4.0 Current Regulatory Regime

4.1 Introduction

This chapter assesses the current regulatory regime and its impact on the provision of timber frame housing in Ireland, including Irish Building Regulations, Technical Guidance Documents, Standards and other regulatory issues in relation to timber frame. The Consortium has also reviewed other regulatory regimes to better understand the impact of regulations on timber frame quality and use.

4.2 Building Regulations


The key provisions of the Building Regulations relating to the design and construction of building works are set out in the Second Schedule of Building Regulations 1997. The requirements of these provisions addresses different aspects of the design and construction of building works and are expressed in broad, performance terms rather than by way of specific, prescriptive provisions.

4.3 Technical Guidance Documents

To assist building designers and builders, the Minister for the Environment, Heritage and Local Government has published a set of Technical Guidance Documents (Parts A through M) describing how to comply with the Building Regulations. The status of Technical Guidance Documents is such that, where works are carried out in accordance with such documents, such works will, prima facie, indicate compliance with the requirements of Building Regulations.

The guidance is not, however, mandatory and the adoption of design and construction approaches other than those outlined in Technical Guidance Documents is not precluded provided that the relevant requirements of regulations are complied with. However, in practice, designers and builders generally tend to adhere to the guidance in order to:

a) produce demonstrably compliant buildings in a timely fashion.
b) ensure building control authority approval.
c) avoid risk and liability for alternatives which may be challenged as not meeting the regulations.

In addition to the contents of Technical Guidance Documents themselves, references are made to and reliance placed on other technical specifications, such as National and European Standards and Codes of Practice.
4.4 Provisions of TGDs relating to Timber Frame Housing

Set out below is a brief overview of the treatment of the design and construction of Timber Frame Housing, where relevant, in each of the twelve Technical Guidance Documents. In some cases the particular area of design and construction has no specific implications for the timber frame element of construction and, where that arises, it is so indicated in the commentary.

4.4.1 Technical Guidance Document A (Structure)

Technical Guidance Document A sets out the structural materials, methods of construction, standards and other specifications which are likely to be suitable for the purpose of meeting the Building Regulations requirements with regard to structure. The guidance itself is prescriptive in relation to the traditional masonry form of house construction with Part 3 of the document devoted to the acceptable practices associated with masonry wall construction and its interaction with other structural elements in single storey and 2 storey construction.

The same level of guidance is not given for timber frame construction. However, as stated in sub-section 2 paragraph 1.2.1, the requirements of the Building Regulations A1 and A2 may be met provided that . . .

- the design and construction of a structure is in accordance with the relevant recommendations of the Codes, Standards and References, and
- where alternative Codes and Standards have been listed, the whole design for the same material should normally be based on one of the codes only.’

Technical specifications and codes relating to the timber frame buildings are cited in Technical Guidance Document A and are listed in Appendix 7 of this Report.

A case may be made for the inclusion of a reference to guidance (i.e. a reference to the recommended ‘TF Manual’, or other suitable reference) in relation to a prescriptive design of timber frame platform wall construction. This has already been recognised by the National House Building Guarantee Company with the inclusion of Appendix B, Timber frame construction, in the 2000 edition of the HomeBond House Building Manual. Whilst there is no prescriptive guidance in TGD A in relation to timber frame construction to 2 storeys, the use of timber frame methodology as a structure is allowed for by reference to Paragraph 1.2.1 and the listing of the appropriate design codes and standards.

not exceeding 4 storeys’ provides design criteria for the design of timber frame dwellings up to 4 storeys. Buildings of 5 storeys or more are subject to the Multi-Storey Buildings Act 1988, which caters for the disproportionate collapse of a building. Timber frame buildings in excess of 5 storeys have been built in the United Kingdom. They are generally designed and certified against disproportionate collapse by the introduction of vertical and horizontal ties and by using the wall panels to truss over potential opes below caused by the failure of an element. Examples include the BRE Timber Frame 2000 project noted in Appendix 4 and the Columba Hotel in Inverness, Scotland.

4.4.2 Technical Guidance Document B (Fire Safety)

Key provisions in Technical Guidance Document B relating to the design and construction of Timber Frame Housing are as follows:

- Paragraph 3.2.5.5 of Technical Document B states that separating walls (party walls) between buildings should be constructed of non-combustible materials, thereby precluding the use of timber frame construction in such situations. This general provision is modified by Paragraph 3.2.5.6, which introduces an exception for separating walls, between dwellings of one or 2 storeys only, where the wall is part of a timber frame construction system consisting only of a structural frame of combustible materials and contains no pipes, wires or other services and the design, materials and workmanship used in the manufacture, and construction of the wall is in accordance with the provisions of Technical Document D.

