemented or reconciled
  – meters not functioning
  – no seasonal commissioning
• Handover time is often squeezed or sacrificed for other activities
• Inadequate training in what handover is supposed to achieve

Sub-meters installed for chillers in Petchey academy are not wired up and do not report the electricity intake of the chillers

https://connect.innovateuk.org/web/building-performance-evaluation
Low energy aspirations influence system complexity

• There are many conflicting factors at play that are outside of the “teams” control
  – carbon/energy targets
  – policy related to planning
  – conditional funding

• Attention needs to be given to implementation of new technologies

POE work to review, fine tune and feedback on findings is vitally important

https://connect.innovateuk.org/web/building-performance-evaluation
Disconnection of the building from the end users

- In-use strategies are not thought through
  - no consideration of occupants’ energy-related behaviours and the way they might interact with the building
- BMS systems impenetrable and confusing
- Complex controls - now with added bespoke protocols

Lack of post occupancy consideration means projects may not achieve operational outcomes

https://connect.innovateuk.org/web/building-performance-evaluation
Programme outputs

embed
building intelligence for innovation
getembed.com

CarbonBuzz
an RIBA CIBSE platform
carbonbuzz.org

BUS methodology
busmethodology.org.uk

DomEARM

CIBSE TM22

https://connect.innovateuk.org/web/building-performance-evaluation
To join the BPE community and be kept up to date go to: connect.innovateuk.org and search for Building Performance Evaluation

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