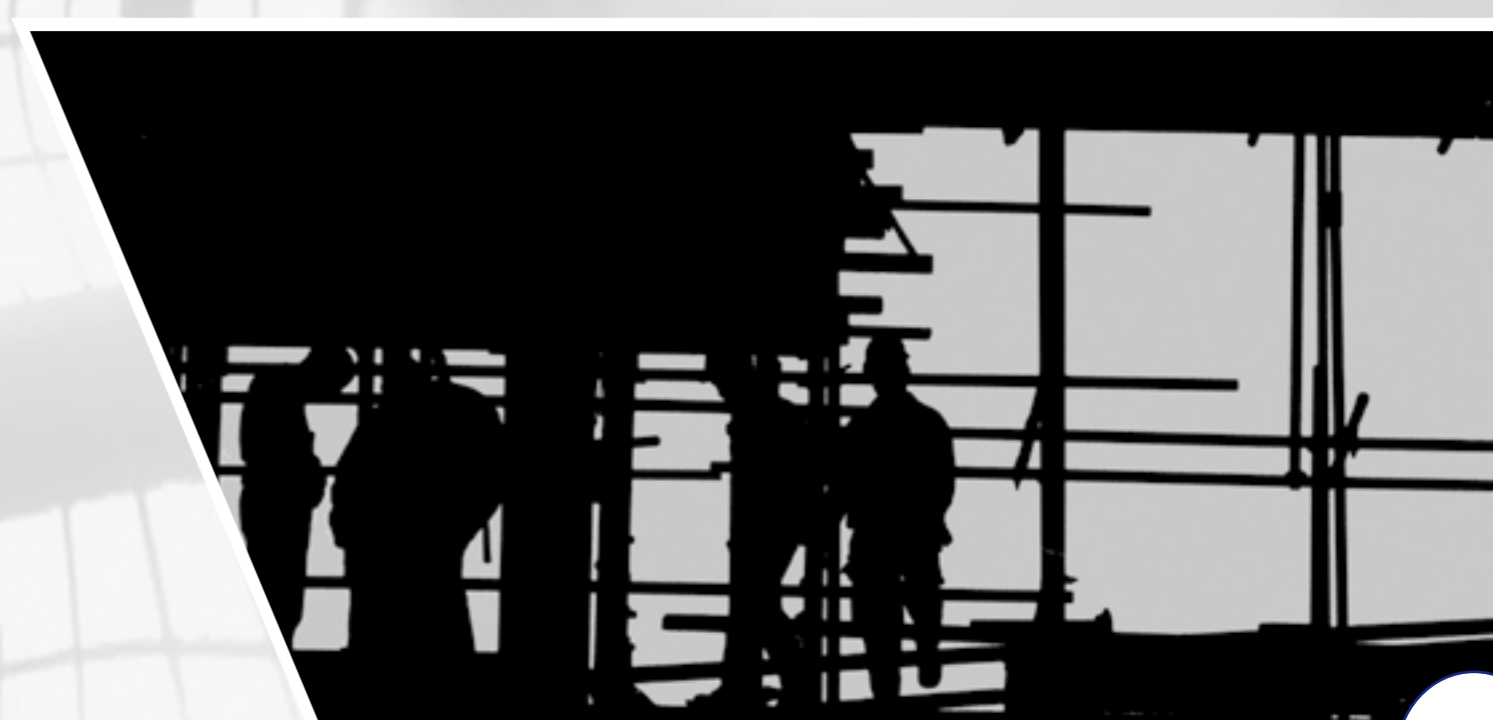# Guide to Post Occupancy Evaluation

Contents

Foreword

From the outset the purpose of this guide was to develop a toolkit on good practice guidance for use by the Higher Education sector. In managing this process I am pleased to say we have expanded our original narrower remit to a much broader one, reflecting the different interpretations and purposes of Post Occupancy Evaluation (POE) identified by the professionals, groups and individuals we consulted.

Whilst there are definitions for POE, we have approached this subject, purposefully avoiding adopting any particular definition, preferring instead to embrace the concept that as Estates Professionals the whole life of a building or development is our responsibility. This guidance therefore covers both post construction and post occupation reviews and has been extended to include a strategic review stage. Consequently this guidance covers the process from initiation of the POE at the inception of each project, through the construction and occupation stages up to and including a strategic review stage, offering tools to use in all of them. Adoption of this guidance should assist in bringing more rigour to the management of developing and operating buildings, establishing easy links to preferred institution standards, for all to adopt and follow.

This guidance is prepared so colleagues can choose according to their needs and preferences, as few or as many of the areas identified in this report. Those who choose to use this more fully will be those who get most out of it. Whether your choice is to audit the construction process, review your occupation approach, ensure good quality design is consistently delivered, monitor building performance or even review and adapt your strategic decision process, this toolkit will assist you.

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Director of Estates and Facilities, University of Westminster

Acknowledgements

Introduction

The origin of this guidance and toolkit began in 2000 when the Higher Education Design Quality Forum (HEDQF) offered a proposal to the HEFCE to develop a Post Occupancy Evaluation (POE) review process, the purpose being to encourage good building design by allowing others to learn from the experience of constructing each building. HEFCE accepted the proposal and the outcome was the successful "De Montfort" approach to Post Occupancy Evaluation. The De Montfort approach required the training of assessors within the sector which began in 2003.

Continuing with promoting POE, the HEDQF, in 2004, agreed a brief with AUDE and HEFCE to carry out further research. This critically reviewed all the different POE approaches used, including the De Montfort approach, in order to develop simple guidance and a toolkit for the HEFCE Estate's Good Management Practice Guides.

Over the similar time period, influences from the Construction Industry occurred promoting the 'Latham' and 'Egan' initiatives for removing conflict, bringing about changes and shaping the way we procure and manage design and construction work. More recently the development of the "Student Experience" has brought more interest in the attractions of good quality, flexible, usable space and memorable design. These pressures and other local issues have meant that Institutions and their Directors of Estates are being asked increasingly to operate more cost effectively, therefore focusing on the estate's strategic need for space as well as its operational performance.

Despite all the different starting points of each initiative, they all broadly coalesce around developing and operating buildings in a better way, having regard to the "whole life" of the building, its part in the strategic management of the estate and the success of the building in its business function for the University. This approach to POE recognises the need for developing harmony between the business aspirations of the institution and the ability/agility of the estate to support it. i.e. effective Corporate Real Estate (CRE) management.

This guidance document is therefore the culmination of the further research, which has included critically reviewing the different methods in use and their application. The output is an intentionally simple framework, allowing users to "pick and mix" the basic elements they wish their institution to include in their "one off" or developing review process, set against a choice of timeframes which reflect three broad categories termed, operational, performance and strategic. The result is a "good practice guide and toolkit" for use by the HE sector and coincidentally much wider audience. This guidance and toolkit offers a framework that operates within the requirements of planned estates strategies and changing business strategies.

Section 1: Post Occupancy Evaluation Process Overview

Step 1	Step 2	Step 3	Step 4	Step 5	Step 6	Step 7
Identify POE strategy	Decide which approach	Brief for the POE	Plan the POE (if being carried out internally)	Carry out POE	Prepare the report	Action in response to POE

What: Identify the need for the evaluation and probable aspects of the evaluation

What: Identify what issues the evaluation must address and whether it will be carried out internally or by external consultant

What: Succinct statement setting out the purpose of the POE and how it is to be achieved

What: Select approaches that will meet your needs

What: Distribute and collect survey questionnaires, carry out interviews, meetings and observations

What: Feedback of findings

What: Feed information into university policies. Feed information into next project

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Issues to address:
appointments for consultants and contractors

Issues to address:
- Objectives and priorities
- Is it 'quick and dirty' or an in-depth study?
- Timing
- How and when information will be used
- Whether to use an existing method or develop your own
- Do you want to benchmark against other buildings

Issues to address:
Brief content:
- Objectives
- Timing
- Who will carry it out
- Who should be involved (e.g. users: staff and students)
- Specific issues to address (perceived problem areas)
- Methods to use
- Where it will take place (interviews, focus groups etc)

Issues to address:
- Decide when the work will be carried out
- Prepare any questionnaires (See tips in section x of this guide)
- Prepare schedules and agendas for interviews or focus groups
- Arrange meeting rooms
- Arrange attendance at group meetings
- Agree when feedback will be given and to whom

Issues to address:
- Arrange for distribution of questionnaires
- Arrange for collection after relatively short period of time if possible
- Collate data
- Analyse information

Issues to address:
- To whom is the information to be addressed
- Are separate reports required for different audiences
- Facilitator
- Structure of report

Issues to address:
- Collating information in a consistent way
- Accessibility of information by others
- Who will use the information and what for?
- Publication: For those outside the client organisation
- Possible feeding of information into HEDQF/HEFCE/SHEFC for wider dissemination

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How to do:
Identify who takes ownership of this stage of this process

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Relevant sections of this guide:
s2.1: Elements of evaluation
Toolkit – Tool 2: Terms of reference and brief for appointing consultants and contractors

Relevant sections of this guide:
s3: Framework for a POE
s4: Identifying which approach to use

Relevant sections of this guide:
s2.3: Who should be involved?
s4: Identifying which approach to use
s3: Framework for a POE
s3: Identifying which approach selection chart
Toolkit – Tool 2: Terms of reference and brief for appointing consultants and contractors

Relevant sections of this guide:
s3: Framework for a POE Toolkit 3: evaluation techniques

Relevant sections of this guide:
Toolkit 3: evaluation techniques
Toolkit 4: Benchmarking

Relevant sections of this guide:
Toolkit Tool 5: Preparing an abstract
Toolkit Tool 6: Preparing a report

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Section 2: Defining Post Occupancy Evaluation

2.1 Introduction
Evaluation and feedback are the cornerstones for the continuous improvement in building procurement sought by the Higher Education sector.

