



Department of
**Finance and
Personnel**

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Building Regulations (Northern Ireland) 2000

Amendment

of

PART F

CONSERVATION OF FUEL AND POWER

**FINAL REGULATORY IMPACT
ASSESSMENT**

August 2006

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SCOPE

1. This Regulatory Impact Assessment (RIA) relates to the amendment to Part F: Conservation of fuel and power of the Building Regulations (Northern Ireland) 2000 (Part F). Two new Technical Booklets are provided to support the amended regulations. This amendment plays a major role by implementing Articles 3 to 6 of the EU Energy Performance of Buildings Directive (EPBD) and commitments to improved energy efficiency standards made in the Government's Energy White Paper (EWP).

Note:

Although the Energy White Paper related solely to England and Wales, an Energy Strategy for Northern Ireland produced by the Department for Enterprise, Trade and Investment stated that the conclusions of the EWP would be adopted for NI.

OBJECTIVE

2. The objective of the amendment is to reduce carbon emissions from new buildings and buildings that are being altered or extended.
3. The purpose of this amendment is to improve the energy efficiency of buildings in response to the declared aims of the EWP and those set out in Article 1 of the EPBD. The proposals will apply to all buildings controlled by the Building Regulations, covering all new buildings as well as the alteration and extension to existing ones.

BACKGROUND

Previous amendments of the building regulations

4. The last amendment to Part F, Conservation of fuel and power came into effect on 1 April 1999. Since then England and Wales (E&W) introduced an amendment to their regulations on 1 April 2002 which raised their standards for the thermal efficiency of buildings above those current in Northern Ireland. The RIA that accompanied the 2002 changes in E&W, estimated that the amendment would improve the energy performance of new dwellings by about 25% at the expense of adding 1% to 3% to construction costs. Similar performance improvements were introduced for buildings other than dwellings.
5. E&W further amended their requirements for the conservation of fuel and power on 6 April this year. The Department of Finance and Personnel (DFP) in Northern Ireland (NI) received Ministerial approval to work in

parallel with E&W to prepare an amendment to our Part F that would, where practicable, bring the NI Regulations broadly into technical harmony with those for E&W as soon as possible. This means that NI is leapfrogging the E&W 2002 standards and moving directly to the more demanding standards for 2006. This will undoubtedly be a major step forward for the construction industry in the NI as it represents an improvement of around 40% on current standards.

Energy White Paper

6. The reduction of CO₂ emissions is a key element in the Government's sustainability agenda. The EWP set out the Government's thinking on how to achieve the substantial reductions in CO₂ emissions that are needed in the coming decades if we are to have any prospect of stabilizing the environment. Two key elements of that strategy are set out below and are reflected in the attached amendment.
 - a. Encouragement to improve the energy efficiency of buildings; and
 - b. Encouragement to select energy sources and generating technologies that produce much less, or no, carbon.
7. As the EWP states, the cheapest, cleanest and safest way of addressing our energy policy objectives is to use less energy. This approach reduces CO₂ emissions, relieves pressure on the energy supply infrastructure and cuts energy bills for householders and businesses. The majority of the proposals contained in this amendment are therefore geared to improving the energy efficiency of buildings.
8. As the EWP also states: 'if we are to achieve a 60% reduction in carbon emissions by 2050, we are likely to need renewables by then to be contributing 30% to 40% of our electricity generation and possibly more'. We have therefore included in the proposals measures that will encourage greater uptake of low or zero carbon (LZC) energy generation systems. This is also in line with Article 5 of the EPBD.
9. Buildings account for approximately half of the UK carbon emissions, and so it is clear that improved standards for new construction and the upgrading of the existing stock present important opportunities to make a significant contribution to achieving the reductions aimed for in the EWP. Building Regulations are perhaps the most important instrument in achieving a widespread improvement to the energy performance of buildings.

Energy Efficiency: The Government's Action Plan

10. The Government published this plan in April 2004 – one year on from the EWP – with the aim of saving a further 12 million tonnes per year of carbon emissions by 2010 by building on previous commitments. The plan notes that the EWP sets energy efficiency at the heart of the energy policy, building on the Climate Change Programme, and identifies energy efficiency as the most cost-effective way to meet all the energy policy goals. It sets the scene for the coming decade but anticipates more work to identify what further savings will be needed in the period 2010 to 2020. That work will take into account the results of the review of the Climate Change Programme.
11. The Energy Efficiency Action Plan (EEAP) sets out a package of measures designed to overcome barriers to achieving the EWP commitments. The main barriers are seen as behavioural and organisational resistance amongst building owners to what are known to be cost-effective measures. Key elements of the plan are given as;
 - a. Measures aimed at householders such as the *Energy Efficiency Commitment*, the *Decent Homes Programme*, and fiscal incentives to landlords and others,
 - a. Revision of the *Building Regulations*,
 - b. Launching of the *EU Emissions Trading Scheme* which came into effect in 2005, and
 - d. Strong leadership in the public sector, with cuts in carbon emissions in existing buildings and procuring high efficiency new ones.

