8TH ANNUAL INTERNATIONAL CONSTRUCTION MANAGEMENT

Building Regulations

What Next

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Advisor
Building Standards Section
Effectively “New” Building Regulations
Protecting the Health & Safety of people in or around buildings

Part A – Structure
Part B – Fire Safety
Part C – Site Preparation and Resistance to Moisture
Part D – Materials and Workmanship
Part E – Sound
Part F – Ventilation
Part G – Hygiene
Part H – Drainage and Wastewater Disposal
Part I – Conservation of fuel and energy – Dwellings
Part J – Heat Producing Appliances
Part K – Stairways, Ladders, Ramps and Guards
Part L – Conservation of fuel and energy – Non Dwellings
Part M – Access and Use
Part N – Heat and Ventilation

Parts C and L Dwellings under review - 2018
Building Regulations – Current Status

- **Part A** – Structure (2012)
- **Part B** - Fire Safety (2017)
- **Part C** - Site Preparation and Moisture Resistance (2019)
- **Part D** – Materials & Workmanship (2013)
- **Part E** – Sound (2014)
- **Part F** - Ventilation (2009)
- **Part G** – Hygiene (2011)
- **Part K** - Stairways, Ladders, Ramps & Guards (2014)
Part B - Fire Safety

- Full Review of Part B/ TGD B underway
- Analysis of 2012 pre-review consultation (44 submissions)
- TGD B Fire Safety to be divide into 2 volumes
  - 1 for Dwelling houses (Volume 2) and
  - 1 for Buildings other than dwelling houses (volume 1)
This new legislation has been inserted after the current B5 in the second schedule.

It applies specifically to dwelling houses.

Existing legislation for other buildings still stands.

This allowed early transition to these new requirements.
The Building Regulations 1997 are amended by inserting after requirement B5 in Part B of the Second Schedule the following: -

“Means of warning and escape in case of fire

B6 A dwelling house shall be so designed and constructed that there are appropriate provisions for the early warning of fire and there are adequate means of escape in case of fire from the dwelling house to a place of safety outside the building, capable of being safely and effectively used.
Legislation

• Definitions for this Part.

• B11 In this Part - “dwelling house” means a dwelling that is not a flat.”

• Part B/ TGD B V2 Dwelling Houses applies since 1st July 2017.

• All dwelling houses started after this date must comply with the new regulations.

• No planning exemption time frame as new requirements will not affect the construction.
TGD B Main Changes

- A new purpose group has been added 1(d) Community dwelling houses.
- Limited to 3 storey
- Limited to 8 bedrooms
- Special fire requirements above the normal dwelling apply.
- Do not attract a Fire Safety cert or Disabled access cert.

<table>
<thead>
<tr>
<th>Use</th>
<th>Group</th>
<th>Purpose for which a building or compartment of a building is used</th>
</tr>
</thead>
<tbody>
<tr>
<td>Residential (Dwellings)</td>
<td>1(a)(1)</td>
<td>Dwelling house with no storey with a floor level which is more than 4.5m above ground level.</td>
</tr>
<tr>
<td></td>
<td>1(b)(1)</td>
<td>Dwelling house with a storey with a floor level which is more than 4.5 m above ground level.</td>
</tr>
<tr>
<td></td>
<td>1(d)</td>
<td>Community Dwelling house with a maximum of 8 bedrooms which may have no more than one storey, the floor level of which is more than 4.5m above ground level.</td>
</tr>
</tbody>
</table>
1.3.5 Community Dwelling Houses P.G. 1(d)

“A Dwelling house with a maximum of 8 bedrooms which may have no more than one storey, the floor level of which is more than 4.5m above ground level occupied as a group home, under the management of a statutory or voluntary organization providing supported living and residential services.”

- Height 3 stories, No basements
- 30min. fire resistance to corridors/stairs enclosure regardless of no. of storeys.
- Free swing doors allowed
- Emergency Illuiminaires
- Reference to C.O.P. – management-risk assessment
- LD1 FDAS to I.S. 3218 + control switch
- Increased coverage -Bedrooms+ attics+ other spaces
Provision of LD2 category F.A.D.S. to I.S.3218 2013 for 1(a) and 1(b) purpose group

Category LD2: Interconnected self-contained mains powered/battery backed Smoke/Heat

- Alarms (as Grade D) shall be suitably located in:
- all circulation areas that form part of an escape route within the dwelling, and all high fire risk areas/rooms e.g. kitchen, living rooms, garages, utility rooms and
- all bedrooms.
TGD B Main Changes

Any new extension to an existing dwelling house should have a Fire Detection and Alarm System similar to that required in a new dwelling.

