

Building Regulations (Northern Ireland) 2011

Phase 1 Consultation Proposals

Regulatory Impact Assessment

(Draft for consultation)

Introduction

The Building Regulations apply to most building work and are made principally to secure the health, safety, welfare and convenience of people in and around buildings, for the conservation of fuel and power, protection and enhancement of the environment and promotion of sustainable development.

Currently the Department of Finance and Personnel which has policy responsibility for maintaining the Building Regulations sets mainly functional requirements and gives provisions which, if followed, will satisfy (deemed-to-satisfy) the requirements of the regulations.

The building regulations primary legislation – the Building Regulations (Northern Ireland) Order 1979 - was amended by the Building Regulations (Amendment) Act (Northern Ireland) 2009 which gives the Department the powers to change the Building Regulations from a deemed-to-satisfy based system to a guidance based system.

In 2011, The Department proposes to amend the format of the Building Regulations, to a guidance based system. It is proposed to set amended requirements for a number of Parts and to consolidate all previous amendments into a new set of regulations - the Building Regulations (Northern Ireland) 2011.

Along with the “new” regulations, new Technical Booklets will be published which will replace all the current Technical Booklets and will provide guidance on how to meet the requirements of the regulations.

The Department will be consulting on its proposals for guidance based building regulations in three phases. Each phase will be subject to a separate public consultation exercise with consultation on phases 2 & 3 expected to commence in November 2010. This consultation represents phase 1 and consists of proposals for: -

- Revised format of the Technical Booklets;
- The introduction of new guidance-based Technical Booklets for: -
 - Part E Fire safety;
 - Part H Stairs, ramps, guarding and protection from impact;
 - Part N Drainage; and
 - Part V Glazing,with no or little regulatory change.
- Regulatory/technical uplifts and new guidance-based Technical Booklets for: -
 - Part C Preparation of site and resistance to moisture; and
 - Part G Sound insulation of dwellings.

Regulatory Impact Assessment - draft for consultation

This Regulatory Impact Assessment outlines the impact, costs and benefits of the proposals in this Phase 1 consultation.

Consultation

There is a statutory duty to carry out a public consultation and to consult with the Northern Ireland Building Regulations Advisory Committee (NIBRAC). NIBRAC has been actively involved in the development of these proposed amendments to the building regulations and has agreed that it is now appropriate to consult on the proposals.

The purpose of this consultation is to obtain comments and views from all interested parties on the proposed amendments.

All responses to the consultation will be recorded and discussed with NIBRAC prior to the drafting of the final regulations and Technical Booklets.

Monitoring and Review

Amendments to Building Regulations in Northern Ireland are generally made in light of the amendments that have been made in England and Wales, the aim being to maintain technical harmony with the other UK regulatory bodies. The Department for Communities and Local Government (CLG) in England undertakes reviews of amendments to the Building Regulations which it brings into operation. These reviews and additional research that inform further amendments to Building Regulations is undertaken mainly by CLG on behalf of England and Wales, Scotland and Northern Ireland.

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Parts with no Technical Amendment

Part E: Fire safety

Part H: Stairs, ramps, guarding and protection from impact

Part N: Drainage

Part V: Glazing

In relation to the above Parts of the Building Regulations (Northern Ireland) 2000, the Department is not proposing to amend any of the requirements nor is it proposed to amend any of the technical provisions provided in the supporting Technical Booklets or in any other referenced publications that provide provisions that are deemed-to-satisfy the requirements.

Where a Technical Booklet for a Part has not been amended for a period of time (e.g. Part N: Drainage 1990) the opportunity is being taken to update references in the Technical Booklets to revised British Standards, harmonised European Standards or other technical publications that have been published since the last revision. In practice, these current standards have generally already been adopted by industry.

The intent is to have a set of building regulations supported by guidance. In a guidance based Technical Booklet, a “performance” section will be included to further explain the regulations and their objectives. Where a practitioner decides not to follow the solution provided in the Technical Booklet or where the solution provided does not lend itself to the proposed design, criteria provided will assist the practitioner and those enforcing the regulations to determine if the alternative approach meets the requirements of the regulations.

