Achieving excellence in a sustainable university refurbishment

Aled Williams (Dean – Research, Innovation & Partnerships)
UCEM Context

• Founded in 1919 by Royal Charter

• Awarded TDAP in 2013

• QAA Higher Education Review (Alternative Providers) in 2016
  • Met expectations

• Leading provider of supported online learning for existing and aspiring real estate & construction professionals worldwide

• Degree programmes at Foundation, Bachelor and Masters levels
  • Degree Apprenticeships and Level 3 Apprenticeships

• Over 3000 part-time students from over 100 countries benefitting from our degrees to meet industry needs
UCEM Vision & Core Purpose

2019 Vision

• To be the ‘leading, vocational, online university’.

Core Purpose

• ensures that we provide truly ‘accessible, relevant and cost effective education, enabling students to enhance careers, increase professionalism and contribute to a better built environment’.

• One Mission, One Team
Sustainability Policy

Our strategic ambition is to develop and implement genuine sustainability credentials as a socially responsible organisation by:

• ensuring our students are **conversant in best practice** to nurture sustainable built environment.

• **making sustainability a central focus** for UCEM at organisational, departmental and individual levels through driving forward long-term and effective behavioural change.

• **establishing UCEM as a leader** in the sustainability agenda through actively influencing industry and conducting research.
BREEAM UK Non-Domestic Refurbishment and Fit-out 2014

James Honour RIBA
BREEAM UK RFO Scheme Manager
Agenda

1. Background & benefits of BREEAM RFO
2. How does it work?
3. How to engage with the scheme
4. Technical overview of the scheme
5. Refurbishment scenario session
What is BREEAM?

- The world’s **longest established** and **most widely used** environmental assessment method for buildings
- Launched in **1990** (First Offices, then Industrial, Retail etc...)
- Driven and first piloted by London market following 80’s energy crisis
- Process and **outcome focused**
- Robust, **evidence based** criteria
- Drives **innovation** and standards above the regulatory minimum
- Credible label showcasing **CSR**
Around the world ... over 540,000 certified buildings

...across 77 countries, with 2m+ registered
BREEAM Family - Whole Life Cycle
Key headlines – Non-domestic refurbishment in context

18% - of UK emissions are from non-domestic buildings

90% - of properties are EPC ‘Band C’ or worse

62% - of commercial properties are tenanted
BREEAM UK ND Refurbishment and Fit-out

First dedicated BREEAM version specifically for refurbishment and fit-out projects with a focus on what can be influenced.
Scope of each part

**Part 1**  
**Fabric and Structure:** external envelope including walls, roof, windows & floor

**Part 2**  
**Core Services:** centralised M&E plant including heating, cooling & ventilation

**Part 3**  
**Local Services:** localised services including lighting, local heating, cooling & ventilation

**Part 4**  
**Interior Design:** Interior Finishes, Furniture, Fittings & Equipment

**Base build issues**

**Fit-out related issues**
Example assessments: University accommodation

- Internal fit-out e.g. Wing
  - Part 3 & 4 assessment

- Replacement of M&E plant
  - Part 2 only assessment

- Fabric upgrades
  - Part 1 only assessment

- Comprehensive refurbishment
  - Part 1-4 assessment
BREEAM UK RFO 2014 - Environmental sections

Management
Overall management policy, commissioning site management and procedural issues

Health & Wellbeing
Indoor and external issues affecting health and well-being

Energy
Operational energy and CO₂ issues

Transport
Transport-related CO₂ and location-related factors
Water
Consumption and water efficiency

Materials
Environmental implication of building materials

Waste
Reducing waste during both construction works and operation

Land Use & Ecology
Ecological value conservation and enhancement of the site

Pollution
Air, noise and water pollution issues
Benefits of BREEAM Refurbishment and Fit-out

• Only assess aspects which are within your scope of works

• Provides comparability between projects

• Empathetic with historic buildings e.g. grade 1, 2, 2* listed buildings

• Assists with CSR obligations

• Get ahead of your competition & showcase industry best practice

• Reduced running costs and risk as a result of minimising water use, energy use, CO₂ emissions and waste

• Enhance occupant comfort - increase productivity
Adding value

“Investment costs not as high as perceived”
World Green Building Council report 2013

“BREEAM is the preferred certification body across Europe”
DLA Piper: Towards Greener Future 2014

“Potentially significant life cycle cost savings”
BSRIA: The Value of BREEAM report 2012

“Increased value, suggested higher staff productivity levels”
RICS: Supply, Demand and the Value of Green 2012

- Average CO2 saving is 22% with BREEAM
- BREEAM ‘Excellent’ 33% carbon emissions reduction expected
- Operational costs savings from 2% higher capital costs can be paid back within 2-5 years
- Green certified buildings sales prices increase by up to 30% - World Green Building Council 2013
- Staff costs account for 90% of business’ operating costs
Case study – Aztec West business park, Bristol

• Aztec West – first RFO – Office in Bristol
• Awarded design stage ‘Very Good’ rating for Parts 2 and 3
• £5 million, 30-week, 51,000 square feet project
• Improved EPC rating to achieve an EPC A.
• New steel-frame reception extension
• New toilet facilities, floor, ceiling & wall finishes to extension
• Replaced window and curtain walling
• Replaced the mechanical and electrical systems
• Installed photovoltaic panels on the roof
• Enhanced the airtightness of the building
• Improvements to the site landscaping.
“All new acquisitions must have a BREEAM rating”