- Paragraph 3.2.5.2 of TGD B limits the construction of compartment floors in buildings using combustible materials, such as timber, to buildings where the height of the top storey does not exceed 10 m (effectively 4 storeys) above ground level.

- Table 3.2 of TGD B requires the provision of cavity barriers in specified locations in external walls, including external walls of timber frame construction.

- TGD B incorporates the following guidance in respect of the construction of compartment floors and walls:
  - ‘In a building of any purpose group, where the height of the top storey is 10 m or more, any compartment floor that is required to have a fire resistance of 60 minutes or more should be constructed of non-combustible materials apart from any floor finish.’
  - ‘In a building of purpose group 2(a), Residential (Institutional) and in a building of any purpose group, where the height of the top storey is 10 m or more, a compartment wall that is required to have a fire resistance of one hour or more should be constructed of materials of limited combustibility (see Appendix A, Table A7), apart from any wall surface
complying with the requirements of B2, internal fire spread (linings).

The effect of these provisions is to permit the use of construction incorporating timber components in compartment walls and floors in apartment buildings where the topmost storey is not more than 10 m above ground level – in practice, up to 4 storeys in height where standard floor-to-floor heights are provided.

- Paragraph 1.4.4.1 of TGD B includes the following provisions:

  ‘Every escape stairway and its associated landings should be constructed of materials of limited combustibility in the following situations:

  a) If it is the only stairway serving the building, or part of the building, and the period of fire resistance for the elements of structure (Tables A1, A2 to Appendix A) is 60 minutes or more,

  b) If it is within a basement storey,

  c) If it serves any storey having a floor level more than 20 m above ground level . . .’

The effect in practice of these provisions is to limit the incorporation of conventionally constructed timber stairs to dwelling houses, single-stairs apartment buildings with a topmost floor no more than 5 m above ground level (typically, 2 storey construction), and multi-stairs apartment buildings with a topmost floor no more than 20 m above ground level.

4.4.3 Technical Guidance Document C (Site Preparation and Resistance to Moisture)

Technical Guidance Document C does not contain any specific guidance relating to the design and construction of timber frame housing in relation to Part C requirements nor are any technical specifications cited in the document that relate directly to the design or construction of timber frame housing.

It does provide basic guidance on suspended timber floors as follows:

- Paragraph 3.1.8(a) suggests the use of 100 mm concrete over 100 mm hardcore.

- Paragraph 3.1.8(b) suggests the use of 75 mm space to the underside of any timber wall plates and 150 mm ventilated air space to the underside of timber joists.

- Paragraph 3.1.8(c) suggests damp proof course is required to ensure ground moisture cannot reach the timber.
It also provides basic guidance on the performance of cladding as follows:

- Paragraph 3.3.6.(i) notes that cladding ‘materials should be permeable to water vapour unless there is a ventilated space directly behind the material. A ventilated space behind cladding materials may require cavity barriers and fire stopping . . .’

- Paragraph 3.3.6.(ii) ‘jointless materials and sealed joints should allow for structural and thermal movement.’

4.4.4 Technical Guidance Document D (Materials and Workmanship)

Technical Guidance Document D does not contain any specific references to timber frame housing or cite any technical specifications relating thereto, but rather, addresses in a general way, how materials and systems can be shown to be ‘proper’ and fit for purpose.

4.4.5 Technical Guidance Document E (Sound)

Technical Guidance Document E at Paragraph 2.6 provides the following guidance in relation to timber frame separating compartment wall construction: ‘the resistance to airborne sound depends on the isolation of the frames plus absorption in the airspace between. Proprietary forms of construction underwritten by recognized testing houses, which include details of frame construction and connections, absorbent materials and linings to satisfy fire resistance, would be suitable methods of achieving the requirement of ‘reasonable resistance to airborne sound.’

Guidance is also given in Technical Guidance Document E at Diagram 14 relating to the construction of sound-resisting timber floors, which is a requirement in compartment floors separating apartments.

Section 4 of Technical Guidance Document E gives general guidance in relation to the design and construction of sound-resisting walls based on test data and specified levels of sound insulation.