Designers, developers, Building Control, along with the rest of the industry will have to become familiar with the revised format of the regulations and the guidance based Technical Booklets. The proposals for the above Parts should not require any new skills so it is not anticipated that these familiarisation costs will be significant.

Part C: Preparation of site and resistance to moisture; and Technical Booklet C;

Purpose and Intended Effect Of Measure

Scope

- C1. This draft Regulatory Impact Assessment (RIA) addresses the proposals to amend Part C (and consequential changes to Part A: Interpretation and general) of the Building Regulations (Northern Ireland) 2000, and Technical Booklet C that are deemed significant: -
- the amendment of Part C: Site preparation and resistance to contaminants and moisture to highlight the issue of contaminants;
 - amendments to the application of Part C requirements in respect of a material change of use (Regulation A9); and
 - the amendment of Schedule 1 (Class 7 Extensions) so that the requirement for protection from radon in designated radon Affected Areas will be provided in all extensions, porches and conservatories.

A number of proposed amendments to the technical provisions are very minor and are considered to be cost neutral.

Objective

- C2. A key objective is that the Building Regulations and Technical Booklets are updated to ensure that they are in line with current guidance and practice and generally in technical harmony with requirements which apply elsewhere in the UK, particularly in England and Wales.
- C3. The overall objective of the amendment is to improve the safety of people in and around buildings without imposing disproportionate bureaucracy and costs on building owners or developers or on district councils whose role it is to enforce the building regulations.
- C4. To achieve this objective the main effects of the proposed amendments are:
- to reference the revised radon Affected Areas included in the Northern Ireland Environment Agency publication "Radon in Dwellings in Northern Ireland: 2009 Review and Atlas";
 - extending the requirement to limit the ingress of radon in:
 - all alterations and extensions to dwellings (including conservatories), irrespective of size (alterations to dwellings with radon protection and extensions and conservatories of at least 30 m² already require radon protection); and
 - material changes of use to dwellings;
 - extending the requirement to avoid any harmful effect caused by contaminants to all material change of use cases.

- C5. The proposed amendment will affect most of the construction industry including design teams, developers, builders and Building Control.

Background

- C6. The Building Regulations for Northern Ireland apply to most building work. Currently the Department sets mainly functional requirements and gives provisions which, if followed, will satisfy (deemed-to-satisfy) the requirements of the regulations. The deemed-to-satisfy provisions for Part C are given in the following publications:
- for resistance to ground moisture and resistance to weather – Technical Booklet C “Preparation of site and resistance to moisture” 1994;
 - for protection from radon in dwellings – BRE Report BR 413; and
 - for condensation – BS 5250: 1989: Clauses 9.1 to 9.5.
- C7. The current Part C regulations were last amended in 2000. Technical Booklet C was published in 1994 with only minor amendment in 2000. Since then, there have been developments in the areas covered by Part C, particularly in relation to the remediation of contaminated land. The provisions in the current Technical Booklet are either lagging behind current good practice or do not address recent guidance.
- C8. The Department has received Ministerial approval to prepare an amendment to Part C and to Technical Booklet C which will bring the Building Regulations and supporting guidance broadly into technical harmony with the rest of the UK. This will result in a revised Part “Site preparation and resistance to contaminants and moisture” and a new Technical Booklet which will provide guidance on meeting the requirements of the revised regulations.

Risk assessment

- C9. Contaminants in the ground can pose a health and safety risk. An assessment should be made and reasonable measures taken to mitigate their effects.
- C10. Condensation and dampness in buildings can cause mould growth. Mould spores may contribute to human respiratory problems. Moisture can also be harmful to the fabric of buildings and damage structural integrity as well as surface finishes.

Options

- C11. There are three options that will be examined in detail in this RIA:
- Option 1 – do nothing
 - Option 2 – provide guidance for the existing Part C and publicise best practice
 - Option 3 – amend Part C and the supporting provisions to bring them generally into technical harmony with England and Wales, provide guidance and reference revised radon Affected Areas.

Benefits and Costs

- C12. The proposed amendment to Part C and the supporting provisions involves many separate amendments to unrelated aspects of the Part C requirements and the benefits and costs are provided for each of these aspects. For ease of understanding in this RIA the benefits and costs have been grouped together for each aspect.