Good feedback is an intrinsic part of good briefing and design of buildings. A recent report produced by CABE shows that well-designed buildings are a significant factor in the recruitment of staff and students in Higher Education.

To be most effective building performance evaluation must happen throughout the lifecycle of the building.

In this guidance the term POE is used as an umbrella term that includes a review of the process of delivering the project as well as a review of the technical and functional performance of the building during occupation.

POE is a way of providing feedback throughout a building's lifecycle from initial concept through to occupation. The information from feedback can be used for informing future projects, whether it is on the process of delivery or technical performance of the building. It serves several purposes:

Short term benefits of POE
- Identification of and finding solutions to problems in buildings;
- Response to user needs;
- Improve space utilisation based on feedback from use;
- Understanding of implications on buildings of change whether it is budget cuts or working context;
- Informed decision making

Medium term benefits of POE
- Built-in capacity for building adaptation to organisational change and growth;
- Finding new uses for buildings;
- Accountability for building performance by designers

Longer term benefits of POE
- Long-term improvements in building performance;
- Improvement in design quality;
- Strategic review

The greatest benefits from POEs come when the information is made available to as wide an audience as possible, beyond the institution whose building is evaluated, to the whole Further Education sector and construction industry. Information from POEs can provide not only insights into problem resolution but also provide useful benchmark data with which other projects can be compared. This shared learning resource provides the opportunity for improving the effectiveness of building procurement where each institution has access to knowledge gained from many more building projects than it would ever complete.

It is a key concern of HEDQF that POE reviews from projects be available to all in the sector, not just the institution whose buildings have been reviewed. Therefore an important strand in the AUDE/HEFCE/HEDQF initiative has been to make the information available to all. This has implications on the way that information is structured so that institutions can compare and benchmark their own buildings with those of others.

2.2 Three stages of review
POEs address a number of questions:
- Does the building perform as intended?
- Have the user's needs changed?
- What problems need to be tackled quickly?
- How effective was the process from inception to completion?
- What can be learned for future projects?

However not all these issues can be tackled immediately on handover; some may take several months to establish. A variety of methods are used to collect this information from questionnaires, focus groups or data monitoring.

This document has clarified three stages of the review process. As a guide they are; the **Operational Review,** carried out 3 - 6 months after occupation, a **Project Review** carried out 12 - 18 months after occupation, and a **Strategic Review** carried out 3 - 5 years after occupation.

Once the users have got to know the building after two or three months, they can be asked in an **Operational Review** about how well it is working and whether there are any immediate problems that need resolving. The next feedback stage, the **Project Review**, would be carried out after at least a year of occupation when the building's systems have settled down and there has been a full seasonal cycle. This gives the opportunity to see how the building performs under a variety of conditions. It also gives users a chance to identify where the building does not meet their long term needs. The third POE stage, the **Strategic Review**, would take place several years after initial occupation when the organisational need may well have changed and the building does not now meet that.

It is very possible that after any one of these reviews or as a natural consequence of building use, changes will be made to the building. The techniques described in this guide can be used again to test whether these have had the positive effect intended.

To get the most from a POE it needs to be planned for at the outset of the project. Putting POE on the project agenda from the start will focus the minds of the project team on how the outcome of the project will be measured and it enables the team to structure and record relevant information throughout the project. Often when an evaluation is carried out after a building project, people have forgotten why decisions were made. Attendance at post occupancy evaluation sessions can be made a requirement under the consultants' and contractors' contracts, doing this will alleviate problems caused by a team member refusing to take part and/or should a project member leave the organisation so create the loss of valuable insight.

2.3 Who should be involved and key issues to consider
Depending on the focus of the POE, different people will need to be involved. There are several reasons why it is important to include other people in the evaluation:
- To get information from them – different types of information come from different people;
- To make them feel confident that issues are being addressed;
- To carry out the evaluation.

Table a: Who needs to be involved and key issues to consider:

Who	Issues to consider
Project team	
Consultants/ Contractors	• Ensuring that they take part, set down the expectation • Recording relevant information • Incorporate terms of reference in appointment • Incorporate POE in the project brief
Estates team	• Relevant areas of expertise and responsibility
Users	
Students	• When are they available? • Is time relevant – do you need feedback from a particular group who may only be available in the near future, if so, does this affect when a study is carried out? • How best to get them involved? Is a questionnaire survey better than group meeting? • How many students would be a representative sample?
Staff	• When are they available? • Which staff would be representative?
Other users (eg visitors)	• Who might best represent external users?
University as client	• Which functions need to be included?

2.4 Levels of investigation

It is possible to define three levels of investigation moving from a quick, surface review to a more in-depth investigative analysis, to a diagnostic review correlating physical and occupant perceptions.

An indicative review gives a quick snapshot of the project. It is a broad brush approach where a few interviews are combined with a walk-through of the building. A short, simple questionnaire might also be circulated. The aim is to highlight major strengths and weaknesses. The value of this is to provide useful information quickly but also to form the basis of a more in-depth study.

An investigative review is a more thorough investigation using more rigorous research techniques to produce more robust data. In this type of review representative samples of staff are given questionnaires backed up by focus group reviews and interviews to tease out more information on problems identified by the questionnaire responses.

A deeper diagnostic review is a very thorough analysis which links physical performance data to occupant responses. In this type of review, the evaluators carry out analysis of the building's environmental systems. Generally this includes: air-handling, lighting, energy use, heating, measuring ventilation rates, temperature, lighting levels, energy use, CO_2 emissions and acoustic performance.

Section 3: Framework for a POE

3.1 Elements of evaluation
The relevance of a particular approach to POE will depend on what is to be reviewed, the level of detail that is needed and when the evaluation is to be carried out.

The focus of a POE can be considered in terms of three broad areas: **Process, Functional Performance** and **Technical Performance.**

Process
There are two aspects to consider:
First, the delivery of the project from inception to handover, this looks at how the project was delivered and how decisions were arrived at.

The second is the operational management, this asks questions of the Estates team about how they manage the buildings.

Table b: The areas covered in a Process evaluation

Brief	The way in which the team developed the brief on which the design was based including financial management aspects.
Procurement	The way in which the team selection, contractual and technical processes were undertaken including time and value aspects.
Design	The way in which the team developed and refined the design including space planning, engineering and financial management aspects.
Construction	The way in which the construction phase until handover was managed, including financial and change management processes.
Commissioning process	The way in which the final commissioning of the building was managed, including final adjustments and the provision of documentation.
Occupation	The way in which the handover process was managed including the rectification of last-minute snags and the removal/relocation process.

Functional Performance
This addresses how well the building supports the institution's organisational goals and aspirations and how well the user needs are supported.

Table c: The areas covered in a Functional Performance evaluation

Strategic Value	Achievement of original business objectives
Aesthetics and Image	Harmonious, neutral, iconic, powerful, bland
Space	Size, relationships, adaptability
Comfort	Environmental aspects: lighting, temperature, ventilation, noise, user control
Amenity	Services and equipment: completeness, capacity, positioning
Serviceability	Cleaning, routine maintenance, security, essential changes
Operational Cost	Energy cost, waterand waste, leases, cleaning, insurances
Life-cycle Cost	Initial construction cost, cost of operating, maintenance and repairs, replacement costs, alterations, demolition
Operational Management	Booking and space allocation systems, user support systems, help desks, manuals, training

Technical Performance

This involves measuring how the physical systems perform, for example lighting, energy use, ventilation and acoustics.

Table d: Areas covered in a Technical Performance review

Physical systems	Lighting, heating, ventilation, acoustics
Environmental systems	Energy consumption, water consumption, CO_2 output
Adaptability	Ability to accommodate change
Durability	Robustness, need for routine extensive maintenance, incidence of "down time" for unplanned technical reasons

3.2 Review periods

POEs can be broken down into three different time horizons: 3 to 6 months after handover (operational review); 12 to 18 months (performance review); and 3 to 5 years (strategic review).

Operational review

Soon after handover of the completed project is an appropriate time to evaluate the process of delivering the project because events are fresh in people's minds. However, it may be important to leave a bit of time before it is carried out to let the 'dust' settle, particularly where relationships on the project were strained. It may be better to wait until the performance review stage and include it in a wider review.

While the focus of the 'operational review' is likely to be part of the process, an early evaluation of the actual building may be important for identifying initial occupational and operational problems that need fixing. Carrying out a review soon after completion may also be important where there is a programme of small projects and it is necessary to get feedback into the next project which starts a few months later. In situations where feedback from students is important — because they may be in the best position to compare a new facility with the old one — then it may be necessary to carry out a review early if they are due to leave the institution soon.