4.4.6 Technical Guidance Document F (Ventilation)

No issues arise in Technical Guidance Document F specific to the timber frame component of timber frame housing construction.

4.4.7 Technical Guidance Document G (Hygiene)

No issues arise in Technical Guidance Document G relating to the timber frame component of timber frame housing construction.
4.4.8 Technical Guidance Document H (Drainage and Waste Water Disposal)

No issues arise in Technical Guidance Document H relating to the timber frame component of timber frame housing construction.

4.4.9 Technical Guidance Document J (Heat Producing Appliances)

Guidance relating to the installation of heat producing appliances and their shielding from and proximity to combustible material is given in Technical Guidance Document J in the following locations:

- Paragraphs 2.15, 2.17, 3.10, 3.20 and 4.9.

4.4.10 Technical Guidance Document K (Stairways, Ladders, Ramps and Guards)

No issues arise in Technical Guidance Document K relating to the timber frame component of timber frame housing construction.


In line with the recommendations outlined in the National Climate Change Strategy, Part L of the Building Regulations on the Conservation of Fuel and Energy has been amended along with the TGD L. New thermal performance recommendations for new dwellings as set in Table 4.3 came into effect on 1 January 2003.

The DETR Framework Field investigations of the thermal performance of construction elements as built November 2000, revised June 2001 concluded that the U-values for timber frame walls very accurately matched their calculated values as opposed to other forms of construction where there was a significant disparity between measured and calculated values. The disparity in other forms of construction relate to workmanship on site and thermal bridging. The TGD Part L 2002 emphasises the importance of good workmanship and elimination of thermal bridging. When properly constructed all forms of construction should meet or exceed their calculated U-values.

In response to changes to TGD L Conservation of Fuel and Energy, TGD F Ventilation has been revised to ensure that new houses, which will be more airtight as a result of higher thermal performance standards, will have proper ventilation.

Technical Guidance Document L provides guidance in relation to timber frame construction in the following locations:

- Paragraph B.1, Diagram 17 and Table 16.

<p>| Maximum average elemental U-value (W/m²K) |</p>
<table>
<thead>
<tr>
<th>Fabric Elements</th>
<th>New Buildings and extensions</th>
<th>Material Alterations to or Material Change of Use of existing buildings</th>
</tr>
</thead>
<tbody>
<tr>
<td>Pitched roof*</td>
<td>0.16</td>
<td>0.35</td>
</tr>
<tr>
<td>Pitched roof**</td>
<td>0.20</td>
<td>0.35</td>
</tr>
<tr>
<td>Flat roof</td>
<td>0.22</td>
<td>0.35</td>
</tr>
<tr>
<td>Walls</td>
<td>0.27</td>
<td>0.60</td>
</tr>
<tr>
<td>Ground floors</td>
<td>0.25</td>
<td>---</td>
</tr>
<tr>
<td>Other exposed floors</td>
<td>0.25</td>
<td>0.60</td>
</tr>
<tr>
<td>External door, windows and rooflights</td>
<td>2.20^1</td>
<td>2.20</td>
</tr>
</tbody>
</table>

Note 1: Permitted average U-value of external doors, windows and rooflights may vary as described in Paragraph 1.2.2 and 1.2.3, and Table 2.

* Insulation horizontal at ceiling level
** Insulation on slope

Table 4.3 Part L 2002 – Table 1, listing U-value requirements using the elemental method.

No issues arise in Technical Guidance Document M relating to the timber frame component of timber frame housing construction.

4.5 Relevant Standards Authorities

The Technical Guidance Documents provide references to relevant Irish Standards (IS), British Standards (BS) and the emerging harmonised European standards (Ens), which are relevant to timber frame construction. The authorities responsible for establishing and coordinating standards are listed below with a brief description of their roles and methods of demonstrating compliance with regulations. TGD Part D in particular recognises emerging harmonised European standards (ENs) for traditional forms of construction and European technical approvals (ETAs) for innovative construction products.

In general, the referenced standards specify moisture content, structural grading, roof truss design, structural use and durability of timber used in timber frame construction. Relevant standards relating to timber frame construction are listed with commentary in Appendix 7 (Reference Standards).

4.5.1 National Standards Authority of Ireland (NSAI)

The NSAI is Ireland’s Standards body. NSAI facilitates the development of voluntary standard documents, which manufacturers or service providers may use as an aid to meeting safety or customer requirements.