Option 1

- C13. Doing nothing is not a viable option. In order to introduce a guidance based system the Department must convert the Building Regulations and all the Technical Booklets simultaneously. The Department is committed to making this change by 2011 to provide the flexibility necessary to maintain technical harmony with the building regulations in England and Wales.

Option 2

- C14. Do the minimum to convert Part C and Technical Booklet C to a guidance based system and to publicise good practice.
- C15. This option would mean that there would be no: -
- technical update of the provisions in the 1994 Technical Booklet C;
 - amendment to the references to superseded third party documents; and
 - guidance on contaminated sites.
- C16. Requirements on resistance to contaminants would not apply to all material change of use cases. Radon protection would not be required in major alterations or a material change of use to a dwelling, nor in extensions, porches and conservatories of less than 30 m².
- C17. Without reference to revised radon Affected Areas, the current requirements would continue to apply to the previously designated radon Affected Areas – measures could be required that are considered to be no longer appropriate.
- C18. A large part of industry already operates to good practice and experience has shown that undertaking a publicity campaign alone to highlight good practice to those in the industry who are not following such practices is unlikely to have a significant long-lasting effect, given the wide range of aspects covered, i.e. moisture, contaminants, radon, etc. In isolation, such an approach is only effective in helping the committed and the enthusiastic to improve.
- C19. The cost to the Department of a publicity campaign is hard to quantify and is dependent on what form this would take.
- C20. Additionally, a publicity campaign would not achieve the Department's general objective of maintaining technical harmony between the building regulations in Northern Ireland and those elsewhere in the UK, particularly in England and Wales.

- C21. The benefit in adopting Option 2 is that it would facilitate the transition of the Building Regulations to a guidance based system. However, this option would leave the technical requirements unchanged and it would ignore the considerable body of policy and technical guidance that has been produced over the last ten years.

Option 3

- C22. Amend Part C requirements, the supporting technical provisions in Technical Booklet C and provide guidance in Technical Booklet C on demonstrating compliance with the requirements of the regulations.
- C23. This option will bring Part C up-to-date and generally into technical harmony with requirements operational elsewhere in the UK.
- C24. Referencing the revised radon Affected Areas will harmonise the requirements with newly published guidance provided by the Northern Ireland Environment Agency.
- C25. As each site may have its own particular problems requiring an on-site assessment to determine an appropriate solution on site preparation, guidance will be provided in Technical Booklet C. Also, appropriate guidance will be included particularly in relation to proposed brownfield development where the remediation of contaminated land requires a site specific assessment.
- C26. The cost of amending Part C and providing supporting guidance is one that the Department must bear in order to achieve the benefits of the flexibility that such a system will give industry (rather than the rigidity of the deemed-to-satisfy provisions given in the current Technical Booklets).
- C27. This is the preferred option.

AMENDMENT WITH A COST SAVING

Radon protection in new dwellings

- C28. Radon protection measures are already required in dwellings in radon Affected Areas and will continue to be required in new dwellings that will be located in the revised radon Affected Areas identified in 'Radon in Dwellings in Northern Ireland: 2009 Atlas and Review'. As a result of this Review the percentage of Northern Ireland that is designated as a radon Affected Area has decreased. It is estimated that the number of dwellings in radon Affected Areas has decreased to approximately 11% from 28% in the previous Report in 1999.

- C29. For new dwellings, the annual savings associated with the reduced number of dwellings which will need radon protection are given in Table 1 below:

Table 1: Estimated annual <u>saving</u> using radon Affected Areas given in 2009 maps in Northern Ireland		
Item		Source
Average NI house completions for 2001 to 2007	15,186	CLG Live tables on house building 2001 to 2007
Average % of dwellings which are flats or maisonettes	21.0	NHBC data for % of flats and maisonettes
Average NI house completions for 2001 to 2007 excluding flats and maisonettes	11,997	
% of dwellings in radon Affected Areas (1999 maps)	27.8	'Radon in Dwellings in Northern Ireland: Atlas and 1999 Review'
Number of dwellings (excluding flats and maisonettes) constructed per annum in radon Affected Areas (1999 maps)	3,332	
Average additional cost of installing a radon barrier (£)	400	CLG Working Party C
Estimate of current cost pa of radon protection using 1999 maps (£)	1,332,800	
% of dwellings in radon Affected Areas (2009 maps)	11.1	'Radon in Dwellings in Northern Ireland: 2009 Atlas and Review'
Number of dwellings (excluding flats and maisonettes) constructed per annum in radon Affected Areas (2009 maps)	1,328	
Estimate of future cost pa of radon protection using 2009 maps (£)	531,200	
Estimated annual <u>saving</u> on current costs (£ rounded)	802,000	