Operational review: 3 to 6 months after handover

Table e:

Time horizon	Looks back over project
Main focus	The process of delivering the project from inception to occupation of the building
Broad focus	Tip of iceberg on technical and functional performance issues: • provides a snapshot view on whether the project improved work area • Provides an opportunity to correct / make minor adjustments to immediate problems Enables a quick response to problems that emerge
Use of information	• For the internal estates department and university, unlikely to publish information to organisations outside the project • Process review: Information fed into next project • Building review: Used to make necessary adjustment to building
Approach	Indicative review

Project Review

Generally it is argued that a POE should be carried out at least a year after occupation. This allows a full seasonal cycle so that information on how the building's systems perform under different seasonal conditions can be captured. Also, it gives users and building managers' time to get used to the building and identify any chronic problems.

Project Review: 9 to 18 months after handover

Table f:

Time horizon	Looks back at the building in use
Main focus	• On performance of specific areas/functions • In depth review of technical and functional performance • Identifies where adjustments and corrections are needed to the building and its systems • Cost in use
Use of information	• Internal (university estates) and external (project team) focus • Used to make adjustments to building and to inform the brief for the next project
Approach	Investigative/diagnostic

Strategic review

POE is an important technique for longer term reviews, perhaps 3 - 5 years after occupation, to assess how the buildings are likely to meet future needs and whether they have been able to respond to changing need so far. Therefore an important focus for a review at this stage is the change in organisational need. During the Strategic Review stage, there is an opportunity to re-evaluate the process of procuring the building from defining the need itself through to delivery and occupation. Here the aim is to identify recent experience which approaches are appropriate. Also, the review at this stage is used to re-evaluate the brief the functional and technical performance requirements of the building types. Findings will inform and feed forward into the future estates strategy.

Strategic review: 3 to 5 years

Table g:

Time horizon	Looks back but also forward/long term
Main focus	On organisational change and building response • Asks how buildings might respond to change in future, and how they have responded to short and medium term needs and changes. PFI/PPP review to allow a length of experience of operating the building
Use of information	Internal university focus – information unlikely to be published for public consumption • Feeds into next project, what is next project?
Approach	Investigative

Information gathered from all three stages provides feedback for the institution on managing the process of procurement, managing the buildings, resolving problems or developing the brief for the next project. It also provides valuable feedback for the higher education sector as a whole, and feedback for the construction industry.

It is important to be clear about how the information might be used and how to address the different audiences in feedback reports, Tools 5 and 6 and Templates 10 and 11 provide some tips on structuring the report.

Section 4: Identifying Approach to Use

4.1: Deciding which approach to use
There are two principal choices, either develop your own approach using a range of existing evaluation techniques (Tool 3) or use an established method.

A bespoke solution may be useful for specific situations for example, where the intention is to analyse specific issues. While this approach can enable benchmarking across an institutions' own estate, the downside is that expertise may be needed to interpret more complex findings or to carry out some types of evaluation.

Table h: Advantages and disadvantages of creating your own POE methodology or using an established method

Existing Methods	
Advantages	**Disadvantages**
• Already tested • Ready to use • Backed up by rigorous research • May offer benchmarking with other organisations in Higher Education sector • Expertise available to administer • May be able to license use of method	• May be a significant cost • May not be suitable for specific situations • Ownership of the data may not be yours • Cost of expertise to back up
Bespoke Methods	
Advantages	**Disadvantages**
• Tailor to suit specific needs • May cost less than established method • Under your own control	• Time needed to set up • Expertise needed • May cost more than established methods

4.2: Existing methods
A summary of the established methodologies available are given in Table i.

4.3 Bespoke approaches
Table j summarises the suitability of techniques for each review stage. This chart can be used by those who wish to put together their own POE. Clearly it is possible to use most of the techniques at every stage, but this guide aims to indicate which are likely to be more or less useful in the context of busy organisations needing to gather enough quality data that will provide useful information which the organisation can then act upon. There is a danger of gathering a lot of data which may be valuable but leaves a significant data handling problem, and may in the end not be analysed because of the magnitude of the task. The usefulness of the technique is based on a balance of useful information gathered for the effort required.

When deciding which techniques to use it is helpful to consider how different techniques can be combined. For example combining a questionnaire with a focus group or workshop will enable different levels of information to be gathered with the workshop or group being used to tease out some of the results from the questionnaire.

It is important to make the study manageable by erring on the side of gathering less data, but focusing on the quality of it. So rather than use every technique for each area of the review select those which will best meet your purpose.

Table i: Established POE methods available

Method	Format/ techniques used	Focus	How long does it take?	When is/can it be used?	Reference
De Montfort method	Forum Walk-through of the buildings	Broadly covers the process review and functional performance	1 day generally	A year after occupation	www.architecture.com click on client forums
CIC DQIs (Design Quality Indicators)	Questionnaire	Covers functionality, building quality and impact	Questionnaire completion is online – takes about 20-30 minutes. Analysis is immediate	At design stage and after completion	www.dqi.org.uk
Overall Liking Score	Questionnaire: – hard copy – web based 7 point scale	Occupant survey Sectors include educational Diagnostic tool	10 minutes for each occupant	About 12 months after occupation	www.absconsulting.uk.com
PROBE	Questionnaire Focus groups Visual surveys Energy assessment Env. Performance of systems	User satisfaction / occupant survey - Productivity Systems performance Benchmarks developed	Overall process varies time needed 2 days (over two months?) One-person month	Any time but PROBE team recommend earliest at 12 months	www.usablebuildings.co.uk
BUS Occupant survey	Building walk-throughs Questionnaire backed up by Focus groups	Occupant satisfaction Productivity	10 – 15 mins to complete questionnaire	On its own or in conjunction with other methods Anytime but often after 12 months	www.usablebuildings.co.uk
Energy Assessment and Reporting Methodology	Energy use survey Data collection e.g. from energy bills	Energy use and potential savings	Full assessment up to one-person week	Once building is completed On its own or in conjunction with other methods e.g. PROBE	www.cibse.org
Learning from Experience	Facilitated group discussions or interviews	Team learning from its experience.	Ranges from single seminar to continuous evaluation	Can be used before, during and after project as 'Foresight, Insight and hindsight' reviews	

Table j: Selection Chart for carrying out a POE

KEY	Operational Review – Qualitative assessment				Operational Review – Analytical assessment			Project Review – Qualitative assessment				Project Review – Analytical assessment			Strategic Review – Qualitative assessment				Strategic Review – Analytical assessment		
	Observation	Interview	Focus Group	Workshop	Questionnaire	Measurement	Benchmark	Observation	Interview	Focus Group	Workshop	Questionnaire	Measurement	Benchmark	Observation	Interview	Focus Group	Workshop	Questionnaire	Measurement	Benchmark
PROCESS																					
Brief																					
Procurement																					
Design																					
Construction																					
Commissioning Process																					
Occupation																					
FUNCTIONAL PERFORMANCE																					
Strategic value																					
Aesthetics and image																					
Space																					
Comfort																					
Amenity																					
Serviceability																					
Operational cost																					
Life-cycle cost																					
Operational management																					
TECHNICAL PERFORMANCE																					
Physical systems																					
Adaptability																					
Environmental Systems																					
Durability																					

KEY:
- Most suitable approach
- Quite useful
- Least useful
- Not applicable

TOOLKIT

This toolkit provides a range of tools and techniques that can be used during post occupancy evaluations.

Tool
1: STRUCTURE OF BUILDING BRIEF

2: STATEMENT FOR PROJECT BRIEF/TERMS OF REFERENCE
  Template 1: POE Project Brief/Terms of Reference

3: EVALUATION TECHNIQUES
  a: Walk Throughs and Observation
  Template 2: Observation evaluation sheet
  b: Interviews
  c: Focus groups
  d: Workshops
  e: Questionnaires: Operational Review Stage
  Template 3: User/facilities/estates
  Template 4: Consultant team
  Template 5: Contractors
  Template 6: Sample occupant survey questionnaire
  f: Measurements

4: BENCHMARKING
  Template 7: Environmental Benchmarks
  Template 8: Elemental cost breakdown
  Template 9: Operational costs
  Template 10: Whole life cost model

5: PREPARING AN ABSTRACT FOR PUBLICATION
  Template 11: Contents of the abstract

6: PREPARING A REPORT FOR PUBLICATION

This toolkit aims to provide useful guidance and advice on carrying out POEs and includes templates which can be used and adapted for specific circumstances.

TOOL 1: STRUCTURE OF BUILDING BRIEF

The list below indicates a briefing structure, with suggested areas to be reviewed below. This is not an exhaustive list nor is it all that may be needed.

This list can be used to identify in more detail what needs to be considered.
Briefing Headings

A: Project identification
Intended to establish a general outline of the kind of project and who is involved

A.1 Identity of the project
• Project, name/title/reference number
• Location/address
• Building category/type of use

A.2 Purpose of the project
• Main reason for the project
• Main aims of the project
• Business objectives for the project
• Factors for success
• Summary of main priorities
• Tasks of the brief

A.3 Scope of the project
• Size
• Quality
• Financial frame
• Timeframe
• Current stage of project planning
• Future changes

A.4 Participants
• Client
• Occupiers/users
• General manager/administrator
• Briefing consultants
• Designer
• Other consultants
• Builder

A.5 Identity of other related groups
• Central government
• National/international agencies
• Local government
• Town planning/building authorities
• Financiers
• Groups/persons with special interest
• Site owners/tenants
• Neighbours and their consultants
• Media
• Insurers

A.6 PROCESS - THE PROJECT PLAN
• Procurement process
• Decision making process throughout project
• Timeframe/programme
  – milestones
• Statement about what is wanted in response to brief

B: AIMS, RESOURCES AND CONTEXT
These form the essence of the project and a prime focus for an evaluation after the project.