“BREEAM is a strong rating tool that helps sound, responsible property investment”

“Tenants will discard buildings that don’t have BREEAM ratings”

Michael Borello, Aviva Investors, MIPIM UK 2014
Importance of engaging with BREEAM early

- Cost
- Opportunity
- Isolated improvement
- Integration
- Feasibility design construction occupancy
Management – Early collaboration and communication

- **Man 01 - Project brief and design**
  - Stakeholder consultation
  - Sustainability Champion

- **Man 04 - Commissioning and handover**
  - Commissioning & testing schedule & responsibilities
  - Commissioning building services
  - Testing and inspecting building fabric
  - Handover - BUG and training schedule

- **Man 05 - Aftercare**
  - Support - meetings & on-site training & data collection
  - Seasonal commissioning – occupation 1 year – test & review
  - Post occupancy evaluation
Health and Wellbeing – Early considerations

• **Hea 01 – Visual comfort**
  • Daylighting - window sizes – glass to floor area ratio
  • View out - % of floor area 7m from a window wall
  • Internal & external lighting levels, zoning & control

• **Hea 02 - Indoor air quality**
  • Minimising sources of air pollution - IAQ plan, ventilation & VOCs
  • Adaptability – Potential for natural ventilation – ventilation strategy

• **Hea 04 – Thermal comfort**
  • Thermal modelling, zoning and controls

• **Hea 05 – Acoustic performance**
  • Sound insulation, indoor ambient noise level & reverb times
Design Stage issues – Other early considerations

• Energy strategy – Design & monitoring
• Water – Consumption, monitoring & leak detection
• Pollution – Refrigerant impact, NOx emissions, light & noise

Reducing potential costs.
Thank you.

www.breeam.com/ndrefurb

@BREWatford

BREEAM Official Group

www.breeam.com

GreenBookLive www.greenbooklive.com
Rob Callaghan – Sustainability Officer

Case Study – ‘Horizons’
Before Refurbishment
Before Refurbishment
After Refurbishment
After Refurbishment
Project Management and Collaboration

Property Working Group (PWG) = UCEM SLT, Program Manager, Architect and Design, BREEAM, Main Contractor

Sustainability Working Group (SWG)

Property Advisory Group (PAG)
Challenges and Positive Outcomes

• Producing a sustainable building should be relatively easy ... if you start with an unlimited budget and plenty of time.

• If you don’t, then you must be creative
  • ... you really have to think about how you can deploy particular solutions in a building that are much more cost and time effective.
Challenges and Positive Outcomes

• From the initial target of a BREEAM "Very Good" rating of 51.6% UCEM went on to **achieve an "Excellent" rating of 73.1%**

• All of this was **achieved in around 6 months** from the start of the works in January 2016 to UCEM taking occupation of the building in July 2016
Shortlisted for ‘Sustainable Project Of The Year – 2017 Construction News Awards
Case Study via the UCEM Online Academy

• You can take the tour for yourselves and learn more detail from the Case-Study and much more besides by visiting the UCEM Online Academy at:

https://onlineacademy.ucem.ac.uk/
BREEAM Scenario – Exercise

15 minutes
RFO Scenario building

- **1970s University building:**
  - Office
  - Classrooms
  - Small lab
  - Lecture theatre
  - Community space
  - Computer suite
  - Plant room
Questions
Man 01 - Project brief and design
Stakeholder consultation

• Who are the Stakeholders?
• Who to speak to?
• What would you ask them?
• Who benefits?

• Consultation content – aspects to consider?
Man 01 - Consultation content – checklist - Answers

- Functionality, build quality and impact (including aesthetics)
- Provision of appropriate internal and external facilities Maintenance resources implications.
- Impacts on the local community, e.g. local traffic/transport
- Shared use of facilities and infrastructure with community
- Compliance with statutory consultation requirements
- Inclusive and accessible design
- Suitability of services from outside of the refurbishment area e.g. legionella prevention
  - Educational building types, minimum content also includes:
    - How the building/grounds best be designed to facilitate learning
    - Changes to the internal layout and function appropriate?

- s containing technical areas or functions, e.g. laboratories, workshops etc., minimum content also includes:
  - The end users broad requirements for such facilities, including appropriate sizing, optimisation and integration of equipment and systems.
Questions
Man 05 – Aftercare

Post Occupation Evaluation (POE)

– Design, room comfort and use of building feedback

• What would you check?
POE - Check brief is met & issues raised are included

**Answers**

**POE needs to cover:**

- A review of the **design intent** and **construction process** (review of design, procurement, construction and handover processes).
- **Feedback** from a wide range of **building users** including facilities management on the design and environmental conditions of the building covering:
  - Internal environmental conditions (light, noise, temperature, air quality)
  - Control, operation and maintenance
  - Facilities and amenities
  - Access and layout
  - Other relevant issues.
- **Sustainability performance** (energy/water consumption, performance of any sustainable features or technologies, e.g. materials, renewable energy, rainwater harvesting etc.).