




## Energy Literacy for Professionals: the key to Built Environment Quality and Resilience

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### Policy Context: Nearly /Zero Energy Buildings; COP21 and UK Climate Change Act

**MAYOR OF LONDON**



**HOUSING SUPPLEMENTARY PLANNING GUIDANCE**

MARCH 2016

LONDON PLAN 2016  
IMPLEMENTATION FRAMEWORK

**Definition**  
2.3.58 'Zero carbon' homes are homes forming part of major development applications where the residential element of the application achieves at least a 35 per cent reduction in regulated carbon dioxide emissions (beyond Part L 2013) on-site (in line with policy 2.58). The remaining regulated carbon dioxide emissions, to 100 per cent, are to be off-set through a cash in lieu contribution to the relevant borough to be ring-fenced to secure delivery of carbon dioxide savings elsewhere (in line with policy 5.2.63).

**Implementation**  
2.3.58 In line with the implementation date for previous increases in the London Plan carbon dioxide targets and improvements to Part L of the Building Regulations, 'zero carbon' housing will be implemented for Stage 1 schemes from 1<sup>st</sup> October 2016.

**Committee on Climate Change**  
A balanced response to the risks of dangerous climate change  
Independent, evidence-based advice to the UK and Devolved Governments and Parliaments

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**Coming up**

This is a selection of the milestone dates in the CCC calendar looking forward:  
[RSS feed for latest coming up items](#)

**Jump to:**  
[June 2017](#)  
[September 2017](#)

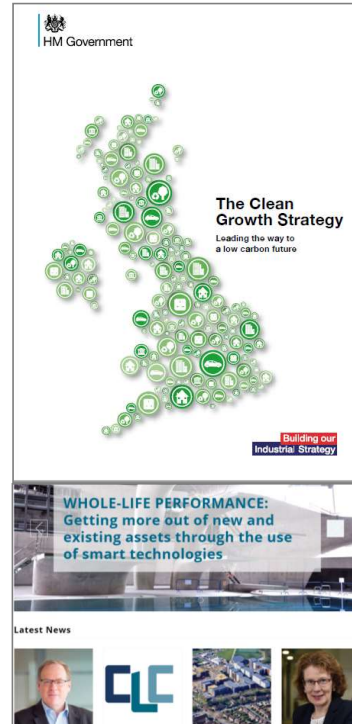
June 2017

**Progress report to Parliament: Meeting carbon budgets – Progress in reducing UK emissions**  
29 June, 2017  
The Committee on Climate Change will publish its annual progress report to Parliament, setting out UK progress on reducing greenhouse gas emissions in line with UK carbon budgets.

**Progress report to Parliament: Progress in preparing for the impacts of climate change**  
29 June, 2017  
The Adaptation Sub-Committee of the Committee on Climate Change will publish its second statutory progress report to Parliament, assessing UK progress in preparing for the impacts of climate change, as directed by the National Adaptation Programme.

### Policy Context: Whole Life Performance and maximising the value of our built environment

- **INDUSTRIAL STRATEGY:** We have world-leading capabilities in areas including electric vehicle manufacture, offshore wind, smart energy systems, sustainable construction, precision agriculture and green finance
- **CHALLENGE FUND:** £170m to 'transform' the construction sector – improving the whole life performance of assets is key: investment in offsite manufacturing centre; digital innovation etc.



### Drivers for Professional skills and training – gearing to the policy objectives

- More strategic investment by Government for modernising construction technologies and associated skills and training programmes
- **SECTOR DEAL:**  
“The government and the construction sector, through the Construction Leadership Council, have agreed a Sector Deal to transform the productivity of the sector benefiting the wider economy.

Construction is one of the largest sectors in the UK economy – with a turnover of £370 billion, contributing £138 billion in value added to the UK economy and employing 3.1 million people (9% of the total UK workforce).

