

IGBC submission - Public Consultation on the Review of Part L (Conservation of Fuel and Energy for Buildings other than Dwellings) 2017

Introduction

The Irish Green Building Council and its members welcome the introduction of the draft revised Part L 2017. IGBC is made up of [members](#) representing the full value chain to the built environment, including building owners, investors, facility managers, architects, engineers, academics and building materials suppliers.

IGBC notes that the current regulations dating from 2008 do not represent good industry practice. In fact, we have communicated the urgency to the investment community over the past number of years of the need to build to a higher standard. Many of our members who represent the most progressive companies, investors, engineers, architects, suppliers and organisations operating in the construction and property sector have been working to a standard which considerably exceeds current 2008 TGD building regulations. This is demonstrated by the increasing numbers of certified BREEAM and LEED buildings that are being designed and built by our members.

We would also reference the recent World Green Building Council report - [From Thousands to Billions- Coordinated Action towards 100% Net Zero Carbon Buildings by 2050](#). This sets out inspiring case studies of what a genuinely Nearly Zero building should look like. We still remain a long way from this level of ambition with the proposed revisions and this revision should only be considered an interim step on the path.

Notwithstanding these comments the proposed revised regulations need to come into force as soon as possible, and therefore any comments made below should be seen as positive supportive input rather than any reason for further delay. Whilst the proposed regulations appear to fall short of the Commission's requirements, particularly in the requirements for renewable energy, the perfect should not be the enemy of the good.

In order to compile this consultation IGBC has asked for input from its members. We have attended the consultation in November 2016 in the Custom house hosted by the Building standards division of the Department of Housing and SEAI, and the briefing workshop for the public sector and their design teams on 29th January 2017.

We note and welcome the positive changes in the draft Part L Technical Guidance documents as a direct result of input from our members in these early consultations. We would also point the department towards the outcomes of the [Build Upon](#) dialogue on developing the National renovation strategy.

For this current consultation, we have asked for further input from our members and organised our own workshop meeting on the 5th May to gather views on the published consultation documents. We set out the comments of our members as follows.

General Comments

- The complexity of non-residential buildings means that simply measuring operational energy is no longer enough and there is a need to move to a Life Cycle Approach where the energy used at all stages of the construction, operation, maintenance and end of life need to be considered. The embodied impacts of the construction of a building can account for between 30 and 50% of the overall lifecycle impacts. It becomes increasingly important to achieve the optimal energy and carbon savings over the life of the building rather than just at the operational stage.
- IGBC has started on the first step towards mainstreaming the life cycle assessment of buildings. It is currently developing a National [Environmental Product Declaration programme](#) and database, and shortly thereafter hopes to develop a programme to mainstream the calculation of Life Cycle assessment at the building level to EN 15978.
- The Primary energy factors for electricity are based on estimate for 2018. In view of the long term strategy to decarbonise the electricity grid consideration should be given to regular updates of the primary energy factor or a figure that reflects the ongoing reduction of carbon in the fuel mix.

0.2.3 Ventilation

Given the increase in airtightness it is imperative that there is a more sophisticated approach to ventilation than merely relying on opening windows or back ground ventilation such as trickle vents and hole in the wall. Energy efficiency must go hand in hand with healthy buildings. This is particularly important for schools where problems with condensation and poor indoor airquality have been reported due to poor ventilation and improved airtightness. We do not suggest that air tightness should be sacrificed as this is a key indicator of quality, but there must be a requirement for designed ventilation in all building types.

0.6 Application to Buildings of Architectural or Historical Interest

There is no reason why historic buildings should be fully exempt from the requirements of the proposed revised Building regulations. There is nothing historic about the heating, lighting, building control systems, and energy systems already installed so any upgrade should require these to be improved. Where exemption should be allowed is where historic building fabric would be compromised by intervention. In fact considerable energy savings are possible and needed in historic properties and there is no reason to exempt buildings which are in common use for commercial purposes.

The extensive renovation of the National Gallery of Ireland a historic structure, demonstrates that it is possible to improve and upgrade buildings.

Miesian Plaza in Baggot St. and the Carrolls building in Dundalk have demonstrated that even protected modernist structures can be renovated close to NZEB standard without compromising their architectural quality.

In fact by providing additional case studies such as these, and working closely with bodies such as ICOMOS and the Heritage council, there is no reason why we cannot considerably reduce energy consumption from historic structures also.