The EU Energy Performance of Buildings Directive

12. This was published on 04 January 2003 and requires Member States to transpose its requirements into national law by 04 January 2006. It also requires most of the Articles to be implemented by that date, but allows for extensions of time for building certification and boiler and air conditioning inspections. The only grounds for extension that the Directive allows are time accepted by the EU Commission as necessary for a Member State to muster sufficient numbers of acceptably qualified surveyors and inspectors.
13. Owing to the complexities of implementing the Directive, no Member State did so by the implementation date. E&W brought new building regulations into effect on 6 April 2006 to implement Articles 3 to 6 of the Directive but has deferred the implementation of Articles 7 to 10, as allowed for by the Directive, due to a lack of suitably qualified assessors.

14. This amendment to Part F of the Building Regulations (Northern Ireland) 2000 implements Articles 3 to 6 of the Directive in Northern Ireland. Separate regulations will be made to implement the remaining Articles 7 to 10 of the Directive (Articles 7 – 10).

RISK ASSESSMENT

15. This amendment to the Building Regulations is primarily aimed at addressing climate change as part of the Government's overall programme. The risks associated with climate change are discussed in the Climate Change Programme itself, in the EWP, in the EEAP and in the Second EU Climate Change Programme Progress Report, so the detail is not repeated here. However, a summary of the main risks is included below. There are a number of technical and administrative risks, and in particular, there are the legal risks associated with a delay in implementation of the EPBD.

Technical and administrative risks

16. Failure to proceed with this amendment to the Building Regulations and failure to properly enforce it will undermine the estimated savings given in the Energy Efficiency Action Plan and hence jeopardise the Climate Change Programme.
17. The improvements in the standards in the Building Regulations and widening of the scope of application take into account such risks as:
 - a. **Adversely impacting on other aspects of building performance** such as ventilation for health and combustion appliance safety, acoustic insulation, etc.
 - b. **Demanding construction details or techniques that are too challenging** so the risk of serious defects becomes unacceptable. Defective insulation and airtightness construction details can lead to acute problems of rain penetration, condensation problems (which can lead to ill-health caused by mould), and latent problems leading to poor service life.
 - c. **Creating disproportionate burdens on particular sectors of industry.** There are many forms of construction requiring different materials and design and construction techniques, and each of these has a place. Raising standards too far and too frequently would place severe technical and commercial burdens on builders and their materials and component suppliers, and slow the building programme.

It might also provide an unwarranted market edge to overseas competitors.

- d. **Making the regulations and associated supporting provisions too complex to understand and enforce.** Informal consultations in E&W with the construction industry, local authority building control inspectors, and approved private inspectors has revealed widespread concern at the growing complexity of the energy efficiency requirements. The previous provisions in E&W came into effect in April 2002 and after two years there were still outstanding concerns about the understanding of what is required, the amount of effort needed to supervise and inspect, and the extent of evasion. The EWP gave the Government's intention to work with Local Authorities to see how enforcement and the correlation between design intent and As Built performance can be improved. A workshop on the enforcement of energy requirements, jointly sponsored by the Department for Communities and Local Government (DCLG) [formerly the ODPM] and the Foundation for the Built Environment, was held in March 2004 and a report of the proceedings is on the DCLG web site. In light of the difficulties identified in E&W, we will work with Industry to ensure that Building Control, designers, developers etc understand what is required and what is necessary to demonstrate compliance with the new provisions.

Legal risks associated with implementing the Directive

18. Failure to implement exactly, or to implement in time, could have led to the UK being exposed to the risk of infraction proceedings initiated by the Commission.
19. There are also risks attached to the proposed way in which the Directive is to be implemented. Rather than adopting the "copy-out" approach, the Directive's requirements for Articles 3 - 6 are to be embedded in the existing national legal frameworks that bear on construction. Copy-out avoids the risk of challenge by the Commission or private complainants in the UK or elsewhere of failing to comply fully or over implementation. In isolation however copy-out would leave industry and commerce with no guidance on how to implement. Official guidance published to fill the vacuum could have risked the Government being as exposed as if adopting elaboration.

OPTIONS

OPTION 1 – DO NOTHING

20. The Government has already decided that “business as usual” is not a viable strategy. It has accepted the weight of scientific opinion that we need to achieve substantial cuts in greenhouse gas emissions. It has also accepted that the process of achieving these reductions needs to start as soon as possible. This is reflected in the aims established in the EWP and taken forward in the EEAP.
21. A second important reason that prevents the “do nothing” approach is that EU Member States were required to transpose the EPBD into law by 04 January 2006. Many of the requirements of the EPBD are most appropriately brought into effect through the Building Regulations.