AMENDMENTS WITH LITTLE OR NO COST IMPACT

- C30. This section summarises all of the proposed changes which it is felt should have little or no cost impact, primarily because they are bringing the Building Regulations supporting guidance into line with current practice or other policy.

Clearance or treatment of unsuitable material

- C31. This guidance is concerned with removal of unsuitable material such as vegetable matter, existing foundations and other sub-surface obstacles. It is felt that the guidance reflects current practice. As such, there should be little or no cost implications. Where this is not the case, there are likely to be some benefits arising from avoiding expensive remedial works should problems arise.

Resistance to contaminants

- C32. The remediation of contaminated land is primarily a planning matter. There are requirements in environmental legislation for sites affected by contamination that require most changes of use and converted buildings to incorporate remedial measures to deal with contaminants. Builders and developers should already be adopting the principles of risk assessment and remediation when managing land contamination.
- C33. If contamination is not adequately addressed when a site is developed, expensive remedial works may be required. Option 3 will provide guidance to ensure that builders, developers and other construction professionals can identify if the site is likely to be affected by contaminants. Any residual risk of sites being developed without proper attention being paid to contaminants should be minimised. There should therefore be no additional cost implications.
- C34. In addition, the current Building Regulation C2(1)(b) requires measures to be taken to prevent the harmful effects on buildings and their occupants from dangerous or harmful substances. It is proposed that revised Regulation C2(1)(b) (Resistance to contaminants) shall apply in future in all material change of use cases. Again, there should therefore be no additional cost implications.

Resistance to moisture

- C35. In respect of moisture, the new guidance on driving rain will clarify the protective measures that are required to deal with possible future problems which could arise from climate change. The proposed changes will bring Part C into line with British Standards and other guidance, and thereby eliminate inconsistencies.
- C36. There are further non-tangible benefits such as greater confidence that issues such as the risk of dampness from increased winter rainfall have been considered in the building design.
- C37. Although there are a large number of proposed changes to the guidance in respect of resistance to moisture, most of them bring Technical Booklet C into line with European and British Standards as appropriate. In addition, many of the proposed changes match the technical requirements of home warranty schemes, for example, those operated by the NHBC (National House Building Council) and Premier Guarantee.
- C38. The guidance is normal good practice and as such it should have no cost implications.
- C39. The benefit of following this guidance is a reduced risk of dampness in the building and avoidance of the possible consequential respiratory health problems associated with mould growth.

AMENDMENTS WITH A COST IMPACT

Resistance to radon requirement in

- an extension (up to 30 m²) to a dwelling
- a material change of use
- the construction of a conservatory (up to 30 m²) to a dwelling

- C40. Radon protection is currently required in all domestic extensions of 30 m² or greater, but not where a dwelling is created by a material change of use, nor in a domestic conservatory with an area not exceeding 30m².
- C41. It is proposed that radon protection will be required in all dwelling extensions, dwellings created by a material change of use and in all conservatories attached to dwellings where the dwelling or conservatory is located in a designated radon Affected Area.
- C42. If the proposal is not implemented, radon protective measures may not be installed when small extensions or conversion work takes place. If it is subsequently established that the radon concentration in the extension or conversion exceeds the Action Level then the householder may have to undertake expensive remedial measures (usually a sump, ducts and extract fan). This would be more expensive than installing radon protection when construction was taking place, particularly when in an extension or a conservatory, installation of a gas tight membrane may provide sufficient protection. Costs for a sump etc. are typically £750-£1,000 (remedial measures) whereas a membrane may cost £200 for a typical domestic extension. One of the benefits of the proposal therefore is the potential costs avoided at a later stage by installing protective measures during construction.
- C43. In a material change of use, it is estimated that such a proposal could ultimately save roughly 1 life every 7 years in Northern Ireland but this would not be realised for a considerable number of years given that the risks from radon are assessed over an individual's lifetime, nominally 70 years.
- C44. In extensions and conservatories, lives may also be saved but it has not been possible to quantify this as only the extension or conservatory would be protected whereas the original dwelling may well be unprotected having been constructed prior to regulations for radon protection being introduced in 1994.
- C45. For change of use to dwellings, the additional annual costs associated with providing radon protection are given in Table 2.
- C46. For extensions (up to 30 m²) to dwellings, the additional annual costs associated with providing radon protection are given in Table 3.
- C47. For conservatories (up to 30 m²) to dwellings, the additional annual costs associated with providing radon protection are given in Table 4.