1.1 Limitation of Primary Energy Use & CO2 emissions

The approach to measure compliance by use of the EPC and the MPEPC could be reconsidered particularly for future reviews. There is a lack of transparency in the approach in particular for those in the design team who are not using the software. The European Commission issued recommendations for offices in Ireland's Oceanic temperate climate: *40-45kWh/(m2.y) of net primary energy with typically 85-100 kWh/(m2.y) use covered by 45kWh/(m2.y) of onsite renewable sources*. This acts as a clearer target than setting levels of improvement against the same design which may not be the optimal in the first place. An absolute benchmark for energy efficiency for different building types as suggested by the EU may drive better architectural and conceptual design for energy efficiency and a more integrated process between architects and engineers. To this end we welcome the reference to the SEAI programme Exceed.

In the meantime the following should be considered

- Provide clarification on the need to change from measuring the improvement against the reference building built to 2008 Part L TGD. It is no longer clear what level of improvement is targeted under the revised regulations.
- It would be preferable that all buildings are measured against one reference model such as mixed mode rather than referencing Air Conditioned (AC) buildings against another AC building.
- Given Ireland's temperate climate a fully sealed air conditioned buildings should not be required for most building types including offices or hotels. AC buildings can use approximately 40% more energy than naturally ventilated buildings. Therefore it should not be easier to achieve compliance for an AC building over a well-designed mixed mode or naturally ventilated building simply because there is a cultural preference for this approach in a particular segment of the market. The building regulations should compare the actual functional requirements for comfort of the building rather than client preference for the means of achieving this comfort.
- The popularity of international wellbeing assessment systems such as [Well](#) can be misinterpreted by estate agents and other property advisors as a requirement for a fully sealed air conditioned building in the belief that it offers total control over indoor air quality. For occupiers, the health and wellbeing of their staff is considered far more important than the savings from energy however the external air quality in Dublin and other Irish cities and towns is generally much better than in other Global cities such as London or New York from whence these standards originate.

SBEM Software compliance

Notwithstanding the comments below the use of compliance software should not increase the gap in understanding by becoming a black box where the relevant members of the design team become disengaged from the process. The use of MPEPC measuring against a notional building for compliance

does not encourage good early design and fails to maximise the benefits from simple passive measures such as form factor, shading and other basic design attributes. It is only by the architect and the engineer working in a fully integrated way with a shared understanding of the process of compliance can the optimal creativity and innovation needed to make good energy efficient buildings happen.

- In general, SBEM is not currently suitable for demonstrating compliance for more complex buildings and there is a need for SEAI to invest in developing a front end interface for Dynamic simulation software compliance through a number of tools such as IES and other dynamic simulation tools. It may not be realistic to expect the suppliers of software to develop the templates themselves for such a small market.
- The system in the UK requires buildings of different complexity to demonstrate compliance at different levels with simple buildings at level 3, more complex buildings such as offices at level 4 and complex buildings at level 5. This approach is more appropriate than one simple system such as SBEM.

1.2 Renewable Energy Technologies

We welcome the overall principle of reducing the percentage of renewables for more energy efficient buildings to encourage an energy efficiency first approach. Yet, the figure of 10% renewables may not be considered acceptable under the EPBD directive as it may not be considered to comply with the spirit of the directive namely that *“The nearly zero or very low amount of energy required should be covered to a very significant extent by energy from renewable sources, including energy from renewable sources produced on-site or nearby”*.

The Renewable Energy Resources (RER) is also the only element of the proposed regulations that encourages the design of the most energy efficient building possible rather than just a building that meets the MPEPC as measured against the reference building. Therefore the renewables element should not be watered down any further, as by default it incentivises good passive design concepts such as form factor, shading, as well as natural and mixed mode ventilation. A building that uses very little energy will not need a large renewable system to meet the RER whereas a fully AC building will need a much larger and more costly system to meet the RER.

There needs to be a strategy in the document for ensuring that a requirement for renewables does actually result in energy saved and the following issues need to be considered:

- Members suggested that in their experience, often when renewables are required for compliance, they are installed but then not optimally used. This has been evident from a number of studies carried out in Ireland and the UK. In some cases biomass boilers were installed for compliance reasons only but never used. Unless there is an approach to ensure compliance of the building at all stages there could be wasted capital expenditure with no environmental benefit.
- For example there is concern that Combined Heat and Power (CHP) systems are often oversized and feasibility studies are not correctly carried out to ensure that there is the demand profile for the combination of heat and energy to justify the assumed primary energy savings.

- Some of our members noted a resistance to renewables for maintenance reasons amongst some of the state's own agencies. There must be a strategy to ensure that renewables when installed are maintained and operated.
- The requirement for renewables could give rise to legal issues where for example renewables such as solar photo voltaic systems on roofs, could be over shadowed by a future higher rise neighbour. Further guidance needs to be developed by the Department of Housing, Building standards in conjunction with the relevant planning authorities. A building that may comply at completion stage, might no longer comply when a new neighbouring building overshadows it. Who is liable? - The designer for not foreseeing this, the neighbouring building who overshadows, or the planning authority for granting permission? Should there be a provision to allow the overshadowing building to compensate via provision of roof space? This should form part of a guidance note to planners.
- The use of Wood pellets should be discouraged in urban areas as this impacts air quality and perversely could drive up demand for higher energy using sealed AC buildings to control indoor air quality against the ingress of polluted external air.