“Where the following conditions apply, and where an extension creates one or more habitable rooms a Fire Detection and Alarm System should be provided throughout the whole dwelling house:

– the rear garden is enclosed
– the only escape route is through a room in the Dwelling house and
– the provisions in Diagram 4 are not met.”
For an escape route to be acceptable into an enclosed courtyard or garden, the depth of back garden should exceed:

a. the height of the house above ground level (X); or

b. where a rear extension is provided, the height of the extensions (Y)

whichever is greater.
Replacement of windows for escape or rescue - change in emphasis “should meet” replaces “recommended”

“Where windows are being replaced in existing dwelling houses, bedroom windows should meet, in as far as is practicable, the provisions outlined at 1.3.7.1 (a) to (e) above.

In the case of other habitable rooms, opening sections should not be reduced or altered to an extent that reduces their potential for escape or rescue”.
Windows for escape or rescue-angled approach deleted.

New requirement for “readably openable” main door applies to all dwelling houses not just 3 storey

New provision for isolation of P.V. Panels (ET101)
1.3.9.9 Galleries
Treated as a storey to comply to 1.3.2, 1.3.3, 1.3.4
Requires fire resistance to floor (in all cases)
Second means of escape (window or door)
Gallery with no alt. exit designated only where:
• It is not designed as a sleeping area
• Does not project into more than 50% of room
• 3m travel distance to door in room
• 7.5 m from of stairs head to any point on gallery
• Cooking facilities either:
  • Enclosed in storey height construction
    • Not less than 3m from stair(see Dig.6)
    • Does not prejudice escape from gallery
"Diagram 17" type exemption on compartmentation is removed.

Fire protection will have to extend to the inner face of the outer wall/rainscreen, etc. (This aligns with the sound flanking requirement in TGD E)
Appendix A Performance of Materials and Structures

- A 21 Structural fire design - additional Reference to Eurocodes and Fire Parts of Structural Eurocodes

- Application of EU Test methods - design to Eurocodes (TGD Part A Structure - 2012)

- Application BS 476 - existing buildings
Part B - Fire Safety

• Volume 1 now being finalised
• Public consultation before end of year
• Final document published 2019
• Transitional arrangement will apply where Planning or FSC is in place.
Nearly Zero Energy Buildings (NZEB)

DHPLG Wexford
Energy Performance of Buildings Directive (EPBD) and NZEB

• Member states to ensure that all new buildings are “Nearly Zero Energy Buildings” by 31st Dec 2020

• Member states to ensure that all new buildings owned and occupied by Public Authorities are `Nearly Zero Energy Buildings’ after 31st Dec 2018

• Major Renovations to be at Cost Optimal Level in Building Codes
‘nearly zero-energy building’ means a building that has a very high energy performance, as determined in accordance with Annex I. 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;
‘major renovation’ means the renovation of a building where more than 25% of the surface of the building envelope undergoes renovation;

**Article 7** Member States shall take the necessary measures to ensure that when buildings undergo major renovation, the energy performance of the building or the renovated part thereof is upgraded in order to meet minimum energy performance requirements set in accordance with Article 4 in so far as this is technically, functionally and economically feasible.
Building Regulations Part L
Development - Dwellings

BER* D1/C3
BER C1

*Building Energy Rating (BER)
## Part L Current Requirements

<table>
<thead>
<tr>
<th></th>
<th>Dwelling heated by mains gas</th>
<th>Dwelling heated by oil</th>
</tr>
</thead>
<tbody>
<tr>
<td>Primary energy</td>
<td>59 kWh/m²/yr</td>
<td>59</td>
</tr>
<tr>
<td>CO2 emissions</td>
<td>12 kg/m²/yr</td>
<td>14</td>
</tr>
<tr>
<td>EPC</td>
<td>0.40</td>
<td>0.40</td>
</tr>
<tr>
<td>CPC</td>
<td>0.37</td>
<td>0.45</td>
</tr>
</tbody>
</table>
Implementation of NZEB-Dwellings

SI 4 of 2017 amended Building Regulations to include the definition of NZEB Jan 2017

TGD L 2011-Dwellings has been amended to include numerical indicators for NZEB Dwellings on the 22nd Feb 2017. The numerical indicators provide MPEPC of 0.30 and MPCPC of 0.35 for dwellings.

A full review of Part L for NZEB Dwellings is on going.

Public Consultation end of this month. Publish Q3/4 2018 to apply from early 2019
TGD L 2018-Dwellings NZEB

- Advanced Fabric performance
- Improved airtightness performance
- Calculated thermal bridging
- Renewables
- Review Ventilation provisions
TGD L 2018-Dwellings
Major Renovations

• Where more than 25% of the surface of the building envelope undergoes renovation the energy performance of the building or the renovated part thereof is upgraded in order to meet minimum energy performance requirements with a view to achieving a cost optimal level (Art. 4) in so far as this is technically, functionally and economically feasible.