In the European Union the NSAI represents Irish interests in the European Standards bodies CEN and ETSI. These agencies work towards the harmonisation of standards and the removal of technical barriers to trade in the EU.

The NSAI have developed standards associated with the manufacture of timber frame in Ireland. These Irish Standards (IS) are referenced within the Technical Guidance Documents.

The Irish Agrément Board (IAB), which reviews manufacturers’ applications for certification of products intended for the Irish market, is an entity within the NSAI.

The NSAI is also the independent administrator of the Timber Frame Manufacturers’ Quality Approval Scheme, which is reported on in Chapter 5 (Quality Control and Product Certification).

4.5.2 Agrément Certification
Agrément certification is a process by which new products are assessed by a technical review board and certified for particular use and under specific conditions. Agrément certificates are relied upon by building designers and builders as an indication that a product is fit for purpose. They are an assurance of the product’s performance and safety in use.

The Irish Agrément Board (IAB) reviews applications for product certification submitted by manufacturers of products that are being introduced to the Irish market. The IAB reviews all the relevant test data, drawings, samples submitted and may visit the manufacturers’ facilities. This technical evaluation assesses the products or methods and, if appropriate, certifies that the product is fit for purpose having considered Irish construction practice, climatic conditions, Building Regulations, buildability and durability.

The IAB also reviews Agrément Certificates granted by other EEA member states to the manufacturer, which is intended to give ‘equivalent’ assurance as to performance and safety in use of the product.

These certificates, however, may have the limitation of not having considered specific Irish conditions; for example, a BBA (British Board of Agrément) certificate may not have taken into account construction practices or Building Regulations in Ireland. Should a manufacturer make application for IAB certification, the IAB will assess the Agrément Certificates of other states, appropriate data and conduct a technical review and, if satisfied, will issue an IAB certificate.

The level of demand for Agrément certification has accelerated since the introduction of the Building Regulations and with the increased emphasis on environmental management, sustainability and greater focus on the need to achieve conformance with Building Regulations.

The IAB themselves do not carry out any testing of building products as they do not have the necessary facilities. Testing of products is contracted out to approved technical bodies such as British Research Establishment or to other private testing facilities. For a new product the IAB generally will draw up an appropriate testing protocol in order to generate the data required for the technical assessment. IAB carry out a technical appraisal based on the test data supplied and determines whether these products are fit for purpose in Irish construction.

4.5.3 Structural Eurocodes (EN)

The ‘Structural Eurocodes’ comprise a group of standards for the structural and geotechnical design of buildings and civil engineering works which originally were intended to serve as an alternate to the differing rules in force in the various member states. It is envisaged that in time the Eurocodes will ultimately replace them.

There are currently nine Eurocodes issued as pre-standards and of
these nine, Eurocode 5 ‘Design of Timber Structures’, relates to timber frame construction.

At present Eurocode 5 (EC5) has the status of European pre-standard (ENV) and is made available for provisional application, but does not have the status of a European Standard. EC5 applies to the design of timber structures - i.e., structures made of timber (solid timber, sawn, planed or in pole form, and glued laminated timber) or wood-based panels jointed together with adhesive or mechanical fasteners. EC5 differs in its design principles from both IS 444 and BS 5268. EC5 bases its process of design on limit state principles with the use of appropriate factors of safety instead of the permissive design principles currently adopted by both IS 444 and BS 5268. In time it is envisaged that EC5 will supersede both IS 444 and BS 5268 and harmonise the design of timber frame towards the limit state design methods that are currently used in the design of steel and concrete.

Eurocode 5 is used as the basis of verification of structural aspects of timber frame kits intending to attain the European CE mark under ETAG 007 Guideline for European Technical Approval of Timber Frame Building Kits.

4.5.4 ETAG 007 (Guideline for European Technical Approval of Timber Frame Building Kits)

The European Technical Approval Guidance (ETAG) is intended to provide standard assessment criteria for Agrément bodies within the EEA for new construction materials and systems and to guide its members such as the Irish Agrément Board (IAB). An ETAG is a document approved by European Organisation for Technical Approvals (EOTA).

ETAG 007 ‘Guidelines for European Technical Approval of Timber Frame Kits’ covers those industrially prepared timber frame kits, marketed as a building, that are made of pre-designed and prefabricated components intended for production in series.