OPTION 2 – INFORMATION AND EDUCATION

22. Setting aside for the moment the imperative of legislation to implement the EPBD, information and education would be an alternative option. Information and education will have a vital role to play in dissemination of the goals and how they can best be achieved. Experience has shown however that, in isolation, such an approach is only effective in helping the committed and the enthusiastic to improve, i.e. it is a driver of good and best practice.
23. This is why improvements in the standards in the Building Regulations are one of the key elements of the EEAP. We consider that to persuade the majority of the construction sector to pursue higher standards, something other than exhortation is required. The technical information that supports the energy efficiency requirements in Building Regulations defines reasonable energy efficiency practice that provides a minimum standard. By improving the minimum legal standards, there will be a “regulatory push” to complement the “pull” provided by information and education schemes and any supporting incentive schemes that may be put forward by the Government.
24. Information and education will also help deliver the objective in the EWP of improving the degree of correlation between design standards and As-Built performance. To achieve the objective, there will need to be an improvement in;
 - a. The general awareness of the need for building energy efficiency;
 - b. Construction workforce skills, and

- c. Building Control surveyors' skills and hence their abilities to enforce the regulations. Simplifying the provisions in the Technical Booklets will further support this.

OPTION 3 – AMENDING PART F OF THE BUILDING REGULATIONS

- 25. The Government gave the aim in the EWP of introducing the next major revision of the energy efficiency standards in the Building Regulations by 2005. It also gave the aim of using the regulations to raise the standard required for new and replacement boilers to the level of the most efficient boiler types – SEDBUK A and B rated condensing boilers. At the Better Building Summit it gave an implementation date for raising the boiler standards as 01 April 2005. The original intention was to arrange for two stages of amendments:
 - a. By April 2005, to bring into force revised Regulations so that in most cases new and replacement domestic boilers would be condensing types rated SEDBUK A or B, except in specific cases where a reasonable alternative provision shall be made. This has been done; and
 - b. By 31 December 2005 bring into force the proposed changes to the Building Regulations that would improve the energy efficiency of buildings and assist in the transposition of the EPBD. This date was to meet the deadline of 04 January 2006 given in Article 15 of the EPBD for the implementation of its requirements. The deadline was not met in E&W but new requirements were brought into effect on 6 April 2006. The current amendment introduces similar requirements for Northern Ireland.

Due to a possible infraction of an existing EU Directive on central heating boilers we are unable to introduce a prescriptive regulation to require the installation of new and replacement condensing boilers in dwellings. However, the proposed standards in the new Technical Booklets are set on the presumption that a condensing boiler will be installed as the norm in new dwellings and, where technically feasible, when an existing boiler is replaced.

PREFERRED OPTION

- 26. Based on the previous discussion, it is clear that Option 3 should be adopted, namely:
 - a. Amend the Building Regulations to raise national efficiency standards and by so doing transpose and implement Articles 3 to 6 of the EPBD.

- b. Other legislation will be necessary to complete the transposition of all of the elements of the EPBD. The aim is to develop this after this amendment is completed.
- c. In terms of the ensuing discussion of benefits and costs, the point of the debate is not whether to regulate, but rather about the level at which new energy efficiency standards should be set, and the practicality and cost-effectiveness of the proposed ways of implementing the Directive.

BUSINESS SECTORS AFFECTED

27. All sectors of the construction industry will be affected by these proposals:

- Building owners, tenants, operators and facilities managers
- Designers
- Manufacturers
- Constructors
- District Councils, Building Control staff
- Maintenance contractors

CHANGES IN THE PROPOSED SCOPE OF THE BUILDING REGULATIONS

Application to existing buildings

28. The Building Regulations address the construction of new buildings and the alteration and extension of existing ones. This amendment to Part F now pays much greater attention than before to energy efficiency works to existing buildings.
29. Given the goal of reducing total carbon dioxide emissions, such an emphasis is important. The existing stock of dwellings for instance numbers around 670,000 and about 12,250 new units are built each year. Turnover in the building stock (i.e. demolitions replaced by new development) is relatively low; indeed the total stock is actually increasing at around 10,000 units per year. It is therefore important to improve the existing stock as well as to improve the standards for new buildings.
30. Consequently, this amendment contains new requirements that apply when refurbishing existing buildings, including in some cases provisions to upgrade the overall building performance as well as achieving compliance for the work in hand. This will fulfill our obligation under Article 6 of the EPBD, which requires that where possible existing buildings should be upgraded as part of major renovation work.