Table 2: Estimated additional annual cost for radon protection in a material change of use to a dwelling in Northern Ireland		
Item		Source
Additional annual cost (£) in E&W at Jan 2002 prices	405,000	E&W RIA* 2004 (paragraph D7)
Cost index for the period Jan 2002 to May 2010 including NI locational factor	0.96	BCIS
Additional annual cost (£) in E&W at NI May 2010 prices	387,350	
Average ratio of housing completions in NI to E&W (2001 to 2007)	0.095	CLG 'Live tables' on house building
Ratio of % of homes above the Action Level in NI to E&W	0.791	Calculated from HPA data
Estimated additional annual cost (£ rounded)	29,000	
*The Building (Amendment) Regulations 2004 Regulatory Impact Assessment		

Table 3: Estimated additional annual cost for radon protection in extensions (under 30 sq m) to dwellings in Radon Affected Areas in Northern Ireland		
Item		Source
Estimated floor area (sq m) pa of extensions under 30 sq m in Radon Affected Areas	28,828	Calculated from district council data
Additional average cost (£) of radon protection in a dwelling	400	CLG Working Party for Part C
Ground floor area (sq m) of average dwelling	40	CLG Working Party for Part C
Additional average cost (£/sq m) of radon protection in a dwelling	10	
Estimated additional annual cost (£ rounded)	288,000	

Table 4: Estimated additional annual cost for radon protection in conservatories (under 30 sq m) to dwellings in Radon Affected Areas in Northern Ireland		
Item		Source
Estimate of total floor area (sq m) of conservatories (under 30 sq m) per annum	46,300	UK market research adjusted for NI
Percentage of dwellings in Radon Affected Areas	11.1	'Radon in Dwellings in NI' 2009, NIEA
Estimate of total floor area (sq m) of conservatories (under 30 sq m) per annum in Radon Affected Areas	5,100	Calculated from figures above
Additional average cost (£/sq m) of radon protection in a dwelling	10	CLG Working Party for Part C
Estimated additional annual cost (£ rounded)	51,000	

Compliance Costs

- C48. Option 1 is not viable.
- C49. Option 2 is likely to cost Government some hundreds of thousands of pounds per annum in promotional projects with no long term benefit.
- C50. Option 3 – it is estimated that the annual savings resulting from the proposed amendment to Part C will be as given in Table 5.

Table 5: Summary of estimated annual savings and costs for radon protection to dwellings in Radon Affected Areas in Northern Ireland		
Item	£	Source
Estimated annual saving using Radon Affected Areas given in 2009 maps rather than 1999 maps	- 802,000	Table 1
Estimated costs for material change of use to a dwelling	+ 29,000	Table 2
Estimated costs for extensions under 30 sq m	+ 288,000	Table 3
Estimated costs for conservatories under 30 sq m	+ 51,000	Table 4
Estimated annual <u>saving</u> on current costs (£ rounded)	- 434,000	

Other costs

- C51. Building control, along with the rest of the industry will have to bear the cost of learning the changes brought about by the amended regulations and guidance. The proposed changes to Part C should not require any new skills so it is not anticipated that these cost will be significant.
- C52. There should be no environmental costs.

Business Sectors Affected

- C53. Option 3 imposes some additional burdens on designers, builders, and developers who will have to meet higher standards.
- C54. Following familiarization with the amendments, there should not be any addition to the normal time required by district council staff to assess submissions for building works.
- C55. The Department considers that the proposed amendments to Part C would have no significant effect on competition in any markets as they will apply equally. The majority of the changes are intended to introduce guidance in line with current practice, and as such should not significantly alter the current status quo.