‘Timber Frame Kits’ in this instance are complete house kits including all aspects of the completed house. This differs from the timber frame kits more commonly used in construction in Ireland and which generally include only the timber frame studs and sheathing. This ETAG sets out the performance requirements for timber frame kits and assessment methods used to evaluate the performance of the constructed kit, for the intended use and the presumed conditions.

Under ETAG 007 timber frame kits are assumed to be designed to have a minimum working life of 50 years for load-bearing structures and for non-accessible components and materials. They are also assumed to have a minimum 25 years, working life for repairable or replaceable components and materials like claddings, roofing materials, exterior trims and integrated components like windows and doors, provided that the kit is subject to appropriate use and maintenance.
ETAG 007 stresses that on site quality assurance standards are primarily a matter for regulation, at national level, by individual member states.

While the ETAG 007 does not apply to the timber frame kits commonly utilised in Ireland at present which are supplied as a structural frame only, it will apply to complete timber building kits which are currently being introduced into the Irish house market.

4.5.5 British Standards Institution (BSI)

The British Standards Institution in the UK performs a similar role to that of the National Standards Authority of Ireland. Their standards have been in existence for many years and are often referenced by Irish Standards and Technical Guidance Documents.

It is generally accepted that in the absence of an appropriate Irish standard for a particular material or construction the British Standard will apply. The most relevant British code of practice that reference is made to regarding timber frame construction is BS 5268 ‘Structural use of timber’ and many references are made to it in IS 444.

4.6 Enforcement

Building control authorities are empowered under the Building Control Act 1990 to carry out random inspections to check compliance with Building Regulations. The national inspection target level introduced by the DoEHLG at the end of 2002 is 12%-15% of all buildings covered by valid Commencement Notices.

The building control authority inspection process is intended to encourage compliance and deter non-compliance, secondary to the primary responsibility for compliance imposed by legislation on designers, builders and owners. This system differs significantly from building control regimes elsewhere in Europe and North America where the following regimes are in place:

1. **Local Authority Inspection Approval system**: the building control authority inspects and certifies building plans, various stages of construction, and the completed building as being in compliance with Building Regulations.

2. **Certification system**: qualified building professionals and/or builders are required to certify that the completed building complies with the Building Regulations.

Random inspections by building control authorities are not adequate on their own, nor are they intended, to provide universal and consistent quality assurance of good building standards and checking of compliance with Building Regulations, whether it relates to design.
or construction of buildings using methods whose technical robustness is well established or methods of construction whose technical robustness in the Irish environment is less established.

In the case of timber frame construction, due to the current low level of awareness and knowledge in the construction industry in relation to this construction method and the potential consequences of defects where timber framed housing is not built in accordance with appropriate codes, there is a need to introduce a more advanced certification approval system for timber frame housing above 2 storeys in height.

The general view of representatives from the DoEHLG housing inspectorate is that timber frame housing in Ireland is viable when properly constructed and in compliance with Irish building regulations. The DoEHLG inspectorate has found that instances of defects, generally, are proportionate with other forms of construction.

The inspectorate recognise that there is a shortage of technical information and standards relating to timber frame and other lightweight (e.g. steel frame) systems and particularly for 3 storey and apartment construction. This has resulted in uncertainty and lack of uniformity, particularly in the areas of fire safety and sound insulation and the issue of accommodation of services is not always dealt with in a satisfactory manner.

The DoEHLG explanatory memorandum HA1 sets forth standards for new houses for which the First Time Purchase (FTP) grant is currently payable. The FTP grant system is being phased out, and the final FTP grant payments will be made in 2004. Certification by a competent body (e.g. Agrément Certification by NSA/IAB) is required by HA1 where unconventional materials or methods of construction are used, to demonstrate their compliance with Building Regulations.

4.7 Conclusions on Building Regulations and Technical Guidance

The Consortium considers it desirable that ‘deemed-to-satisfy’ guidance be available to assist in the design, specification and construction of timber frame buildings. Such guidance in the form of a ‘TF Code’ should be formulated by the NSAI, with assistance from the DoEHLG, the wider construction industry and timber frame industry. The TF Code should be cited as a reference for compliance in relevant TGDs.

It is the view of the Consortium that the provisions of Technical Guidance Document B cited above in respect of separating walls are unnecessarily restrictive. The limitation set in TGD B on timber frame separating wall construction warrants review. Timber frame separating walls between 3 storey houses (an increasingly common form of house type consistent with current density and sustainability objectives) are not compliant with the current Technical Guidance Document B. However, compartment walls (and floors) incorporating
timber between apartments in configurations up to and including 4 storeys above ground (i.e. topmost storey not exceeding 10 m above ground) are deemed acceptable.