Other technical issues

Low and zero carbon (LZC) systems

31. As indicated in paragraph 6.b, the EWP suggested that this review of the Building Regulations should encourage greater uptake of such technologies. Analysis has shown however that currently, not all LZC systems are always cost effective, although it seems likely that they will become more so as the technology improves and market volumes increase.
32. Consequently, it is not considered justifiable in this amendment to **prescribe** the inclusion of particular packages of LZC systems. However, for dwellings, information has been included in a supporting publication on how LZC systems can be used to help achieve the target reductions in CO₂ emissions. For buildings other than dwellings, there will be an additional reduction in CO₂ of 10% over what might be achieved by a typical package of conventional energy efficiency measures. This 10% can be seen as a “notional” LZC contribution, but leaves the developer to decide how best to achieve the improvement. It could be achieved by:
 - a. Zero carbon systems like solar water heating,
 - b. Low carbon systems like CHP,
 - c. A package of conventional energy efficiency measures with no contribution from LZC systems, or
 - d. Any combination of these approaches.
33. This measure is expected to encourage clients, builders and their designers to seriously consider LZC systems as part of their overall designs for all new buildings. By doing this we are also addressing Article 5 in the EPBD, which requires Member States to ensure, for new buildings with floor areas over 1,000 m² that consideration is given at the design stage to adopting cost-effective opportunities for introducing LZC systems.
34. This flexible approach will enable clients and builders to take advantage of incentive schemes, grants etc, which shift the balance of cost effectiveness in their particular design. However these fiscal measures are outside the scope of Building Regulations and so they have not been included in the cost benefit calculations in this RIA.

Correlation with Part K: (Ventilation), of the Building Regulations – Airtightness

35. A principal aim of this amendment to the Building Regulations was to improve the sealing and hence airtightness of buildings. The numbers of poorly sealed buildings will be reduced rather than increase the proportion of very airtight ones. The maximum acceptable pressure test performance standard has been set at $10 \text{ m}^3/\text{h}/\text{m}^2$ at 50 Pascal (Pa). There will be a distribution of actual performances up to this value however as a result of design choices and construction quality variance. A significant proportion of new buildings will therefore be more airtight than this maximum acceptable value. Therefore it has been decided that a future amendment to Part K will set a minimum standard for ventilation provisions that will be sufficient even in buildings whose fabric envelope is exceptionally airtight.
36. The distribution of airtightness that will be achieved in response to this amendment will not be known for several years. Experience has shown however that few current buildings are more airtight than $3 \text{ m}^3/\text{h}/\text{m}^2$ at 50 Pa, so this has been adopted as the design target for the ventilation provisions that will be given in the next amendment proposed for Technical Booklet K (Ventilation).
37. Because the building fabric will become better sealed, it will be necessary to increase the size of natural ventilation openings such as trickle ventilators. Industry will therefore need time to develop new products that provide the extra positive, controllable ventilation capability in practical ways that are not unattractive to householders.
38. It should also be noted that the proposed new approach to compliance based on whole-building performance does not rule out the use of components and products that meet the current E&W standards for ventilation. Products and components necessary to meet the improved E&W standards for ventilation will find their way into the NI market and manufacturers are likely to phase out products that would only meet the minimum standards for ventilation in NI. This approach allows a longer effective transition period at the design stage than previous amendments.
39. As a result of these considerations it is proposed to set phase-in periods in Part F for the airtightness provisions and in a future amended Part K for the provision of larger natural ventilators.

EQUITY AND FAIRNESS

40. It is considered that the changes in the way performance standards are being set and to be enforced for the whole building rather than at constructional element level will remove the perceived unfairness associated with the Elemental and Calculation Methods used in the Technical Booklets to date.
41. It is difficult to set standards for every element of building fabric and equipment such that the impact is felt fairly across all sectors. Setting standards at the level of the whole building leaves designers the freedom to choose their own way of achieving the standard required for compliance. This means that no individual technology, system or product is unfairly disadvantaged.
42. This principle will also help encourage suppliers of innovative higher performance products, since the compliance system will now fully recognize the benefits of such products in achieving an overall carbon target. The greater emphasis on the inclusion of energy efficiency measures, as part of refurbishment work, will also help to balance a perceived inequality. It had been suggested that continuing to raise the standards of new buildings would create a market distortion, in that the costs of providing a new building are inevitably increased. Procurers of buildings are then faced with a market where the costs of one sector (new construction) has had its costs increased relative to the existing stock, but with no clear signal about the benefits accruing from the better standards provided. This amendment will help to address both aspects of this by increased demands being placed on existing buildings and by extending the application of the Regulations to more building work in the existing stock.