Other Impact Assessments

- C56. The amendment to Part C will apply to all buildings and therefore have an affect on all sectors, businesses, building owners, developers, etc. with no adverse impact on equality of opportunity or the needs of rural customers.
- C57. The proposed changes are unlikely to have an adverse effect on the industry, particularly the building materials sector.

Small Firms Impact Test

- C58. A small firms impact test will be carried out.

Enforcement and Sanctions

- C59. The proposals will be enforced by district councils through the existing mechanisms and sanctions provided through the Building Regulations (Northern Ireland) Order 1979 (as amended).

Summary and Recommendation

- C60. Option 1 is not viable because the regulations and Technical Booklet need to be converted to a guidance based system.
- C61. Option 2 imposes some costs on Government, but provides no long term benefits. The Regulations and Technical Booklet C would remain out-dated and not in technical harmony with the requirements and guidance elsewhere in the UK.
- C62. Option 3 will provide up-to-date regulations and guidance broadly in technical harmony with building regulations in the UK.

The net total annual **saving** on current costs is estimated to be approximately £434k.

- C63. On the basis of the assessments presented in this paper, the Department's recommendation is Option 3 – to amend Part C of the Building Regulations (Northern Ireland) 2000 and to provide the updated guidance in a new Technical Booklet C.

Part G: Sound insulation of dwellings, and Technical Booklet G & G1

Purpose and Intended Effect of Measure

Scope

- G1. This Regulatory Impact Assessment (RIA) addresses the proposals to amend Part G “Sound insulation of dwellings” of the Building Regulations (Northern Ireland) 2000, and Technical Booklet G that are deemed significant: -
- the amendment of Part G “Resistance to the passage of sound”, so that new requirements in G1 to G6 extend the scope of the current regulations;
 - revised standards in Technical Booklet G that would be expected to be achieved to satisfy the Part G requirements; and
 - the inclusion in Technical Booklet G of guidance to support alternative ways of meeting the requirements of the regulations.

Objective

- G2. A key objective is that the Building Regulations and Technical Booklets are updated to ensure that they are in line with current guidance and practice and generally in technical harmony with requirements which apply elsewhere in the UK, particularly in England and Wales.
- G3. The proposed amendments have an overall objective of securing reasonable standards of health, safety and welfare for persons in or about buildings in respect of resistance to the passage of sound, without imposing disproportionate bureaucracy and costs on builders or developers or on district councils whose role it is to enforce the building regulations.
- G4. There have been considerable changes in living standards since the previous amendment in 1994. Lifestyles have changed dramatically and occupants are now less tolerant of noise generated within their own household or by their neighbours. In recent years there has been an increased use of home entertainment / cinema systems (with increased power output at low frequencies) and other domestic electrical appliances, and a consequential increase in the amount of noise that people are likely to make at home. The trend towards home working, reduced contact with neighbours and rising expectations means that people are less tolerant of noise disturbance from their neighbours while incongruously they are likely to be making more noise themselves.
- G5. Improved thermal standards have resulted in better insulated external walls and consequently, improved noise insulation from external sources. As a result occupants have become more aware and sensitive to loud music, television and

conversation between rooms within their own home and also from adjoining homes.

- G6. As land values increased in recent years, developers have been building to higher densities and have been building more apartments. This closer living environment has also raised the profile of the level of noise transmission between adjoining homes.
- G7. Any noise generated within or between dwellings can affect the health of occupants and cause psychological and physiological affects such as depression. Research studies (BRE Building Regulation and Health) have shown the correlation between noise and health problems. Noise can be a nuisance to those living or sleeping, not only in domestic but also in non-domestic buildings. Services such as mechanical plant and lifts, where they are located adjacent to dwellings and sleeping accommodation, in residential buildings have also generated many complaints. However, quantifying the risks attributable to exposure to environmental and neighbour noise is very difficult.
- G8. The proposals are to improve the standard of sound insulation from adjacent homes and to introduce sound insulation within buildings for the first time. Without these improvements the effects of noise on the well-being of the occupants is likely to become more apparent in future years.
- G9. In England and Wales a review of the comparable noise standard resulted in higher standards coming into force in 2003 and for the first time all separating walls and floors requiring a sound test prior to occupation. This review has shown that complaints relating to general domestic activities in dwellings to which these regulations apply are minimal.