B.1 Project management
• Participants
• Related groups organization
• Design evaluation procedures
• Quality control

B.2 Laws, standards and codes
• Town planning
• Legal restrictions on the site or buildings
• Occupancy laws
• Finance
• Building/design regulation/codes
• Environmental/pollution regulations
• Political/administrative
• Social/cultural

B.3 Financial and time constraints
• Financing the project
• Budgets
• Costs in use
• Lifecycle costs
• Target dates
• Financial and time risk

B.4 Background and historical influences
• Project history
• Current situation – client/user activities
  – existing sites/facilities/buildings
  – -on-going investigations
• Reason for proposed project
• Commitments
  – organisational
  – social
  – contractual

B.5 Influences of site and surroundings
• Location
• Use
• Availability
• Infrastructure
• Characteristics
• Existing buildings

B.6 Client's future enterprise

- Purpose
- Organisation's objectives
  - strategic aims
  - priorities
  - image
  - new areas of activity
- Size
- Context
  - national/local trends
  - social
  - commercial
  - technological
  - availability of resources
- Foreseeable future changes
  - expansion/contraction
- Insights on distant future

B.7 Intended occupancy in detail

- Activities/processes schedule
  - nature and purpose
  - frequency/duration/permanence
  - nature of activities
- Users
  - nature and numbers of users/staff
  - overall organization
- Relationships
  - similarity of activities
  - communications/transport
  - people
  - information
  - organisational connections
- Items to be housed
- Floor space guidelines etc
- Predicted by-products e.g. noise, heat
- Safety and health risks
- Foreseeable future change

B.8 Aims of the project

- Required effects on the client's enterprise
  - financial
  - social
  - cultural
  - political
  - image
  - continuity of operations
- Required effects on occupiers and/or users
  - spatial (operational efficiency, adaptability)
  - convenience of systems
  - communication (between groups, physical, ICT)
  - circulation (ease of use, access, lifts, stairs, corridors)
  - Orientation (specific direction effects, view out)
  - security (limits of delay for intruders and authorised access)
  - cleaning and maintenance (ease of use of devices and systems)
  - escape
  - levels of beneficial effects
  - comfort
  - cleanliness
  - health
  - safety
  - aesthetic satisfaction (image, morale, appearance, atmosphere)
  - value for money
  - limits of delay and disruption from project process
  - building fabric wear and tear
- Required effects on public (appearance, access)
- Required effects on process of construction (ease, speed)
- Accessibility
- Required effects on the environment
- Priorities
  - value for money
  - time
  - cost
  - quality
- Functions, Capacity and size
  - Adaptability
  - Facilities management – what is important
  - Level of technology to be installed
  - Life of building
  - Car parking
- Environmental factors
  - Heating
  - Lighting
  - Ventilation
  - "Green" issues: Waste
  - Pollution
  - Services in use (targets)
  - Zoning requirements for anticipated uses

C: Design and performance requirements

In this section of the brief, specific criteria are set out. Much of these may be in the form of performance criteria that the design must meet. These performance criteria are by their nature measurable and should be used as the basis for the POE.

C.1 Sites and surroundings

- Special relationships
  - surroundings
  - other buildings
  - other site features
- Protection
  - flooding
  - weather
  - erosion
- Access
  - pedestrians
  - bicycles
  - vehicles
  - public transport
  - parking
  - road layouts
- Security
- Site zoning
- Environmental control
- Utilities
- Waste disposal
- Maintenance

C.2 The building as a whole

- Physical characteristics
  - dimensions
  - volumes
  - number of storeys
  - building phasing
  - loading
  - energy
  - flexibility for future uses
- Circulation/access
  - vertical/horizontal
  - pedestrian/mechanised
  - goods/people
  - handicapped people
  - signposting
- Safety
  - structural
  - construction
  - fire
  - safety in use
- Environmental – strategy
  - passive cooling
  - heating system
  - control of heating
- Environmental
  - heat (required levels)
  - humidity (required levels)
  - light (required levels)
  - sound (required levels)
  - air (quality, movement. Strategy – mechanical/natural)
- Environmental systems
  - energy consumption
  - water consumption
  - CO_2
- Lighting strategy
  - daylight use and control
  - artificial lighting (types, location)
  - lighting controls
- Hot and cold water
- Drainage
- Information technology and data
- Communications (ICT)
- Fire strategy
  - alarm system
  - means of escape
  - extinguishing
- Security strategy
  - Systems (access control, alarms)
- Appearance
  - building forms/symbolic/functional
  - proportions
  - material colours
  - finishes
- Works of art
  - murals
  - sculpture
- Operation
  - cleaning
  - repair
  - maintenance
  - waste disposal

C.3 Building fabric performance

- Structure
- External envelope roof , walls and windows
- Building Interior
  - walls
  - doors
  - ceilings
  - furnishings
- Materials and finishes
  - access
  - security
- Spatial dividers within the envelope
- Services

C.4 Grouping of spaces
• Zoning
• Spatial relationships
• Physical characteristics
C.5 Spaces in detail
• Physical characteristics
• Related activities
• Relationship to other spaces
• Building services
C.6 Plant, equipment and furnishings
• Items listed by category
• Location/area of use
• Installation
• Appearance
  – materials
  – colours
• Maintenance
  – life-span
  – cleaning
  – maintenance control
  – handbook

Note: This list has been compiled from a range of materials including the authors own material and BS7832:1995 (ISO 9699:1994) "Performance Standards in Building – Checklist for briefing – Contents of brief for building design."

TOOL 2: STATEMENT FOR PROJECT BRIEF/TERMS OF REFERENCE

The following paragraphs can be inserted into all project documentation including: the project brief, the contract documents for the contractor/s and the schedules of duties for the consultants appointed etc.

Template 1:POE Project Brief/Terms of Reference

PURPOSE OF POE
The University is encouraging continuous learning from its construction and building projects whereby the benefits of lessons learned is fed forward to new projects. The aim is to foster a culture of feedback both within the estate management system and amongst consultants and contractors who work within it. By doing so improved efficiency and effectiveness of the delivery process, the construction and the resultant building/s will occur. Feedback will also assist the University to manage its operational facilities so that change in organisational need and how buildings support that need, can be monitored thereby improving how users are supported.

The information gathered will primarily be available to the University, participants in the project. We encourage information to be made available to the sector and the wider corporate real estate industry for research purposes in general.

This schedule of conditions applies to the Contractor(s), Project and Design teams equally, who must each ensure they provide sufficient resource to enable completion of the full POE process, as defined below in accordance with the HEFCE/AUDE Guide to POE. The resource should be identified and in all cases involve the primary contact involved in each of the identified roles. Where this is not possible the Contractor(s), Project and Design team companies must provide a substitute acceptable to the client, together with the complete and accurate records of the design development, construction and commissioning processes and the final Defects Liability Period.

PROCESS EVALUATION
In accordance with the guidelines set out in the HEFCE/AUDE Guide to POE carry out a review covering the following areas of process evaluation; [*insert headings for Process Evaluation*] …………………………
………
………
To complete the [*Delete as appropriate*;] **Operational Review, Project Review, Strategic Review**, stage/s within the following timeframes; [*Delete as appropriate and complete timeframe in months;*] Operational Review……
Project Review……………………………………….Strategic Review……………………………………………,
Following the target date of Practical Completion or …………[*Delete as appropriate or fill in Target Date*]

FUNCTIONAL PERFORMANCE EVALUATION
In accordance with the guidelines set out in the HEFCE/AUDE Guide to POE carry out a review covering the following areas of functional performance evaluation; [*insert headings for Functional Performance evaluation*] ……………………………………………………………………………………………………
………
………
To complete the [*Delete as appropriate*;] **Operational Review, Project Review, Strategic Review**, stage/s within the following timeframes; [*Delete as appropriate and complete timeframe in months*;] Operational Review……
Project Review……………………………………….Strategic Review……………………………………………,
Following the target date of Practical Completion or ………..[*Delete as appropriate or fill in Target Date*]

TECHNICAL PERFORMANCE EVALUATION

In accordance with the guidelines set out in the HEFCE/AUDE Guide to POE carry out a review covering the following areas of technical performance evaluation; [*insert headings for Technical Performance evaluation*]
…….
……….
To complete the [*Delete as appropriate*;] **Operational Review, Project Review, Strategic Review**, stage/s within the following timeframes; [*Delete as appropriate and complete timeframe in months*;] Operational Review…….
Project Review…………………………………..Strategic Review…………………………………………….,
Following the target date of Practical Completion or …………[*Delete as appropriate or fill in Target Date*]

OUTPUTS

The output required is a report and abstract prepared for the client setting out the findings, following the assessment method identified for each area of Project Review identified. The report and abstract is contributed to by all participants but led and prepared by [*state who*]………………………, in accordance with the guidelines set out in the HEFCE/AUDE Guide to POE,

The report and abstract are to be published on the [*name*] ……………………website

RESOURCE

This schedule of conditions applies to the Contractor/s, Project and Design teams equally, who must each ensure they provide sufficient resource to enable completion of the full POE process, as defined above, and in accordance with the HEFCE/AUDE Guide to POE. The resource should be identified and in all cases involve the primary contact involved in each of the identified roles, where this is not possible the Contractor/s, Project and Design team companies must provide a substitute acceptable to the client, together with the complete and accurate records of the design development, construction and commissioning processes and the Defects Liability Period.