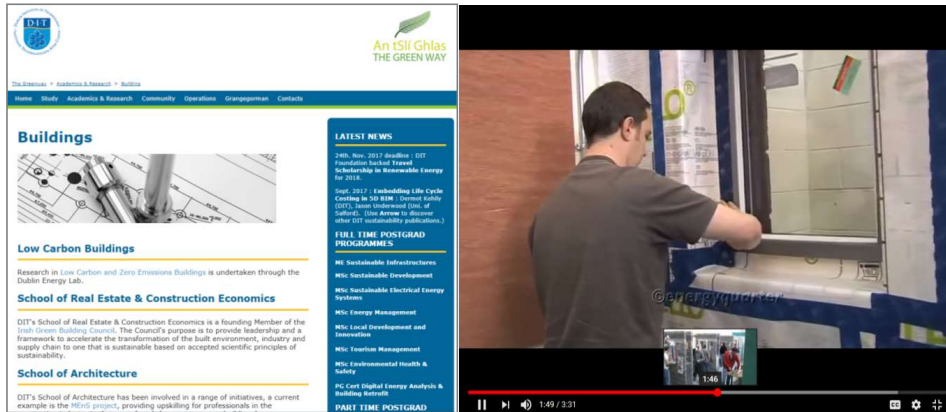
The deal will substantially boost the sector's productivity, through greater investment in innovation and skills, creating new and well-paid jobs and maximising its export potential. This will also reduce the environmental impact, improve the efficiency and reduce whole life cost of new projects and buildings to help build the houses, schools, hospitals and major transport projects we need.”





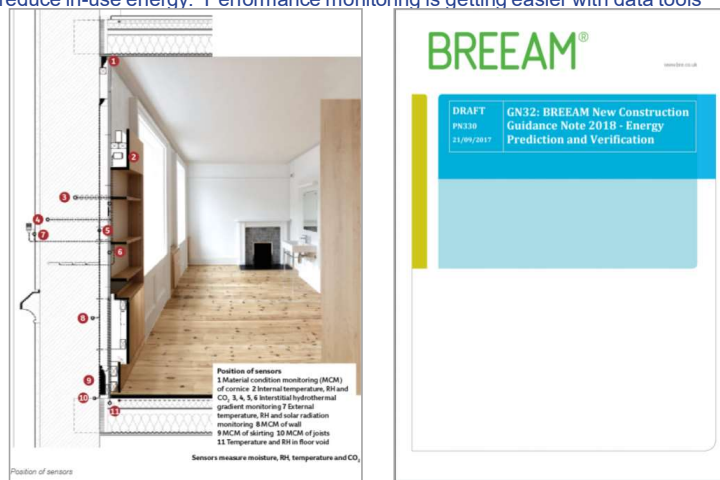
### Drivers for Professional skills and training – quality standards for Passivhaus and NZEB

- Passivhaus is a consumer-led approach to minimising energy use for heating and cooling in buildings, with monitored certified buildings demonstrating performance as intended. The world's first dedicated Passive House training lab is established in Dublin – includes hands-on training including how to achieve the air-tight envelope; how to install a fresh air ventilation system which delivers the required air change rate etc – geared to installers but popular with designers and project managers
- Countries in the EU are gearing to Near Zero Energy Buildings, eg professional upskilling courses in Ireland



### Drivers for Professional skills and training – quality standards for BREEAM

- BREEAM 2018 will reward more detailed energy modelling to enable more accurate prediction of all building-related energy
- BREEAM 2018 will incentivise project leaders who set requirements for performance monitoring after one year of occupation and compare with design aspirations – identifying the performance gap and taking steps to reduce in-use energy. Performance monitoring is getting easier with data tools