NOTE

The certification requirements of the EPBD which will be introduced to comply with Article 7 of the EPBD will mean that all prospective purchasers or tenants will be made aware of the comparative energy performance of different buildings in the marketplace. Further, the reports to be made available with the certificate will give advice on what cost-effective measures could be carried out to improve the performance of existing buildings.

GENERAL STATEMENT OF BENEFITS

43. The express aims of this amendment are:
- a. to make the best cost-effective contribution to reducing emissions of CO₂ from buildings whilst keeping the regulations proportionate, cost-effective, sufficiently flexible for designers, and free from unacceptable technical risks: and
 - b. to assist in the implementation of the EPBD in ways that are practical and cost-effective.
44. In broad terms the higher performance standards and the provisions for implementing the Directive in the Building Regulations proposals are cost-effective when the social cost of carbon is taken into consideration and they will significantly reduce CO₂ emissions. They will also widen the application of the Building Regulations to existing buildings and raise the performance standards when replacement, alteration or extension works are being carried out.
45. Implementing the proposals will provide many general benefits to all stakeholders, including the following:
- a. Progress towards achieving the national carbon reduction goals in a cost effective manner.
 - b. Running cost savings that will pay for the increased costs of building work within the service life of the building works, in some cases very profitably.
 - c. Incentives for the manufacturers of energy efficient products and those designers and builders who effectively integrate such products into their buildings.
 - d. Encourage the adoption of low and zero carbon technologies
 - e. Encourage innovation and development, which is part of the wider sustainable construction agenda.
 - f. As well as improving energy efficiency, many of the proposals will lead to wider performance benefits, such as an improvement in general construction quality thus improving the householders' health and comfort, and creating better comfort and productivity in the workplace; and

- g. The promotion of a culture of continual improvement, reinforced by the proposed regular cycle of review demanded by the Energy Efficiency Action Plan and the Directive.

QUANTIFIED COSTS AND BENEFITS

46. In coming to a view on what would be reasonable improvements, account has been taken of the results of the consultations conducted with industry and other interests, and the advice received from the NI Building Regulations Advisory Committee. As a result of this work the proposals are set at a level that will achieve an improvement of around 40% over our current standards that were set in April 1999.

PRINCIPAL BENEFITS

For new construction

47. An estimate of the carbon savings from new construction work is as indicated in Table 1 and Table 2 below.

Table 1: New Dwellings				
Carbon benefits associated with implementing the proposed changes to Part F				
Dwelling Type	CO₂ savings per year per dwelling (tonnes)	Carbon savings per year per dwelling (tonnes)	Annual number of dwellings built¹	Annual national carbon saving in 2010 (tonnes)²
Flats	1.92	0.35	1800	2,500
Mid-Terrace	1.73	0.47	1800	3,380
Semi-detached	1.95	0.62	3530	8,750
Detached	2.40	0.86	5120	17,600
Total per year in 2010				32,230

Ref. 1. Statistics taken from NHBC published data for year ending March 2003

Ref. 2. Based on 4 full years of construction to the new standards

Table 2: New buildings other than dwellings			
Carbon benefits associated with implementing the proposed changes to Part F			
Building Type	Carbon saving per year per m² of floor area (kg)	Annual build rate (m²)³	Annual national carbon saving in 2010 (tonnes)²
Commercial and public buildings	2.98	472,500	5,639
Industrial buildings	1.04	112,000	468
Total per year in 2010			6107

Ref.3. *DETI estimated in 1999 that NI was responsible for 3.5% of the carbon emissions in the UK so these figures are taken as 3.5% of those quoted in the E&W 2006 Part L RIA*

For refurbishment (including alterations, extensions and changes of use)

Refurbishment of dwellings

48. No firm estimate has been possible because of the diversity of types and scale of refurbishment work.

Refurbishment of buildings other than dwellings

49. One of the outcomes of the EPBD is an increased emphasis on refurbishment of the existing building stock. It is very difficult to assess the likely levels of improvement that will occur, but some indication can be gained from a broad assessment.
50. There are no current figures for the carbon emissions from buildings other than dwellings in NI but in 1999 DETI estimated that we accounted for 3.5% of the national output. Using the E&W estimate in the DCLG (formerly the ODPM) consultation papers of about 57 Million tonnes of carbon per year in the UK this would equate to approximately 2.0 Million tonnes for NI. Assuming that this splits about half-and-half between commercial/industrial processes and maintenance of building internal environments, the amount of carbon emissions from the building internal environments would be about 1.0 Million tonnes of carbon per year. Assuming a building is completely refurbished every 25 years, 4% of the stock would be refurbished per year. Assuming, for the purposes of estimating over the next 6 years, that at each refurbishment, there is a 5% improvement in performance, there should be an improvement in the overall stock performance of about 0.2% per year, which relates to annual savings of 2,000 tonnes of carbon. With four complete years of improvement, this would amount to 8,000 tonnes of carbon savings per year by 2010.