All participants whether consultant and/or contractor, will set aside time [state amount days] for the POE review. Their performance in contributing to the review process will also form part of the assessment.

Each of the Contractor/s, Project and Design team companies involved in this work are to identify separately the cost of this element of their fee and the stage at which it is payable. The fee/amount payable to the [*insert name*……………….] following completion and publishing of the POE report at;
Operational Review stage is……………………………………………
Performance Review stage is…………………………………………..
Strategic Review stage is…………………………………………………

TOOL 3: EVALUATION TECHNIQUES

A range of techniques can be used to carry out an evaluation. The relevance of a technique depends upon, for example:
- The level of detail required;
- The level of information available;
- The resource available in terms of time and money;
- How quickly the study is to be carried out;
- The skill levels of those who will be undertaking the study;
- The extent to which a problem has already been identified.

The most accurate evaluation can usually be gained from employing a combination of techniques, e.g. a widely circulated questionnaire with a focus group to examine in more detail any major problem identified by the questionnaire survey. The key is:
- To be holistic (consider the interplay between the physical environment, facilities provision, and organisational attitudes);
- To look for both cause and effect;
- To verify subjective results either by taking objective measurements or through balancing subjective opinions from a broad range of people;
- To involve different groups of people (assessing perception and reality, for example in the case of productivity impacts, do staff and managers' opinions coincide);
- To use transparent methodology so that results can be interpreted with the appropriate degree of assurance, limitations can be understood, and repeatable if benchmarking is to be undertaken.

It is tempting to collect data first and then decide what to do with it. However, in its raw state data does not contribute much in the way of useful information or knowledge until it has been analysed.

This toolkit shows the range of techniques for gathering the information: questionnaire surveys, focus groups, interviews, measurement, benchmarking, walk-throughs and observation. It offers advice on using each approach with some model data collection forms which in most circumstances may need to be adapted.

3a: Walk through and observation

This can use both observation, reflecting on how space is performing, and informal discussions with users to identify conflicts.

Advantages
- Few staff resources needed
- Can be done without any end user involvement or inconvenience
- Can provide quantitative data if designed appropriately
- Enables unbiased view

Disadvantages
- Methodology may demand rigorous application e.g. observations at particular times of the day
- Comparison can be difficult unless observer is given a methodology to apply

TEMPLATE 2: Observation Evaluation sheet

For use with an observation/walkthrough, where one or two people are carrying out an evaluation of a building or an area of a building.

Building		Department	
Date	Time		
Room No (or space identifier):			
Purpose of room/space (i.e. meeting, classroom, lecture room etc)			

Activity in room/space (note any activities at the time of the review)

Activity in room/space (if room vacant at time of review note from observation what might happen in it)

Description of the room/space (note unusual/unexpected features)

Size (is it appropriate?)

Sketch of room

User comments

Room evaluation chart (contd)

Floor finish

Description	
Suitability	
Durability	
Maintenance	
Aesthetics	

Wall finish

Description	
Suitability	
Durability	
Maintenance	
Aesthetics	

Ceiling finish

Description	
Suitability	
Durability	
Maintenance	
Aesthetics	

Doors

Description	
Suitability	
Durability	
Security	
Maintenance	
Aesthetics	

Room evaluation chart (contd)

Windows	
Description	
Suitability	
Durability	
Security	
Blinds	
Ease of opening	
Maintenance	
Aesthetics	

Light (Quality of light and lighting system)	
Description	
Suitability	
Durability	
Control (manual/sensor)	
Maintenance	

Ventilation/air conditioning	
Description	
Suitability	
Durability	
Control (manual/sensor)	
Maintenance	

Air quality (humidity/temperature)	
Does it feel hot/cold?	
Is heating on?	
Does it feel wet/dry?	
Control (manual/sensor)	

Room evaluation chart (contd)

ICT provision	
Description	
Suitability	
No of points	

Furniture	
Description	
Suitability	
Durability	
Maintenance	
Aesthetics	

Other Comments

3b: Interviews

Interviews with individuals are a useful way of getting very specific, detailed information and developing a deeper understanding of particular problems. They are best facilitated by a professional who is able to be objective. Whilst there needs to be a focus to an interview they are often most useful when conducted with a loose agenda, allowing free discussion to pick up issues that may not be initially obvious.

Interviewees must be carefully selected to provide a balance of perspectives.

Advantages
• Detailed exploration of issues
• Fine grain of detail and insights can be generated
• Target very specific knowledge
• Easier to arrange meetings with individuals than groups

Disadvantages
• Specific opinions do not necessarily represent broad views
• Biased response likely
• Cannot benchmark
• No anonymity

Conducting interviews
There are broadly two ways of carrying out interviews. A structured interview where there are very specific questions or the semi-structured interview where there is an agenda of questions and issues, but allows the discussion to develop which may identify issues not already established.

Interviews should last no more than one hour and be preceded by a visit to the area of the building where the interviewee works making notes about any unusual features of the space which could impact on the views given. In addition each interviewee should be given an agenda which explains the purpose of the investigation and issues to be covered in the interview.

Tips for conducting successful interviews
Steps
• Identify types of staff to be interviewed. Could break this down by organisational hierarchy and area of activity
• Circulate agenda, with start and finish time
• Prepare and distribute minutes of meeting
• Agree with interviewee.

3c: Focus groups

Focus groups are a good way of drawing out information on a range of topics. Often they are a useful adjunct to a questionnaire survey where the responses to that have identified key problem areas but you need to get more qualitative information on them to understand the problem.

Advantages
• Management time needed to prepare is less than for questionnaire survey
• Involves relatively in few people
• Enables specific issues to be addressed in detail
• Interactions between attendees enables deeper insights
• Flexibility of coverage, agenda can allow issues to be explored as they are uncovered
• Useful for teasing out broad issues uncovered by questionnaire survey

Disadvantages
• Expert facilitation needed
• Qualitative data lacks statistical rigour of survey questionnaire
• Bias of those who attend – therefore selection of attendees critical
• No anonymity – people may be reticent to say what they think

Conducting focus groups
A good focus group size is 6-8 people. Groups of this size are manageable and it enables the facilitator to get input from everyone present at the same time as getting a broad range of views.

A maximum length of 1 hour enables attendees to feel that they can devote time to it and usefully contribute. If the sessions are longer then breaks would be necessary which would break the flow of the session.

It is important to consider the selection process and identify the right mix of people. For example do you include both staff and students? Do you need to be careful of some dominant personalities? It is important that the selection is made objectively. Voluntary attendance may bias the responses.

As with the questionnaires it is important that the purpose of the session is clear and what actions will follow.

• Define the areas of investigation and the 'focus' of the session`
• Identify about six key questions that the group is to address. (It is a good idea for the facilitator to have supplementary questions to aid the group reflection if the group either wanders off the subject or finds it hard to address the question as posed)
• Circulate an agenda making the purpose of the session clear and the areas of investigation, but without the specific questions
• At the end of the session go around the table asking each person if they have a final comment they want to make
• Circulate a report on the meeting to the participants

3d: Workshops

A workshop is useful for defining and exploring problems rather than merely discussing what those problems are. In a Post Occupancy Evaluation workshops can be a useful way to explore possible solutions to problems by using group experience. A disadvantage is that they can be time consuming.

A workshop should last at least half a day and have a broad agenda which identifies the focus of each session.

• Identify a range of staff to bring in different types of experience
• Break down the main topic into sub-topics allowing about an hour for each
• With the group define specific questions that need to be addressed and get the group to define answers
• Record the groups responses so that everyone can see – flip charts/white boards are useful for this
• Allow time to summarise
• Where there are say more than eight people in the workshop consider breaking it down into sub groups which are easier to manage and ensure that everyone takes part. These subgroups can be given different issues or questions to address
• Prepare and circulate the workshop report to all participants

3e: Questionnaires
Questionnaires are a valuable way of collecting data from a large group of people.

It is important to consider whether a standard or tailored questionnaire is required. Standard questionnaires offer the advantage of being able to gather consistent data across your facilities. The benefit of this is that you can benchmark buildings, or parts of buildings against each other. A standard questionnaire that is available from expert consultancies enable benchmarking a building project against others in the sector. Tailored questionnaires enable examination of issues specific to the building or institution. However, it is possible to combine the two approaches and use a standard questionnaire with a section that is specific to your circumstances.

Web based questionnaires
Questionnaires can be distributed and completed using the web as well as by hard copy. Clearly an advantage of using web technology is that it cuts out the need for data input and analysis software can be linked to the database that is collecting the information. However, when deciding to use this approach it is important to consider what specialist skills are available within the organisation for using the technology.

Hard copy questionnaires
When distributing hard copy questionnaires it is important to consider how they are to be returned. One way to manage the response is to distribute questionnaires by hand to individuals and say that they will be collected within an hour. This is easier to manage if people are working at desks. However, if they know that the questionnaires will be collected soon then they are more likely to complete them rather than put it off until later.

