

Part L 2010: Another step towards zero carbon



The consultation documents for the 2010 revisions to Part L and F were issued in June 2009 and make interesting reading, says Nick Cullen, Partner at Hoare Lea Consulting Engineers. The proposed changes are not as radical as those of 2002 and 2006, but are nonetheless another significant step towards the Government's goal of zero carbon buildings

In many ways the proposals reflect the experience of implementing the previous two revisions and the feedback received from building control and the broader industry.

If it is anything this revision is about closing the gap between what is designed and predicted and what is constructed and delivered. Many of the headline changes in the 2010 revisions are aimed at closing that 'performance gap'.

The consultation highlights

the causes of the performance gap and they range across the building design, construction and operational phases of a building's life and across the professions. Changes are to be made to Part L that will cut across the whole process of building procurement.

The key changes start at the design stage with a new requirement for the designers to submit a 'design' stage carbon compliance calculation together with an associated building specification. This will enable building control to take a risk based approach to site

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inspection having first identified the key aspects of the design which are crucial to Part L compliance.

It is also acknowledged that there are deficiencies in the carbon calculation methodologies and algorithms that lead to errors in the assessment of energy flows. One such error is the heat loss through party walls that has been grossly underestimated. Changes to the SAP and the Approved Documents now address this.

As overall thermal performance has improved in

The 2010 Part L is another step towards zero carbon buildings, pencilled in for 2016 for all domestic buildings



line with lower U-values and greater air-tightness so the significance of heat losses from thermal bridging has increased. In order to address this, architects are to be encouraged to use 'buildable' and quality assured details. To this end the use of 'Accredited Construction Details' is to be developed and encouraged along similar lines to robust details used in conjunction with Part 'E'.

Once on site a specific problem of product substitution has been identified, a practice that is not easy to spot. The consultation seeks to counteract this through both the provision of specifications to building control at design stage and also through the training and education and improved quality assurance procedures.

Poor workmanship can often be hidden before inspection has taken place but the consequences could remain for the life of the building. In situ non destructive testing such as air pressure testing, first introduced in the 2002 revision, provides a way of identifying poorly constructed buildings. Research has shown a steady improvement in building air pressure tests as both familiarity with the procedure, and the consequences of failure, have spread through out the industry. The 2010 revisions build upon this by requiring a greater number of domestic buildings be tested.

In a similar vein we are beginning to build an evidence base on the 'in-situ' performance of new low carbon and renewable energy

systems and some of the initial findings have been taken on board.

This theme of greater testing is carried through to the installation of mechanical systems such as ventilation. As buildings become more airtight, so there is a growing trend to using mechanical or passive systems in order to maintain adequate levels of Indoor Air Quality (IAQ). Whilst commissioning is an established part of the building process in the non domestic sector, it is less so in the domestic sector. Guidance is to be introduced on the commissioning of systems and certificates confirming adherence to the commissioning plan submitted to building control. Passive systems, however will not need to be commissioned in the traditional sense but a checklist will need to be completed and submitted.

Although beyond the scope of this article, it is worth noting that mechanical ventilation systems in domestic applications are to become a controlled service under Part F.

Despite the emphasis being upon closing the performance gap it is important to remember that 2010 Part L is another step towards zero carbon buildings, pencilled in as being 2016 for domestic buildings, 2018 for public sector buildings and 2019 for all other buildings.

The 2010 increment is proposed as being 25% for domestic buildings much as was expected but between 11% (supermarkets) and 36% (warehouses with roof lights) for non-domestic buildings. This variation when