PRINCIPAL COSTS

51. An examination of the financial costs for this amendment gives rise to the costs set out in Tables 3 and 4. It should be noted however that this amendment requires a greater increase in our standards compared to those for E&W because their standards were amended in 2002 whereas ours was last amended in 1999.

- a. For new dwellings, the extra costs associated with implementing the proposed amendments to the Building Regulations will be as shown in Table 3

Table 3: New dwellings				
Costs associated with implementing the proposed changes to Part F				
Dwelling Type	Average floor area (m²)	Extra cost per unit (£)	Annual number built⁴	Extra NI annual cost (£ million)
Flats	80	1500	1800	2.70
Mid – terrace	95	2000	1800	3.60
Semi-detached	120	2500	3530	8.80
Detached	160	5000	5120	25.60
Total				£40.73 million

Ref.4. Figures taken as per Table 1

- b. For new buildings other than dwellings the estimated extra cost associated with implementing the proposed amendments to the Building Regulations would be as shown in Table 4

Table 4: New buildings other than dwellings			
Costs associated with implementing the proposed changes to Part F			
Dwelling Type	Extra cost per m² of floor area (£)⁵	Annual build (m²)⁶	Annual additional NI cost (£ million)
Commercial and public buildings	£ 28.91 (3%)	472,500	13.66
Industrial buildings	£ 10.32(3%)	112,000	1.16
Total			£ 14.82 million

Ref. 5. Figures taken from E&W 2006 Part L RIA

Ref. 6. Figures taken from Table 2

Costs arising from refurbishment

Refurbishment of dwellings

52. It has not been possible to satisfactorily estimate the degree of improvement and so no estimate is available.

Refurbishment of buildings other than dwellings

53. It is very difficult to assess the likely costs involved in achieving the levels of improvement that will occur, but some indication can be gained from a broad assessment as indicated in the following table.

Table 5: Additional costs of refurbishment of buildings other than dwellings					
Building Type	Typical current cost per m²	Estimated extra refurbishment cost / m²	Floor area of total stock⁷ m²	Estimated refurbishment rate⁸	Total annual NI cost £ million
Commercial and public	£ 800	£ 11.84(3%)	26.5 million	4%	12.55
Industrial	£ 380	£ 8.11(3%)	12.5 million	4%	4.06
Total additional costs per year					£ 16.61 million

Ref. 7. Taken as 3.5% of national output (DETI 1999)

Ref. 8. Taken from the E&W 2006 Part L RIA

OTHER COSTS

54. There are a number of other costs associated with implementing the measures. These are too difficult to quantify, but are discussed in general terms below.

Industry's costs in adapting to the new standards

55. **Training:** All sectors of industry will have to bear training costs associated with becoming familiar with the new requirements. It is felt that existing Continuous Professional Development budgets will cover a significant proportion of these costs. They are non-recurring costs, and are an inevitable consequence of the drive to achieve our carbon reduction programme. It would appear that the costs of these activities will not be excessive.

56. **Upgrading catalogues:** Materials producers, component manufacturers and builders will need to review, and in some cases, amend their product lines and marketing literature. Although costs will undoubtedly be incurred, it is recognised that all sensible industries have to invest in product development and continuous improvement. Therefore much of the costs should be seen as part of that on-going development cycle. It has been assumed that this activity will incur no extra costs.
57. **Exceptions to the requirement to switch to condensing boilers:** In some specific replacement situations the installation of condensing boilers can be problematical. Providing suitable flues and condensate drainage can be disruptive and vapour plumbing at outlets can be upsetting. Based on work carried out by DCLG and DEFRA in conjunction with BRE, the Heating and Hot Water Information Council and other independent parties, the supporting guidance defines those situations where non-condensing (but still high efficiency) boilers and their associated controls would constitute reasonable provision. Some of these exceptional cases might be reduced through product innovation.
58. **Windows and glazing:** The replacement window standard has been changed to reflect the current situation in E&W. This reflects the needs of the glass and window manufacturing industries who require time to implement the higher standards introduced in E&W in 2002. However standards for new construction have been based on the expectation of using higher technology windows and discussions have been started with the glass and glazing industry on extending the higher technology into the replacement market. There is the possibility, for instance, of requiring higher technology replacement windows sooner than in the next general amendment that has been signalled as likely around 2010.