Other issues to consider:
Identifying the sample. Consider which categories of people from whom responses are needed, the number of responses needed to maintain some statistical rigour and where they are located or which parts of the building they use.

To get a large enough response it is important that people can complete the questionnaire within 20 minutes at the most.

Ensure that respondents are clear about the actions to be taken in response to questionnaire results. It is very easy to inadvertently raise expectations that all problems identified will be corrected immediately. Also, people appreciate that they will be given some results.

Advantages
• Generates detailed quantitative data from end users
• Allows performance benchmarking
• Problems can be geographically pinpointed (i.e. where in building respondent works)
• Obtains a broad based opinion
• Anonymity can be given
• Enables comparative surveys to identify trends and responses to remedial action

Disadvantages
• Requires skilled design
• Requires careful administration to ensure response
• Requires staff time to complete
• Requires skills to analyse and interpret responses

Tips for questionnaire design and use
• Never ask unanswerable questions
• Keep the questionnaire as short as possible, so that it takes no more than ten minutes to fill in
• Use multi-choice tick boxes or tickable scales, always giving people a full range of possible options to fill in
• Allow enough, but not too much, space for comment. One short sentence will often suffice for most topics, but leave a paragraph for general comments
• Use a sample which is large enough to cover sub-groups representatively
• Use standard questions (so data are comparable with benchmarks)
• Consider how data are to be analysed when the questionnaire is being designed
• Never underestimate the time taken to prepare a tight, well-structured questionnaire or time spent on data entry into a computer and data analysis
• When handing out questionnaires always state that you will personally collect them Leave half an hour to an hour between distribution and collection

Sample Questionnaires

There are two types of questionnaire included here. The first is a set of three designed to be used on occupation as a way of identifying how the project has performed in terms of benchmarking against some key performance indicators (KPI). These KPIs are based on Constructing Excellence indicators. These questionnaires have been reproduced with permission from the University of Wales Institute, Cardiff

Each questionnaire is aimed at a different audience: the client including occupier, consultant and contractor.

The questionnaires select from seven sections:

Client satisfaction – Product • Client satisfaction – Service • Defects • Predictability – Cost • Predictability- Time • Safety • Comments

Occupancy Questionnaire

The second questionnaire is an occupancy questionnaire which surveys building users.

TEMPLATE 3: Operational review stage

CLIENT: USER/FACILITIES/ESTATES

SCHOOL/SECTION……………………….............   COMPLETED BY:

DATE……………………………………….…..   …………………………………...…….............

PROJECT…………………………...…...…………   SIGNATURE……………….....…………..

Please complete the following questions in respect of the above mentioned project. Return your completed questionnaire to the Estates Department for collation into a project KPI Assessment.

Please add additional sheets if required for comments.
Please tick the appropriate boxes

For Office Use only

SECTION 1 – CLIENT SATISFACTION - PRODUCT

1.1 How satisfied were you with the quality of the finished product?

Dissatisfied   Satisfied

1	2	3	4	5	6	7	8	9	10

1.2 How satisfied were you that the design of the scheme met your requirements?

Dissatisfied   Satisfied

1	2	3	4	5	6	7	8	9	10

1.3 Has the scheme improved your work area?

Worse   Better

1	2	3	4	5	6	7	8	9	10

SECTION 2 – CLIENT SATISFACTION – SERVICE

2.1 How satisfied were you with the service provided by Estates?

Dissatisfied   Satisfied

1	2	3	4	5	6	7	8	9	10

2.2 How helpful were Estates during initial planning of the scheme?

Dissatisfied   Satisfied

1	2	3	4	5	6	7	8	9	10

2.3 How flexible were the Estates Department in delivering your needs?

Inflexible   Very flexible

1	2	3	4	5	6	7	8	9	10

For Office Use only

2.4 How approachable were the Estates Department during the works?

Not approachable   Very approachable

1	2	3	4	5	6	7	8	9	10

2.5 Were any problems resolved to your satisfaction?

No   Yes

1	2	3	4	5	6	7	8	9	10

2.6 How satisfied were you with the service provided by the Consultancy Team?

Dissatisfied   Satisfied

1	2	3	4	5	6	7	8	9	10

2.7 How satisfied were you with the service provided by the main contractor during the work?

Dissatisfied   Satisfied

1	2	3	4	5	6	7	8	9	10

SECTION 3 – DEFECTS

What was the condition of the facility with respect to defects at the time of handover?

Totally defective	Major defects major impact on client	Some defects with some impact on client	Some defects with no significant impact on client	Defect free
1	2	3	4	5

SECTION 4 – COMMENTS

For Office Use only

4.1 Do you have any suggestions to improve the service provided by Estates/Consultants/ Contractor?

4.2 Do you have any other comments in respect of the project:

(Attach additional sheets if required)

Please return this completed form to:

TEMPLATE 4: Operational review stage

CONSULTANTS: PM/QS/SERVICES ENGINEER/STRUCTURAL ENGINEER/ARCHITECT.

COMPANY...   COMPLETED BY:

DATE...   ....

PROJECT REF;...   SIGNATURE...

Please complete the following questions in respect of the above mentioned project. Return your completed questionnaire to the Estates Department for collation into a project KP1 Assessment.

Please add additional sheets if required for comments.
Please tick the appropriate boxes

SECTION 1 – PRODUCT

For Office Use only

1.1 How satisfied were you with the quality of the finished product?

Dissatisfied   Satisfied

1	2	3	4	5	6	7	8	9	10

1.2 How satisfied were you that the design of the scheme met your requirements?

Dissatisfied   Satisfied

1	2	3	4	5	6	7	8	9	10

SECTION 2 – SERVICE

2.1 How satisfied were you that the information/instructions provided by the client was clear?

Dissatisfied   Satisfied

1	2	3	4	5	6	7	8	9	10

2.2 How satisfied were you with communication between the client and yourself?

Dissatisfied   Satisfied

1	2	3	4	5	6	7	8	9	10

2.3 How satisfied were you with the service provided by the contractor?

1	2	3	4	5	6	7	8	9	10

SECTION 3:- DEFECTS

What was the condition of the facility with respect to defects at the time of handover, using a 1-5 scale

Totally defective	Major defects major impact on client	Some defects with some impact on client	Some defects with no significant impact on client	Defect free
1	2	3	4	5

SECTION 4 PREDICTABILITY – COST

4.1 Design:

What was the estimated cost of construction at briefing stage: £(A) _____

What was the final cost of construction at completion(final account)?   £(C) _____

Calculate $£(C)/£(A) \times 100 = +/-$ _____%

4.2 Construction .

What was the estimated cost of construction at tender stage (tender sum)?

£(B). _____

What was the final cost of construction at completion (final account)?.

£(C) _____

Calculate $£(C)/£(B) \times 100 = +/-$ _____%

SECTION 5 – PREDICTABILITY – TIME

5.1 Design:

What was the estimated duration of the design stage at briefing stage?
Weeks _____ (A)

What was the actual duration of the design stage at commencement on site?
Weeks _____ (B)

Calculate $(B)/(A) \times 100 = +/-$ _____%

5.2 Construction

What was the estimated duration of the construction phase at tender?
Weeks _____ (B)

What was the actual duration of the construction period at completion?
Weeks _____ (C)

Calculate $(C)/(B) \times 100 = +/-$ _____%

SECTION 6 – COMMENTS

6.1 Do you have any suggestions to improve the relationship with Estates/Users/Facilities?

6.2 Do you have any other comments in respect of the project:

(Attach additional sheets if required)

Please return this completed form to:

TEMPLATE 5: Operational review stage

CONTRACTOR: MAIN/KEY S/C.

COMPANY.. COMPLETED BY:

DATE... ....

PROJECT REF;... SIGNATURE...

Please complete the following questions in respect of the above mentioned project. Return your completed questionnaire to the Estates Department for collation into a project KP1 Assessment.

Please add additional sheets if required for comments.
Please circle the appropriate figures

SECTION 1 – PRODUCT

1.1 How satisfied were you with the quality of the finished product?

Dissatisfied   Satisfied

1	2	3	4	5	6	7	8	9	10

SECTION 2 – SERVICE

2.1 How satisfied were you that the information received from the Consultant was adequate?

Dissatisfied   Satisfied

1	2	3	4	5	6	7	8	9	10

2.2 How satisfied were you with communications with the client were clear and effective?

Dissatisfied   Satisfied

1	2	3	4	5	6	7	8	9	10

2.3 How satisfied were you with the arrangements regarding works carried out by the client?

Dissatisfied   Satisfied

1	2	3	4	5	6	7	8	9	10

SECTION 3 – SAFETY

3.1 How many reportable accidents have you had in the past year (i.e. fatalities, major injuries, and over 3 day accidents to employees your subcontractors and members of the public). Number (A).

What was the average number of full-time equivalent employees you had in the year ? (2 people each working half time make full-time equivalent)

Number (B) _____

How many sub contractors, do you employ on average during the year?