Background

- G10. The Building Regulations for Northern Ireland apply to most building work. Currently the Department sets mainly functional requirements and gives provisions which, if followed, will satisfy (deemed-to-satisfy) the requirements of the regulations. The deemed-to-satisfy provisions for Part G are given in Technical Booklet G “Sound” 1990 and Technical Booklet G1 “Sound (conversions)” 1990.
- G11. Current standards of sound insulation in dwellings can be traced back to surveys carried out in the 1950s which indicated that 225mm thick solid brick walls and solid concrete floors provided reasonable standards of sound insulation at that time. Values derived from the performance of these constructions became the basis for selecting constructions for the building regulations in the UK in the 1980s and 90s.
- G12. The Department is taking the opportunity to uplift the technical requirements which will bring Northern Ireland into technical harmony with England and Wales. This is the first time in twenty years that a major review of the building regulations for sound has been carried out. Over this time period, lifestyle has changed and people’s expectations have risen, which has resulted in an increase in noise complaints.

- G13. The Department has received Ministerial approval to prepare an amendment to Part G and to Technical Booklets G & G1 which will bring the Building Regulations and supporting guidance broadly into technical harmony with the rest of the UK. This will result in a revised Part G: Resistance to the passage of sound, and a new Technical Booklet which will provide guidance on meeting the requirements of the revised regulations.

Risk Assessment

- G14. There are a number of adverse effects that may result from exposure to noise in dwellings and rooms used for residential purposes. These include:
- annoyance;
 - disturbance of rest and sleep;
 - psychophysiological effects;
 - interference with speech communication;
 - mental-health effects;
 - performance effects;
 - high blood pressure;
 - stress;
 - impediment to learning in young children;
 - pre-term birth in pregnant women;
 - effects on residential behavior; and
 - interference with intended activities.
- G15. Many householders attribute noise problems to poor building design. There is also a belief that there is a lack of compliance with current Building Regulations and that this lack of compliance results in complaints about poor sound insulation. However, in many instances it has been found that existing standards are being attained. This evidence supports the need to raise standards of sound insulation. For all the reasons already referred to, including improvements in living standards, changes in lifestyles, rising expectations, and current housing policy, it is considered that to continue with the current Regulations and Technical Booklet is unsustainable.

Options

- G16. There are three options that will be examined in this RIA –
- Option 1 – do nothing
- Option 2 – information and education
- Option 3 – amend Part G of the Building Regulations.

Option 1 – Do Nothing

- G17. There is a high risk of no improvement and business as usual. There would be continued disturbance from neighbours and everyday domestic activities within the home and continued complaints. There is indicative evidence that occupants feel that the building industry should be providing them with a home that gives them enough peace to live a normal life, but at the moment, for a number of people, this is not happening.

Option 2 – Information and Education

- G18. The Department for Communities and Local Government and its predecessor Departments have supported the development of good practice guidance in this field for many years with limited effect. Voluntary guidance may only be applied to a small proportion of houses, as a result of the extra costs involved. This will probably be limited to those developers and procurers of buildings that acknowledge that there is room for improvement in current noise standards and be ignored by those who will continue to develop to the “minimum” standards.

Option 3 – Amend Part G of the Building Regulations

- G19. With the proposed improved mandatory standards this option should reduce noise complaints generated by neighbours. However there will be an increase in the costs of construction which is likely to be passed on to the buyer due to: -
- cost of materials and labour;
 - increased time spent during the construction stage and completion stage by the house builder due to the better quality of build;
 - increased time/cost of carrying out a sound test on site (optional);
 - increased monitoring by Building Control ensuring pre-completion tests and/or notification of use of “robust details” have been submitted; or
 - any increase in cost where remedial works are required.