Building control costs

59. Other than the need to become familiar with the new standards, it might be argued that the costs for building control should not increase, since most of the changes relate to introducing new standards rather than introducing new requirements for technical expertise. However, feedback from the enforcement workshop held on 10 March 2004, which DCLG officials held in conjunction with the Foundation for the Built Environment, suggests that building control bodies in E&W are having some difficulties with enforcing the 2002 amendments to the E&W Part L. It seems they could be in difficulty in taking on the enforcement of further changes without some support.
60. The proposals aim to ease these difficulties by adopting a whole building compliance route based on approved calculation software. With this approach, compliance checking will be made simpler – it will in many cases reduce to confirming that the calculated performance is no worse than a

defined target value. To a large extent, the necessary technical expertise will therefore be embedded in the approved software tool(s).

61. District Councils will incur additional costs if they decide to have available for their own use the calculation software for assessing building energy performance. There will be costs involved in purchasing the software, but perhaps more significantly, in training staff in its effective use. However, as mentioned above, it is not envisaged that Councils will need to calculate the energy performance for each application. They could instead use their discretion on whether to accept claims of compliance based on calculation results and evidence that calculations have been carried out by a qualified and/or accredited person as envisaged by Article 10 of the EPBD. Such an approach could even reduce the current burden on Councils of having to make detailed assessments of designs.
62. To support this approach DCLG is promoting, as part of the dissemination strategy, how the construction industry can be encouraged to develop accreditation schemes. These schemes will take on most of the responsibility for confirming the accuracy and appropriateness of the input data to the whole building compliance calculation. District Councils will then only need to carry out additional checks to confirm that the actual building meets the claimed standard. Aspects of this would include:
 - a. Checking that the actual building includes the features that delivered the predicted design performance. To aid this, the compliance software produces a key features list that identifies those elements of the design that are mainly responsible for delivering the predicted performance. That will aid District Councils in their sample checking. As an appendix to the Technical Booklets, we have also included compliance checklists that detail the checks that need to be made, the evidence that needs to be produced to demonstrate compliance and who should produce that evidence.
 - b. Considering the results of the commissioning activities including air pressure tests. These are both specialist activities, and so again we state that these aspects of the work are to be carried out and certified by accredited experts.
63. As well as easing the burden on building control and improving the level of compliance, we believe the proposals will create a greater degree of consistency between different District Councils, since there will be less scope for variance in interpretation.

CONSULTATION WITH SMALL BUSINESSES: THE SMALL FIRMS' IMPACT TEST

64. The requirements contained in this amendment have been developed in conjunction with the NI Building Regulations Advisory Committee in the light of discussions between officials and groups in E&W representing the construction industry, energy efficiency and environmental interests and other parties. The results of these discussions with stakeholders can be seen on the DCLG web site. The groups interviewed for the Small Firm's Litmus Test covered a wide cross section of companies and interests. Four small and four large companies were interviewed, with a geographical spread across Northern Ireland. In addition, the Construction Employer's Federation was interviewed, and our findings indicate that it is unlikely that there will be a disproportionate impact on small businesses.
65. One area where there may be an initial issue for small building firms is that a simple elemental route to compliance with Part F is no longer available. This change is driven by the EPBD, which requires compliance to be based on a whole-building standard. However, it is anticipated that industry will develop guidance that defines model packages of measures (Model buildings) that, if constructed, would deliver the whole building standard required by Part F. Although a significant change, this offers longer-term benefits in allowing multiple sets of elemental standards to be prepared, each targeted at optimising the solution for different market sectors.

KEY FINDINGS

Construction

66. Most firms were aware of the forthcoming changes and that adaptation will be required. The level of understanding was even between small and large firms with most confident that they could adapt to the changes. Time was of serious concern for all due to the realization that in adopting the new standards, Northern Ireland was making the largest step change in the UK.

Design

67. Renewables incorporated within the design package was not a favoured option with two thirds opposed to this when considered against the grants available. As a result of the move to a "Whole Building Approach" based on calculation of the energy performance of a building, services engineers are perceived as a future imperative in the design process. Translating the design from drawings to site was identified as a problem with the comment made that "only one in ten architects supervise on site". The view was that good design and good supervision are the keys to a quality building.

Marketing

68. Land costs dominate the delivery of low cost homes to market with many homes being built to astonishingly tight layouts. The view was that the changes to Part F would push cost up by 5 to 10% without a perceived benefit to the purchaser. The view was expressed that Government need to publicize the advantages of energy efficient homes in terms of low running costs and climate benefits to stimulate the housing market.

COMPETITION ASSESSMENT

69. It is considered that there will be no detrimental effect on competition. Indeed, the whole building approach adopted by Part F means that there will be more design flexibility in future. This will mean that failing to meet a set of elemental standards disadvantages no product or system because under-performance in one area can be compensated for by an improvement in others. This will also encourage manufacturers and builders to innovate to develop improved products whose benefits can be fairly credited by the compliance system.