Number (C) _____

Calculate $(A)/(B)+(C) \times 100 =$ _____ %

_____ x 100

(B) _____ + (C) _____

SECTION 4: - COMMENTS

4.1. Do you have any suggestions to improve the relationship with Consultants/UWIC Estates/Users/Facilities?

4.2 Do you have any other comments in respect of the project?

(Attach additional sheets if required)

Please return this completed form to:

TEMPLATE 6: Sample Occupant survey Questionnaire

This questionnaire is about occupant reaction to their environment.
This is a basic questionnaire which can be used to explore user reactions to a building or part of the building. The General section is about the respondent, the Location section is about responses to the building or campus in general and reveals insights about the respondent's wellbeing. The Final section is about specific locations and should be copied for each location that the review is to cover.

However, many situations will have unique characteristics and these will need to be added.

There is merit in keeping the core of your questionnaire the same with project specific attributes being added in another section. This is so that it can be used across an estate in different buildings and comparisons can be made.

Occupancy Questionnaire

Institution:

Building address:

Date: **Time:**

Focus of review (if part of a building):

Introduction
We are conducting an evaluation of your building to assess how well it performs for those who occupy it. This information will be used to assess areas that need improvement, provide feedback for similar buildings and projects and to help us better manage the environment.

Responses are anonymous. Please answer all the relevant questions.

General

1. Gender
Male   Female

(Please tick)

2. Occupation (Please tick most relevant or state in 'other')
Administrative staff
Researcher
Lecturer
Student
Other: ....

Full-time
Part time

---

3. Time in building
a. How long do you spend in the building during the day?
(Please tick)

Hours	>1	1-2	3-4	5-6	7-8	>8

4. Hours at VDU
a. How long do you spend working at a computer (average hours per day)
(Please tick)

Hours	>1	1-2	3-4	5-6	7-8	>8

Location in building

5. Location
In an average week how much time do you spend in the following types of space? (if you are a student assume during term time)

a: Office *(Please tick)*

Hours	0-5	6-10	11-15	16-20	21-25	26-30	31-35	>35

b: Lecture room *(Please tick)*

Hours	0-5	6-10	11-15	16-20	21-25	26-30	31-35	>35

c: Laboratory *(Please tick)*

Hours	0-5	6-10	11-15	16-20	21-25	26-30	31-35	>35

d: Library *(Please tick)*

Hours	0-5	6-10	11-15	16-20	21-25	26-30	31-35	>35

e: Café *(Please tick)*

Hours	0-5	6-10	11-15	16-20	21-25	26-30	31-35	>35

f: Other *(Please state)*
………………………………………

Hours	0-5	6-10	11-15	16-20	21-25	26-30	31-35	>35

5. Please rate the overall quality of the following areas:
(Please tick)

a: Office	Poor	1	2	3	4	5	6	7	Excellent
b: Lecture room	Poor	1	2	3	4	5	6	7	Excellent
c: Laboratory	Poor	1	2	3	4	5	6	7	Excellent
d: Library	Poor	1	2	3	4	5	6	7	Excellent
e: Café	Poor	1	2	3	4	5	6	7	Excellent

f: Other *(Please state)*:

…………………………………

Poor	1	2	3	4	5	6	7	Excellent

Building Generally

6. Security

a. Personal safety: How safe do you feel in the building?
(Please tick)

Unsafe	1	2	3	4	5	6	7	Very safe

b. What aspects of the environment contribute to feeling safe?
i). Visibility of security personnel
(Please tick)

Not significant	1	2	3	4	5	6	7	Very significant

ii). Access control to the building

Not significant	1	2	3	4	5	6	7	Very significant

iii). Security zoning (access controls to parts of building)

Not significant	1	2	3	4	5	6	7	Very significant

iv).Lighting

Not significant	1	2	3	4	5	6	7	Very significant

v) Spatial configuration (i.e. relatively large uncluttered spaces)

Not significant	1	2	3	4	5	6	7	Very significant

7. Accessibility (can you get into it, can you get around the building / campus easily)

a). How accessible is the building from the street i.e. to the reception door?
(Please tick)

Not accessible	1	2	3	4	5	6	7	Very accessible

b). How easy is vertical circulation?

Very difficult	1	2	3	4	5	6	7	Very easy

c). How easy is horizontal circulation?

Very difficult	1	2	3	4	5	6	7	Very easy

8. Cleanliness
How clean is the building?
(Please tick)

Dirty	1	2	3	4	5	6	7	Clean

Location specific

9. Air quality

a). Does the quality of the air in this part of the building have a negative effect on your work performance?
(Please tick)

Not significant	1	2	3	4	5	6	7	Very significant

b). Is the air fresh or stale?
(Please tick)

Stale	1	2	3	4	5	6	7	Fresh

c) Is the air humid or dry?
(Please tick)

Too humid	1	2	3	4	5	6	7	Too dry

d) Is there air movement?
(Please tick)

Still	1	2	3	4	5	6	7	Good circulation

e) Do you have control over ventilation?
(Please tick)

No control	1	2	3	4	5	6	7	Full control

10. Temperature
a). Does the temperature in this part of the building have a negative effect on your work performance?
(Please tick)

Not significant	1	2	3	4	5	6	7	Very significant

b) Is the temperature in winter too cold or too hot?
(Please tick)

Too cold	1	2	3	4	5	6	7	Too hot

c) Is the temperature during the summer too cold or too hot?
(Please tick)

Too cold	1	2	3	4	5	6	7	Too hot

11. Noise
a). Does the distraction from noise in this part of the building have a negative effect on your work performance?
(Please tick)

Not significant	1	2	3	4	5	6	7	Very significant

b) Is there significant distraction from noise outside the space?
(Please tick)

Not significant	1	2	3	4	5	6	7	Very significant

c) Is there significant distraction from background noise?
(Please tick)

Not significant	1	2	3	4	5	6	7	Very significant

12. Light
a). Does the quality of light in this part of the building have a negative effect on your work performance?
(Please tick)

Not significant	1	2	3	4	5	6	7	Very significant

b) Is there too much or too little natural light?
(Please tick)

Too little	1	2	3	4	5	6	7	Too much

c) Is the sun/natural light too bright?
(Please tick)

Not bright	1	2	3	4	5	6	7	Too bright

d) Is the level of artificial light too high or low? (Please tick)

Too low	1	2	3	4	5	6	7	Too high

e) Is the artificial light to bright?
(Please tick)

Not bright	1	2	3	4	5	6	7	Too bright

f) Are the blinds/shutters effective in blocking out natural light?
(Please tick)

Not effective	1	2	3	4	5	6	7	Very effective

g) Do you have control over artificial lighting?
(Please tick)

No control	1	2	3	4	5	6	7	Full control

13. IT / Data projection
Is the electronic data projection equipment effective?
(Please tick)

Does not work well	1	2	3	4	5	6	7	Works well

14. Comments

If you have any additional comments that you would like to make about any aspect of your work environment please note them here. If relevant to a particular question please give the question number.

```



```

This questionnaire will be collected on …..

Thank you very much for sparing the time to complete this questionnaire.

3f: Measurement and physical monitoring
e.g. light levels, noise levels, air and radiant temperatures, CO_2 levels, air flow rates

Needs a level of acceptable environment to be defined for comparative purposes
Needs a clear strategy to determine measurements points, frequencies and duration of monitoring
BMS data will be invaluable provided that the BMS sensor accuracy has been checked
Can be combined with energy monitoring to assess overall building energy efficiency

Advantages
- Quantitative objective data
- Problems can be geographically pinpointed (i.e. where respondent works)
- Problems can be pinpointed in time (eg season, time of day)

Disadvantages
- Expertise needed to take measurements and interpret results
- Appointment of external consultants may be needed
- Hiring of appropriate equipment
- Measurements may need to be taken over a significant period of time, therefore quick, meaningful results may be harder to obtain
- Measuring equipment will be left in place – possibility of disruption and inconvenience

Table k: Measurement and physical monitoring

Area of review	What to measure	Type of measure
PROCESS		
Brief development		
Procurement		
Design development		
Construction		
Commissioning		
Occupation		
FUNCTIONAL PERFORMANCE		
Strategic value		
Aesthetics and image		
Space		
Comfort		
Amenity		
Serviceability		
Operational cost		
Life-cycle cost		
Operational management		
TECHNICAL PERFORMANCE		
Physical systems		
Adaptability		
Environmental		
Durability		

TOOL 4: BENCHMARKING

Benchmarking is used to compare buildings or space performance against recognised leading edge examples. It can also be used to compare buildings within an institution's own portfolio. Benchmarking is a continuous systematic process of measuring relative performance against relevant comparators.

Be aware that benchmark data can be distorted by situations that are unique to a particular organisation. For example high levels of pollution in the atmosphere may mean windows have to be cleaned more often, or the organisation may have high occupancy.

Types of criteria that are often used for benchmarking:

Space use:
• Occupancy ration/floor area
• Space utilisation (what space is used for and for how long)

Costs:
• Whole life cost
• Construction project cost
• Operating costs

Environmental:
• Energy
• CO_2 emissions
• Water use

Key performance indicators
The construction industry has developed a range of economic and environmental key performance indicators to assess construction process performance. The economic KPIs measure client satisfaction, defects, predictability of cost and time, construction cost, safety, productivity and profitability. The environmental KPIs measure energy use of the building as well as the construction process, water use of the building and during the construction process, waste during construction whole life performance of the building, habitat and biodiversity. For more information on these KPIs see: www.constructingexcellence. org.uk

Benchmark data sheets
Provided in this toolkit is a set of benchmark data sheets: environmental, whole life cost model,

TEMPLATE 7: Environmental Benchmarks

Key environmental benchmarks are: energy consumption, CO_2 emissions, water consumption. The tables below are to record these benchmarks and are based on the EMS data definitions.