• Cost Optimal study shows this as typical being equivalent to a BER of B3 on an average dwelling subject to technical, functional and economic feasibility.
Implementation of EPBD-Part L Buildings other than Dwellings

- Extensive Consultation with Stakeholders:
  - OPW, DES, HSE, SEAI, Construction Industry Council (RIAI, SCS, EI, ACEI, CIF), CIBSE, IGBC, IBEC
  - Multiple industry workshops to approximately 1500 professionals

- NZEB Interim Specification for Public Buildings issued 23rd Dec 2016 for buildings commencing design in early 2017

- TGD L Buildings other than Dwellings was published in 2017.

- It provides detailed NZEB guidance and includes Major Renovations performance requirement

- Application- 1st Jan 2019
Key Components of performance requirement
TGD L Buildings other than Dwellings

• Provides an improvement in performance in the order of 60% over 2008 TGD L
• Improved Fabric Specification
• Advanced Services and Lighting specification
• Renewable Energy Ratio of 20% with flexibility of 10%
• Major Renovations
### Proposed Performance requirements for Buildings other than Dwellings Specification - Reference Building-Fabric

<table>
<thead>
<tr>
<th>Parameter</th>
<th>Current reference values-TGD L 2008</th>
<th>Reference values-TGD L 2017</th>
</tr>
</thead>
<tbody>
<tr>
<td>Total Floor Area and Building Volume</td>
<td>Same as actual building</td>
<td>Same as actual building</td>
</tr>
<tr>
<td>Opening Areas</td>
<td>Offices and Shops –windows and pedestrian doors are 40% of the total area of exposed walls</td>
<td>Offices and Shops –windows and pedestrian doors are 40% of the total area of exposed walls</td>
</tr>
<tr>
<td>Walls</td>
<td>U=0.27 W/m²K</td>
<td>U=0.18 W/m²K</td>
</tr>
<tr>
<td>Roofs</td>
<td>U=0.16 W/m²K</td>
<td>U=0.15 W/m²K</td>
</tr>
<tr>
<td>Floor</td>
<td>U=0.25 W/m²K</td>
<td>U=0.15 W/m²K</td>
</tr>
<tr>
<td>Thermal bridging</td>
<td>Add 16% to fabric heat loss</td>
<td>Actual Length of Key Junctions x Advanced psi value</td>
</tr>
<tr>
<td>Air Permeability</td>
<td>10m³/(hr.m²)</td>
<td>5m³/(hr.m²) Floor area &lt;250m² 3m³/(hr.m²) Floor area &gt;250m²</td>
</tr>
<tr>
<td>Window U Value</td>
<td>2.2 W/(m²K) 0.72</td>
<td>1.4 W/(m²K) 0.40</td>
</tr>
<tr>
<td>Solar energy transmittance</td>
<td></td>
<td></td>
</tr>
</tbody>
</table>
## Services

<table>
<thead>
<tr>
<th></th>
<th></th>
<th></th>
</tr>
</thead>
<tbody>
<tr>
<td>Heating efficiency (heating and hot water)%</td>
<td>0.73 CoP</td>
<td>91% Gas Boiler</td>
</tr>
<tr>
<td>Cooling Seasonal Energy Efficiency Air conditioned building Ratio (SEER)</td>
<td>SEER=1.67</td>
<td>SEER=4.5</td>
</tr>
<tr>
<td>Lighting</td>
<td>divide the illuminance by 100, then multiply by 3.75 W/m² per 100 lux</td>
<td>65 lm/circuit watt</td>
</tr>
<tr>
<td>Occupancy Control</td>
<td>Local Manual Switching</td>
<td>Automated</td>
</tr>
<tr>
<td>Daylight Control</td>
<td>Local Manual Switching</td>
<td>Automated</td>
</tr>
<tr>
<td>Central Ventilation SFP</td>
<td>2 (W/(l/s))</td>
<td>1.8 (W/(l/s))</td>
</tr>
<tr>
<td>Variable speed control of fans</td>
<td>No</td>
<td>Yes</td>
</tr>
<tr>
<td>Renewable Energy Ratio</td>
<td>None</td>
<td>20% using photovoltaics</td>
</tr>
</tbody>
</table>
Planned Transitional Arrangements

• In general, this document applies to works, or buildings in which a material alteration or change of use or major renovation takes place, where the work, material alteration or the change of use commences or takes place, as the case may be, on or after 1st Jan 2019.


• However, these documents may continue to be used in the case of buildings:
  – where the work, material alteration or the change of use commences or takes place, as the case may be, on or before 31st December 2018, or
  – where planning approval or permission for buildings has been applied for on or before 31st Dec 2018, and substantial work has been completed by 1st Jan 2020

• “Substantial work has been completed” means that the structure of the external walls has been erected.
NZEB Projects under development

OPW Leeson Lane

ESB HQ

Forensic Labs
TGD L-Buildings other than Dwellings

Major Renovations

- Define as “more than 25% of the surface area of the building envelope undergoes renovation”

- Provide menu of measures to bring to cost optimal when more than 25% of surface area undergoing major renovation:
  - Upgrade inefficient heating systems (15 years old)
  - Upgrade inefficient cooling systems (15 years)
  - Upgrade inefficient lighting systems