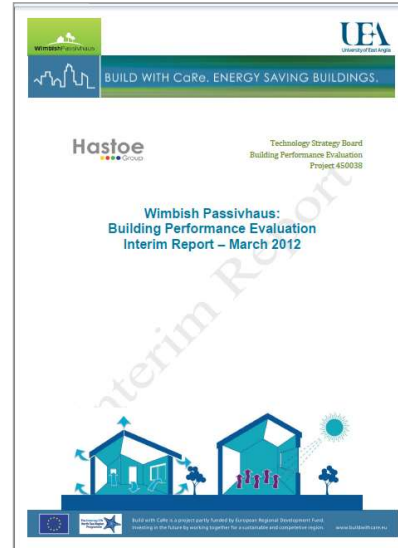
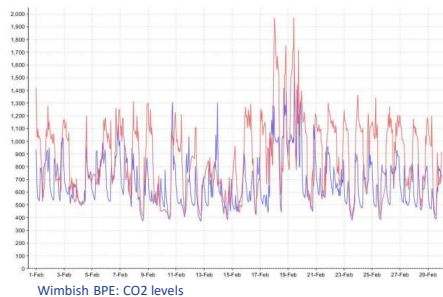


5th Studio at Trinity College, Cambridge – ex CIBSE Journal



### Drivers for Professional skills and training – the feedback loop from monitored buildings

- Innovate UK's TsB projects monitoring outcomes show the problem of both the performance gap and the need to address skills in design, delivery and monitoring
- Monitored outcomes enable the development of knowledge and skills to deliver high performance buildings

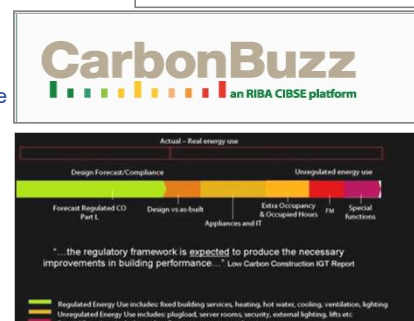
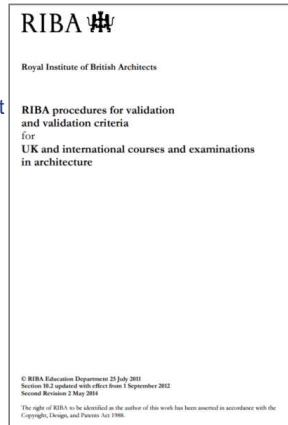


### Progress by UK Professional Institutes

- RICS 'Professional Standard' Nov 17 – Whole life carbon assessment for the Built Environment – sets a new protocol as a requirement for chartered surveyors for measurement of embodied carbon in whole life/whole building assessment
- RIBA CRITERIA FOR VALIDATION OF COURSES (UNDERGRADUATE AND POSTGRADUATE FOR PARTS I AND II: General Criteria GC5 and 9: "Adequate knowledge of physical problems and technologies and the function of buildings so as to provide them with internal conditions of comfort and protection against the climate, in the framework of sustainable development" (GC9) The graduate will have knowledge of:
  1. principles associated with designing optimum visual, thermal and acoustic environments;
  2. systems for environmental comfort realised within relevant precepts of sustainable design;
  3. strategies for building services, and ability to integrate these in a design project.

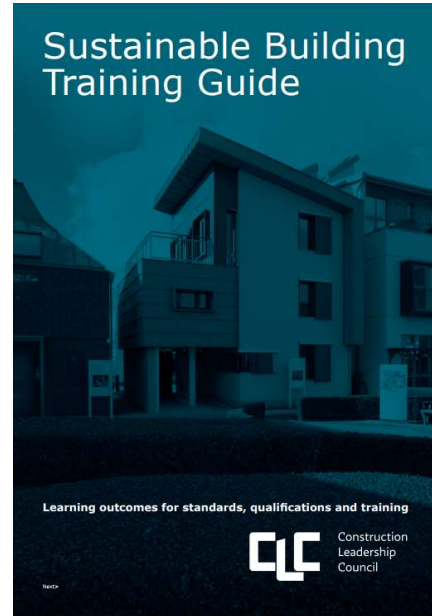
The graduate will have an understanding of:

1. the needs and aspirations of building users;
2. the impact of buildings on the environment, and the precepts of sustainable design"



### Progress by UK Professional Institutes – collaboration and competence

- Sustainable Building Training Guide emphasises the need for a working knowledge of tools and techniques, developed around core themes common to all project teams
- SBTG also emphasises the need for better collaboration and understanding between different activities in the supply chain – Edge Commission led by Paul Morrell also called for this as a necessary modus operandi for the professions' future in the face of the key challenges of our time