1.3.4 Building Envelope Air Permeability

- The air infiltration rate $5\text{m}^3\text{hr}/\text{m}^2$ /pa for larger buildings is probably too loose. Most commercial buildings can now achieve under $3\text{m}^3\text{hr}/\text{m}^2$ /pa and in larger buildings with a lower surface to volume ratio there should be even less infiltration. Improved technology is also making it easier with current curtain walling systems having greatly reduced infiltration rates over older systems. Additional permeability if required for free cooling should be designed in, rather than an accident of poor workmanship or lower quality components.
- It is also suggested that there should be guidance on the permeability of the entrance doors to buildings as the blower door test may give a misleading result if it uses the main entrance as the point of testing. The blower door kit seals the door open, whereas in reality the door itself particularly revolving doors may be the most permeable part of the building.
- There is a view that in the absence of requirement for some form of designed ventilation systems in schools that increased air tightness will increase the existing problems of condensation and poor indoor air quality. There needs to be a parallel requirement for an improved ventilation approach for schools. Uncontrolled air infiltration should never of course be a means of ventilating a building.

1.5 Construction quality and commissioning of services

Whilst not directly relevant to this consultation regulations need to become more focused on ensuring that buildings are operated as designed, and ensuring that building compliance should be enforced not just at point of handover but also during operation. This could be via a requirement for regular recommissioning of buildings to ensure that systems continue to operate.

Section 2 Existing Buildings other than dwellings

2.1.3 Thermal bridging

We would have concerns about the quality of some of the details shown in diagram 2, and suggest that these be expanded upon to ensure best practice, particularly for cill details, including other typical thermal bridges in renovations such as roof wall junctions. The details should encourage 2017 best practice understanding of NZEB thermal bridging.

2.1.4 Air permeability

We would have concerns about the quality of the details shown in diagram 3 particularly around the use of bonding and drylining as a means to provide airtightness. It would be preferable to show best practice such as membranes, wet plaster rather than showing ineffective measures of airtightness.

2.3 Major Renovation

Upgrading our buildings so that they use less energy is one of the most cost-effective ways to reduce Ireland's greenhouse-gas emissions. Building renovation also has several side effects, often yielding substantial benefits –environmental, economic and social. These co-benefits can accrue to the building users (e.g. increased comfort and productivity) but also to society (e.g. job creation and energy security).

The IGBC welcomes the introduction of a requirement that where a building other than dwelling is undergoing a major renovation, the entire building should achieve a cost optimal energy performance. In 2016, the IGBC worked in close cooperation with DCCAE to build a community of 200 key stakeholders to co-design an ambitious national renovation strategy – [Build Upon Project](#). This led to the publication of a [final set of recommendations](#) in February 2017. Among these key 9 recommendations are the necessity to provide all players with long-term certainty and to set the right standards (as well as robust quality assurance for projects from start to finish).

However, the section on major renovation needs to be greatly expanded to provide much more comprehensive guidance on renovation. Renovation and work to existing structures is more complex and requires a different approach to new build. There is a need to acknowledge a separate approach for buildings built using modern techniques generally post 1945 and traditionally built buildings.

Many traditionally built buildings from pre-1945 that are not protected need the same requirement for appropriate intervention as historic protected buildings, where measures can result in irreparable damage to the fabric. Instead of having an artificial delineation between buildings that are protected and the general traditionally built stock there should be much more robust guidance on appropriate intervention. In addition a requirement for interventions to be carried out by appropriately skilled professionals and construction contractors could be required. This issue was raised during workshops organised by the IGBC as part of the [Build Upon](#) consultation process. Please see the [Workshop Making Sure We Have the Right Skills Pre-1945 Buildings](#) report for additional details.

The following IGBC members have contributed to this submission.

- Devyn Olson Sawyer – Nicer training
- Martin Meehan – Meehan Green
- Willian O'Donnell- IN2
- Salam Salman – Geraghty energy
- Orna Fox – PM Group

- Archie O'Donnell- 13pt
- Ciaran McCabe- Metec Engineering
- Orla Kelly
- John Finchley - Ethos Eengineering
- Amanda Gallagher – Easlar
- Rory Burke (part of) – JV Tierney
- Chris Croly – BDP
- David Walshe – IN2
- Pat Barry – IGBC
- Declan Alcock – Varming Engineers
- Simon McGuinness - DIT
- William Scott – Scott McNeill
- Bianca Wong – Kingspan Insulated Panels
- Joseph Little - DIT
- The 170 + organisations participating in www.buildupon.eu