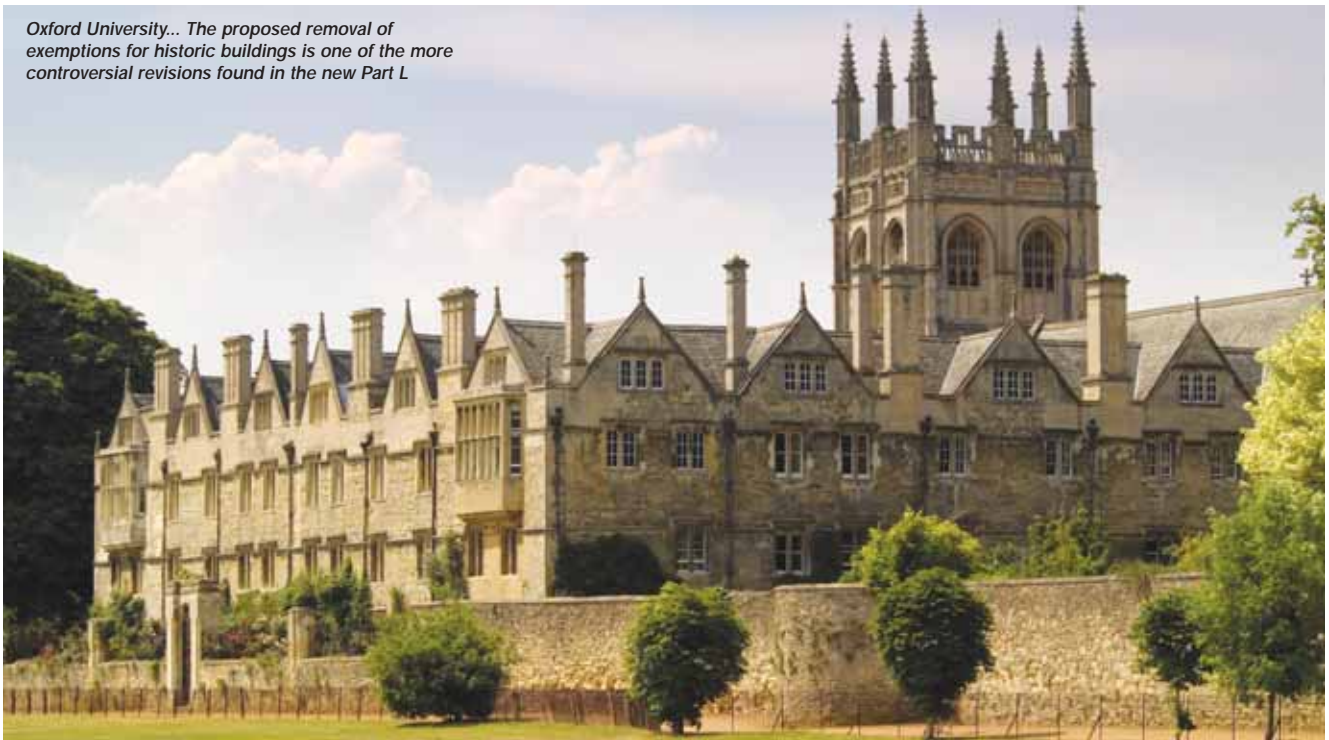
“POOR WORKMANSHIP CAN OFTEN BE HIDDEN BEFORE INSPECTION HAS TAKEN PLACE BUT THE CONSEQUENCES COULD REMAIN FOR THE LIFE OF THE BUILDING”

aggregated with respect to build rate equates to 25%. The reason for the 'aggregated' target for non domestic buildings is to acknowledge the relative cost by which carbon can be reduced for different types of building.

Another important change is that to the carbon emission factors used in the calculation. Although subject to a separate consultation linked to the SAP it is important to touch upon the changes proposed for the carbon dioxide emissions

continued on page 24

Oxford University... The proposed removal of exemptions for historic buildings is one of the more controversial revisions found in the new Part L



continued from page 21

associated with different energy sources used in buildings. The emission factors for all fuels have been recalculated based on a consistent methodology. The most significant change is to the electricity emission factors which have been increased by 40% from 0.422 to 0.591kgCO₂/kWhr (<http://www.bre.co.uk/sap2009/page.jsp?id=1643>).

It goes without saying that the vast majority of buildings are already with us and in regular use. Since the last revision to Part L we have seen the introduction of the Carbon Reduction Commitment (CRC) which aims to incentivise property owners with relatively high annual energy use to incrementally reduce their emissions. The periodic refurbishment of buildings does however offer an important opportunity to improve their carbon performance and one which Part L has important role to play.

There are a number of strategic changes to the Approved Documents ADL21B and 2B. The definition of and guidance on renovation has been refined to clarify its meaning. The definition is extensive and only applies if

the work that meets the definition being carried out equates to 50% of the surface area of the individual element or 25% of the total building envelope.

Testing and commissioning is to be improved in line with changes for new build as is the guidance and requirements for the provision of information to building control under shell land core developments to enable building control to make robust assessments of both the shell and core and the fit out.

More controversial has been the proposed removal of exemptions from the energy efficiency requirements, in particular for historic buildings, although the guidance that historic buildings require special consideration if compliance would affect their character or appearance is being strengthened.

The industry has come a long way in a short period of time. The 2010 revision is the third set of changes in less than a decade, each change cutting 25% off the allowable carbon emissions of buildings. It has not been easy for any part of the industry from designer, constructor to regulator and inspector. We are designing and

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constructing buildings that are very different from those built prior to 2002. It is inevitable that mistakes will be made and blind alleys encountered. The latest revision maintains the momentum towards zero carbon whilst seeking to build on the best of Building Regulation and control with input from all sides. The process of learning must and will continue, encouraged by policy.

AUTHOR BIOGRAPHY

Nick joined Hoare Lea in 1987 from Bath University and worked as a design engineer for 10 years on numerous projects, including the London School for the Performing Arts and the Gas Research Centre, before joining Hoare Lea's Research and Development Group.

Nick is a part-time Lecturer at the University of Bath Department of Architecture and Civil Engineering. He is also a member of the Building Regulations Advisory Committee, BSRIA Council, and the British Council of Offices Environmental Sustainability Committee.