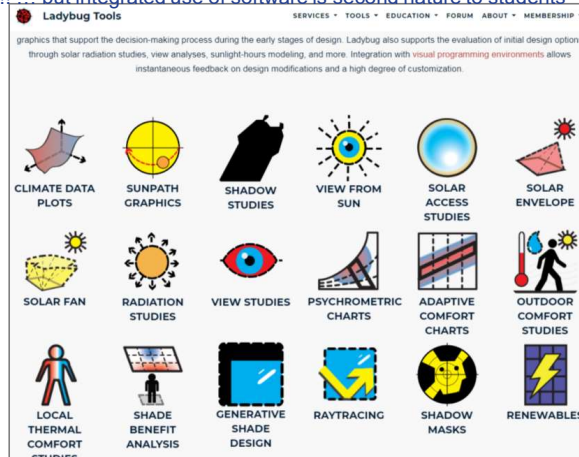
### Progress by UK Professional Institutes – the wider value of sustainability in the BE

- Sustainability in the built environment means addressing a range of issues – not just energy – hence the range of issues covered in SBTG
- Health and Wellbeing of building users, for instance, is now recognised as a vital ingredient for long-term value to the whole economy.



### Architectural Education – a Case Study

- Whilst some architectural schools pay lipservice to the learning outcomes required for the sustainable built environment, others are integrating a working knowledge of the relevant tools at undergraduate level (for example, the 3-year architecture undergraduate programme at Portsmouth requires a working knowledge of IES or similar to inform the technology report on final projects).
- The software tools we have at our disposal enable a range of impacts to be tested – ultimately the tools need to be calibrated IN PRACTICE !! but integrated use of software is second nature to students



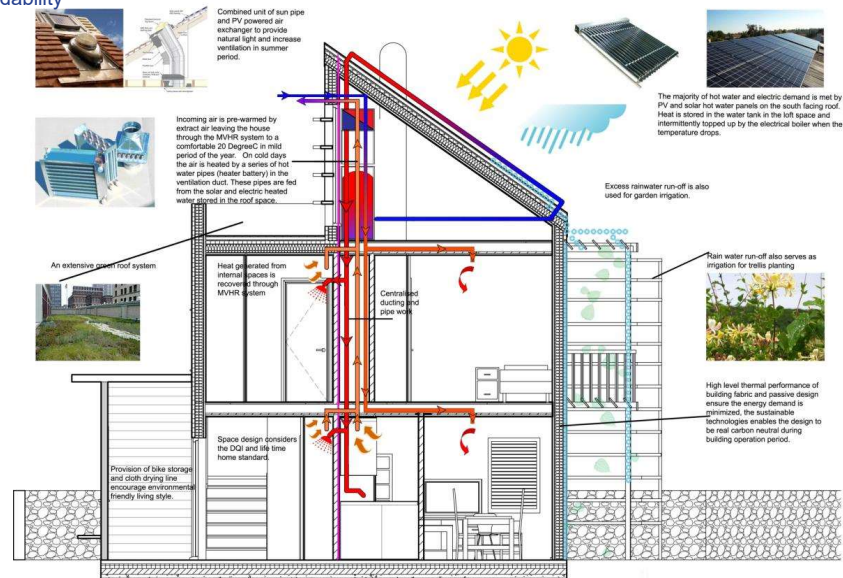
### Architectural Education – a Case Study

- Also at Portsmouth School of Architecture the emissions impacts of lifestyle and infrastructure are also highlighted by their Cities research cluster – students are able to understand the relevance of masterplanning decisions to human, environmental and economic impacts on a completed project, as well as the building-level impacts
- The core themes are developed from the macro to the micro



### Architectural Education – a Case Study

- High performance building requires integrated design thinking, including early resolution of detail and buildability



### Architectural Education – a Case Study

- Integrated design thinking, including early resolution of detail, is also key to design for the offsite manufacturing process, which more and more graduates will work on in future.







Thank you  
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