ENFORCEMENT AND SANCTIONS

70. The proposals will be enforced by District Councils through the existing mechanisms and sanctions provided through the Building Regulations Order (NI) 1979, as amended in 1990.

Contrary to the Foundation for the Built Environment study that found that Local Authorities in England and Wales were having difficulty in enforcing aspects of the building regulations, there is no evidence to suggest that District Council Building Control in Northern Ireland have or are likely to face similar difficulties.

MONITORING AND REVIEW

71. As is customary practice with changes to the Building Regulations, the DCLG propose to carry out a survey about two years after the implementation date of how the construction industry and its clients are responding to the new provisions. This will allow industry to accumulate experience with the new requirements on a significant population of new buildings and refurbishment projects. We will then be able to obtain a realistic insight into the success of the proposals.

72. Such a review timetable will also enable the results to be fed into the next review of Part F, which, because of the requirement in the EPBD, and, in line with the aims in the EWP, is likely to be around 2010.

CONSULTATION

73. As discussed in paragraph 66, industry has provided very useful inputs into the development of the proposals. This has been done through two industry advisory groups (IAGs), a number of specialist working panels convened by those groups, and separate industry groups helping in the development of the calculation methodology and the lighting provisions.
74. As well as this direct interaction with the IAGs and its panels, notes of the meetings and discussion papers on specific topics were posted on the DCLG website inviting comments from the wider building community.
75. The NI Building Regulations Advisory Committee have been actively involved in the development of the attached amendment to the building regulations and have recommended that it is now appropriate to adopt them.

PUBLIC CONSULTATION

76. The consultation package seeking comment on this amendment was made up of a number of documents, one of which was a draft of this RIA. The consultation documentation was available in various formats on request and was placed on the Department's website.

The consultation involved distributing hard copies of the consultation documents to over 200 bodies and individuals who have a particular interest in the subject matter. In addition a press release was sent to all of the daily publications and trade/professional journals. The Department also consulted with the Northern Ireland Building Regulations Advisory Committee (NIBRAC) in relation to the proposals.

77. All responses to the consultation were recorded and discussed with the NIBRAC working party prior to the drafting of the final Technical Booklet.

SUMMARY AND RECOMMENDATION

78. This RIA covers the amendment of Part F of the Building Regulations for Northern Ireland to raise performance standards and assist in the implementation of most of the EPBD.
79. The amendment will deliver:
- a. An updated national calculation methodology for the energy performance of dwellings
 - b. Three alternative national calculation methodologies for the energy performance of buildings other than dwellings.
 - c. An improvement of around 40% in the energy performance of new dwellings leading to a reduction in the fuel costs and the carbon dioxide emissions.
 - d. An improvement of around 40% in the energy performance of new buildings other than dwellings leading to a reduction in the fuel costs and the carbon dioxide emissions.
 - e. Savings arising from the wider application of the requirements to more types of work on the existing stock of buildings.
80. An explanation of the detailed analyses of these savings and the costs that would be incurred in achieving them are given in paragraphs 46 to 65. The quantified results are summarised in the tables 6 and 7.

Table 6: Carbon savings in 2010		
Taken from	Description	Carbon savings in 2010, Tonnes per year
Table 1 New Dwellings	Flats	2,500
	Mid-terrace	3,380
	Semi-detached	8,750
	Detached	17,600
Table 2 Other buildings	Commercial and public buildings	5,639
	Industrial buildings	468
Para 50	Alterations and refurbishment of dwellings	No estimate
Para 52	Alterations and refurbishment of buildings other than dwellings	8,000
Total saving in carbon in 2010(Tonnes per year)		46,337, Tonnes/year

Table 7: Additional annual costs for Northern Ireland.		
Taken from	Description	Additional Costs £ million/year
Table 3 New dwellings	Flats	2.70
	Mid-terrace	3.60
	Semi-detached	8.80
	Detached	25.60
Table 4 Other buildings	Commercial and public buildings	13.66
	Industrial Buildings	1.16
Para 54	Alterations and refurbishments to dwellings	No estimate
Table 5	Alterations etc. to commercial and public buildings	12.55
	Alterations etc. to industrial buildings	4.06
Total Annual Costs for Northern Ireland (£ million)		£ 72.13 million/year

81. The adoption of this amendment to Part F will bring the Building Regulations (Northern Ireland) 2000 broadly into line with the current provisions for the conservation of fuel and power in England and Wales. It will also implement Articles 3 to 6 of the EU Energy Performance of Building Directive.

MINISTERIAL DECLARATION

"I have read the Regulatory Impact Assessment and am satisfied that the benefits justify the costs"

Signed by the responsible Minister
David Hanson MP

Date: August 2006

CONTACT POINT

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