It is the view of the consortium that this anomaly should be eliminated to allow timber frame construction of separating walls, in buildings with storeys up to 10 m (typically 4 storey) above ground. While this does not go as far as what is currently permitted in Northern Ireland, Scotland, England or Wales, it is considered acceptable in the context of the current state of development of timber frame construction in Ireland and the compliance assurance mechanisms in operation.

This revision would permit the use of timber frame separating walls between 3 storey (and, though rare in current Irish house building practice, 4 storey) housing and remove the ambiguity that arises in respect of attic conversions in 2 storey houses incorporating timber frame separating walls. It is also considered a reasonable incremental provision at this point in the development of the timber frame industry in the Irish house-building market. Further relaxation of the guidance may be possible at a future date in the light of the development and implementation of the recommendations relating to quality control and the provision of a recommended Timber Frame Code of Practice made in this report.

In the matter of the construction of stairs, while not an intrinsic element of timber frame structural system, the use of timber stairs efficiently complements timber frame construction, particularly as regards speed of construction, self-weight and relative thermal/shrinkage movement.

Timber stairs within a fire rated stair enclosure should have no fire load and therefore should not pose an unacceptable risk. In the matter of incorporation of stairs of combustible construction (i.e. timber) in single-stair buildings, account needs to be taken of the need for such stairs to remain viable for a reasonable amount of time, even when directly exposed to fire, for example as a result of inappropriately stored combustibles igniting or arson. The viable period of time should include for initial evacuation by occupants directly affected by the fire, attendance and intervention by fire-fighting personnel (turntable ladder access notwithstanding) and subsequent evacuation of other occupants not directly affected by the initial outbreak.

The research carried out by Lennon, Bullock and Enjily in the context of the Timber Frame 2000 project indicated that appropriately constructed timber staircases can maintain adequate durability to satisfy such criteria.

It is the view of the Consortium therefore, that subject to appropriate guidance in the matter, and to ‘dovetail’ with its recommendations relating to timber frame separating walls, timber stairs should be permitted in buildings incorporating timber frame as the primary structure of the overall building and where the soffits of stairs are lined by proprietary gypsum plasterboard, 12.5 mm thick, stair elements are
jointed using thermosetting type glue and all timbers making up the stairs are pressure impregnated using a test validated proprietary treatment equivalent to that necessary to provide a Class 1 surface spread of flame performance.

It is the view of the consortium that suitable reference to guidance be included in TGD C (Site preparation and Moisture Resistance) and TGD D (Materials and Workmanship) regarding preservative treatment of structural timbers in the external walls of timber frame buildings and timber battens within the ventilated and drained cavities of all buildings. See recommendations R.3.3., R3.4. and R.3.6. of chapter 3.

It is considered desirable that more detailed guidance on the construction of timber frame compartment and separating walls be added to the guidance in Technical Guidance Document E to supplement the guidance given on other forms of wall and floor construction.

4.8 Conclusions on the Current Regulatory Regime

4.8.1 Random inspections by building control authorities are not adequate on their own, nor are they intended, to provide universal and consistent quality assurance of good building standards and compliance with Building Regulations. This is valid whether it relates to design or construction of buildings using methods whose technical robustness is well established or to methods of construction whose technical robustness in the Irish environment is less established.

4.8.2 In the case of timber frame construction, there is currently a low level of awareness and knowledge in the construction industry in relation to this construction method and the potential consequences of defects where timber framed housing is not built in accordance with appropriate codes. Accordingly, there is a need to introduce a more advanced certification/approval system for timber frame housing above 2 storeys in height.

4.8.3 The TFHC have considered that for all cases of timber frame housing and apartments above 2 storeys in height, one or more of the following options be implemented by the building control authority to provide a more advanced certification/approval system for housing above 2 storeys.

Option A – Building Control Inspection and Approval System

Local authority building control inspection is carried out on all timber frame housing and apartment developments of 3 or more storeys. Approval is required of plans, construction details and specifications in advance of commencement of construction. Staged inspections by building control authority officials to be carried out at appropriate stages throughout the
construction process. Prescribed fees can fund this option.