Energy Consumption over one year

Fuel type	Residential (kWh)	Non-residential (kWh)	Total (kWh)
Electricity			
Gas			
Oil			
LPG			
TOTAL (kWh)			

Energy Emissions: CO_2
For converting the energy consumption to CO_2 emissions use the conversion rates in Table 1 below.

Table 1: Conversion rates: Carbon dioxide emission factors ($kgCO_2$/kWh) (Part L, 2A, 2006 edition)*

Natural gas	0.194
LPG	0.234
Biogas	0.025
Oil	0.265
Coal	0.291
Biomass	0.025
Grid supplied electricity (note 1)	0.422
Grid displaced electricity (note 2)	0.568
Waste heat	0.018

Note 1: this is the value to use for all electricity consumed in the building
Note 2: this is the value to be used when crediting any on-site generation system
Note 3: If a new building has CHP then the CO_2 calculations for the Emission Trading Scheme will be based on the DEFRA conversion factors rather than those in table 1 (www.defra.gov.uk)
*These figures should be checked against the current edition of the Building Regulations

Energy emissions over one year

Fuel type	Residential (CO_2)	Non-residential (CO_2)	Total (CO_2)
Electricity			
Gas			
Oil			
LPG			
Coal			
Steam/hot water			
Renewable			
Other			
TOTAL (kWh)			

Water Consumption over one year

	Residential (m3)	Non-residential (m3)	Total (m3)
Water			

TEMPLATE 8: Elemental cost breakdown

Element	Percentage %	Preliminaries shown separately		Preliminaries spread across elements	
		Total Cost £	Cost GIA £/M2	Total Cost £	Cost GIA £/M2
Substructure					
Superstructure					
Internal Finishes					
Fittngs					
Services					
Buildings sub-total					
External works					
Preliminaries					
Contingencies					
Total					

Elemental Breakdown

Number	Element	Total Element Cost £	Cost GIA £/M2	Cost element unit rate £/
1	Substructure			
2A	Frame			
2B	Upper Floors			
2C	Roof			
2D	Stairs			
2E	External Walls			
2F	Windows & external doors			
2G	Internal walls & partitions			
2H	Internal doors			
3A	Wall finishes			
3B	Floor finishes			
3C	Ceiling finishes			
4	Fittings inc disabled			
5A	Sanitary appliances			
5B	Disposal installations			
5C	Water installations			
5D	Heat source			
5E	Space heating & air treatment			
5F	Ventilation systems			
5G	Electrical installations			
5H	Gas installations			
5I	Lift & conveyor installations			
5J	Protective installations			
5K	Communications installations			
5L	Builder's work in connection			
6A	Site works			
6B	Drainage			
6C	External services			
6D	Minor building works			
7	Preliminiaries			
8	Contingencies			

TEMPLATE 9: Operational costs

Project title	
Financial Statement for year	
Gross internal floor area	

Element		Total £	Sub Total £	Costs per 100 M2 Floor area £	Sub Total £	Brief description of work
0	Improvements & Adaptations					
1	Decoration					
1.1	External					
1.2	Internal					
2	Fabric					
2.1	External Walls					
2.2	Roofs					
2.3	Other structural items					
2.4	Fittings & fixtures					
2.5	Internal finishes					
3	Services					
3.1	Plumbing & Internal drainage					
3.2	Heating & ventilating					
3.3	Lifts & escalators					
3.4	Electric power & lighting					
3.5	Other M & E Services					
4	Cleaning					
4.1	Windows					
4.2	External services					
4.3	Internal					
5	Utilities					
5.1	Gas					
5.2	Electricity					
5.3	Fuel oil					
5.4	Solid fuel					
5.5	Water					
5.6	Effluents					

6	**Administrative costs**					
6.1	Services attendants					
6.2	Laundry					
6.3	Porterage					
6.4	Security					
6.5	Rubbish disposal					
6.6	Property management					
7	**Overheads**					
7.1	Property insurance					
7.2	Rates					
8	**External works**					
8.1	Repairs & decoration					
8.2	External services					
8.3	Cleaning					
8.4	Gardening					

TEMPLATE 10: Whole life cost model

Element	1. Capital Cost £'000				2. Premises Operating Costs £'000							3. Interaction with other FM services					4. Tax implications	
	A. Initial costs (Incl. design/construction)	B. Replacement costs	C. Adaptation cost	D. Refurbishment costs	A. Services maintenance	B. Building maintenance	C. Cleaning	D. Utilities	E. Reception / security	F. Grounds maintenance	G. Total	A. Mail and messenger	B. Furniture	C. Catering	D. Porterage	E. Staff move / churn costs	Capital Allowances	VAT
Substructure																		
Frame																		
Upper floors																		
Roof																		
Stairs																		
External walls																		
Windows & doors																		
Internal walls & partitions																		
Internal doors																		
Finishes																		
Fittings																		
Plumbing																		
Mechanical																		
Electrical																		
Lifts																		
ICT																		
Drainage																		
External landscaping																		
Total																		

Adapted from: Bernard Williams, Facilities Economics in the European Union, Building Economics Bureau, 2001

TOOL 5: PREPARING AN ABSTRACT FOR PUBLICATION

The aim is to provide sufficient, succinct information to enable people to search a database of POE reports to find those that may be of relevance and interest to them. The abstract is to be emailed to executiveofficer@aude.co.uk where it will be registered & placed on the www.aude.co.uk website. Once registered the abstract will be available for research with links also from HEFCE sponsored HE Estates websites, www.heestates.ac.uk and the Space Management Group website www.smg.ac.uk as well as the HEDQF website, www.architecture.com/go/Architecture/Debate/Forums_2066.html.

Title. The title should be as brief as possible, while being sufficiently descriptive to enable potential readers to determine whether or not it is of interest to them.

Abstract. The abstract should summarise the essential points of the paper and be not more than 300 words in length. It should state the type of review carried out and the important findings and conclusions.

TEMPLATE 11: Contents of the abstract:

Keywords. Provide up to five keywords.

Key building data:

Project Title		Contract Value	£2,500k
		Gross Internal Floor area	6700M2
Location			
Client			
Project description			
Functional Units			

Type	£/m2	GIA	Function	£/m2	% area
New Build			Teaching		
Alterations, extensions			Administration		
Refurbishment			Residential		
			Laboratories		

TOOL 6: PREPARING A REPORT FOR PUBLICATION

The aim is to provide sufficient, succinct information to enable people to search a database of POE reports to find those that may be of relevance and interest to them. The report is to be emailed to executiveofficer@aude.co.uk where it will be registered & placed on the www.aude.co.uk website. Once registered the report will be available for research with links also from HEFCE sponsored HE Estates websites, www.heestates.ac.uk and the Space Management Group website www.smg.ac.uk as well as the HEDQF website, www.architecture.com/go/Architecture/Debate/Forums_2066.html.

Abstract (See TOOL 5: TEMPLATE 10)

Executive summary
Brief introduction to the project. e.g. statement such as: "This review evaluated the process of procuring (x) project drawing the following conclusions and making (x No) recommendations)

• Conclusions
  "X" "Y" "Z"

• Recommendations
  Make recommendation specific and action oriented, say how they might be achieved, make them time related, provide some form of measure and say who is expected to respond.

Introduction

Key project data

Focus of the review
Stage

Findings
(select relevant sections)
PROCESS
Brief
Procurement
Design
Construction
Commissioning Process
Occupation

FUNCTIONAL PERFORMANCE
Strategic value
Aesthetics and Image
Space
Comfort
Amenity
Serviceability
Operational cost
Life-cycle cost
Operational management

TECHNICAL PERFORMANCE
Physical systems
Environmental systems
Adaptability
Durability

Conclusions

Recommendations

USEFUL REFERENCES

De Montfort method, Report accessible from www.architecture.com

Blyth, A and Worthington J, Managing the brief for better design, Spon Press, 2001

Cohen, R., Standeven, M., Bordass, W, and Leaman, A., PROBE Strategic Review, 1999

Jaunzens, D., Hadi, M., and Graves, H., Encouraging Post Occupancy Evaluation, CRISP, 2001

Jaunzens, D., Cohen, R., Watson, M., and Picton., Post Occupancy Evaluation – a simple method for the early stages of occupancy, CIBSE, 2002

Design with distinction: The value of good building design in higher education, CABE, 2005

Creating Excellent Buildings – a guide for clients, CABE, 2003

Preiser.W, Vischer J, Assessing building performance, Elsevier, 2005

BS 7832: 1995 (ISO 9699:1994) "Performance standards in building – Checklist for briefing – Contents of brief for building design"

Useful websites
Organisations
www.hefce.ac.uk

www.heestates.ac.uk

www.sfc.ac.uk

www.aude.ac.uk

www.cibse.org

www.constructingexcellence.org.uk

POE methodologies
De Montfort method: www.architecture.com

Overall Liking Score: www.absconsulting.uk.com

Usable Building Trust for PROBE, Building Use Studies Occupancy surveys, Soft Landings approach: www.usablebuildings.co.uk

Design Quality Indicators: www.dqi.org.uk

NOTES

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