**Option B – Professional Certification System**

In the case where a developer opts for self-certification by the design team, a full professional service by an appropriately qualified person, i.e. an Architect or Engineer (RIAI Schedule A Services 1 – 8 or IEI Standard Services), shall be provided for timber frame housing and apartments of 3 or more storeys. The relevant RIAI, Opinion on Compliance to be signed by a qualified Architect or Engineer with appropriate Professional Indemnity (PI) insurance cover, be in a legally prescribed form and on completion to be lodged in a statutory register maintained by the building control authority.

**Option C – Independent Third Party Certification System**

Certification by a Third Party Inspection Specialist to be required for timber frame houses and apartments of 3 or more storeys to certify that the timber frame building has been manufactured and erected in accordance with the Building Regulations. The certificate to be signed by a suitably qualified design professional with appropriate Professional Indemnity (PI) insurance cover and whose services should include periodic inspection of the works, appropriate to the relevant stage of construction. The certification process to be in a legally prescribed form and lodged in a statutory register maintained by the building control authority.

4.8.4 It is the view of the TFHC that it is unlikely that a Building Control Inspection and Approval System (Option A) could be implemented by local building control authorities in the foreseeable future.

The DoEHLG and representative institutes for the Architectural and engineering professions should liaise on appropriate levels of PI cover.

**4.9 Recommendations**

R.4.1. In the case of all timber frame residential constructions of 3 or more storeys, it should be mandatory that an appropriately worded certificate - as in Option B or C of this Report - be lodged with the building control authority.

R.4.2. The NSAI should prepare and publish a Code of Practice for Timber Frame Construction (hereafter referred to as the TF Code), taking account of the specific characteristics of residential design and construction in Ireland. The TF Code should be formulated by the NSAI, with assistance from the
DoEHLG, the wider construction industry (CIF, IEI, RIAI, SCS) and timber frame industry (ITFMA). The TF Code should be cited as a reference for compliance in relevant TGDs.

R.4.3. TGD B (Fire Safety) should be amended to allow timber frame separating walls in buildings with floors up to 4 storeys and 10 m above ground level. This recommendation is linked to recommendations relating to higher levels of certification for timber frame houses and apartments over 2 storeys (see recommendation R.4.1.).

R.4.4. Recommendation R.4.3. should be reviewed in 2008, in the light of practical experience gained from timber frame construction of up to 4 storeys, with a view to the possible updating of guidance to harmonise with equivalent compliance guidance for England and Wales, Scotland and Northern Ireland.

R.4.5. TGD B (Fire Safety) should be amended to provide clear guidance on timber frame compartment walls in apartment buildings with floor levels up to 4 storeys and 10 m above ground, either directly or by reference to the TF Code (see recommendation R.4.2.).

R.4.6. TGD B (Fire Safety) should be revised to allow the use of stairs constructed of combustible materials in single-stair apartment buildings - provided the topmost storey is not more than 4 storeys and 10 m above ground level and where the soffit of the stairs is lined by proprietary gypsum plasterboard, minimum 12.5 mm thick, stair elements are jointed using thermosetting type glue and all timbers making up the stair are pressure impregnated using a test validated proprietary treatment equivalent to that necessary to provide a Class 1 surface spread of flame performance.

R.4.7. TGD D (Materials and Workmanship) should be amended to incorporate reference to suitable guidance on accepted good practice in timber frame construction (e.g. TF Code, Trada, Timber Frame Construction, etc.).

R.4.8. TGD E (Sound) should be amended to list reference material on accepted good practice in the construction of timber frame separating walls, compartment walls and compartment floors.

R.4.9. ETAG 007 (Guideline for European Technical Approval of Timber Frame Building Kits) is a mandatory European Technical Approval Guidance document and should be utilised by the Irish Agrément Board for establishing evaluation criteria for complete timber frame house kits and the issue of relevant European Technical Approvals (ETAs) in Ireland.
R.4.10. Developers and builders who wish to build timber frame houses over 2 storeys, should be legally required to sign up to the NSAI Timber Certification/Inspection Service or an equivalent certification/inspection service of a member state of the EU. The NSAI, in association with the ITFMA, should establish and maintain a register of those who have signed up to these services.

R.4.11. Formal communication procedures should be established between building control authorities and the NSAI, to ensure that any concerns over innovative construction methods/systems (including timber frame construction) are identified and feed into the evolution of the TF Code and Agrément assessment of timber frame systems.