Costs

Option 1 – Do Nothing

- G20. This option would do nothing to stem the tide of noise problems, indeed changes in lifestyle and expectation would cause noise related problems to increase.
- G21. In Northern Ireland the cost of working days lost to mental ill health may be as much as £125 million. (*The Northern Ireland Association for Mental Health in conjunction with the Sainsbury Centre for Mental Health 2003 Counting the Cost : The economic and social costs of mental illness in Northern Ireland*) When the equivalent Part of the building regulations was amended in E&W it was assumed that noise induced stress could contribute 0.75% to the cost of working days lost to mental ill health. Taking a similar assumption for Northern Ireland, the cost to the Northern Ireland economy could be £937,500.

Option 2 – Information and Education

- G22. The introduction of a voluntary code would have limited effect as it would be left to market forces to determine whether to improve sound insulation. E&W assumed that any improvement brought about by increased awareness was able to reduce the costs to the Health Service noted in Option 1 by 15%. Taking a similar assumption for Northern Ireland, there would still be a cost to the Northern Ireland economy of £796,875.

Option 3 – Amend Part G of the Building Regulations

- G23. In Northern Ireland the average build rate for domestic dwellings (prior to the current industry downturn) is approximately 15,500 units per annum (see Appendix Table 2). This further breaks down by house type as follows, (see Appendix table 3)

Detached	31%
Semi Detached	28%
Terraced	20%
Flats and Maisonettes	21%

- G24. Table 1 in the appendix shows an additional annual building cost of these proposals to the economy in Northern Ireland of £9,454,400 with further breakdowns of cost per dwelling type and annual costs per dwelling type.

Other Costs

- G25. Building control, along with the rest of the industry, will have to bear the cost of learning the changes brought about by the amended regulations and guidance. As a result of the proposed amendments to Part G there will be administrative costs associated with requiring or undertaking pre-completion sound testing, or, where a robust details option is adopted there will be a cost of approximately £35 per dwelling. If all applicable dwellings (90%) adopted the later route to demonstrate compliance the annual cost would be in the region of £488,250.

There should be no environmental costs.

Benefits

Option 1 – Do Nothing

- G26. There are no benefits associated with this option.

Option 2 – Information and Education

- G27. Although adopting this option could potentially reduce the costs noted in Option 1 (on a pro-rata basis to the figure identified in England & Wales, this would equate to £140,625) it is unlikely that these benefits could be sustained.

Option 3 – Amend Part G of the Building Regulations

- G28. It has been suggested that in England and Wales in the “BRE Building Regulations and Health Report” that there are between one and ten deaths per year in the UK (these being suicides or as a result of assaults) attributed to noise from neighbours. This would equate to up to 2 deaths every 10 years in Northern Ireland (calculated on a pro rata housing stock basis). On the basis that each life would cost £1.3m the saving would be £260,000 annually.
- G29. The number of less severe problems attributed to noise (such as stress, migraines, etc.), based on the figures in the BRE Report, is estimated to be about 3100 per year calculated on a similar pro rata basis. E&W assumed that changes to the building regulations might prevent 20% of these cases taking 5 days off work over the course of a year. Taking a similar assumption for Northern Ireland, with, say, an average salary of £20K and a cost to the NHS of £500 per case, the resulting benefit would be of the order of £620,000.
- G30. Again on similar assumptions, if the amendment prevented 15% of cases affected by noise through stress etc making complaints to Environmental Health or to the police (with each complaint costing an average of £250 to process) the saving would be £116,250 for one year.
- G31. This would give a total yearly benefit of £996,250.
- G32. The World Health Organisation advocates that cost benefit analysis should only be applied with caution in the noise field and that it should never be used as the sole and overriding arbiter of decisions. They also state that there is a tendency to over estimate the cost of control action and under estimate the benefits due to the subjective nature of noise. Therefore the extent to which it is reasonable to attempts to quantify the benefits of option 3 is debatable.

Business Sectors Affected

- G33. Option 3 imposes some additional burdens on designers, builders, and developers who will have to meet higher standards.
- G34. Following familiarization with the amendments, there should not be any addition to the normal time required by district council staff to assess submissions for building works.
- G35. The Department considers that the proposed amendments to Part G would have no significant effect on competition in any markets.

Other Impact Assessments

- G36. The amendment to Part G will apply to all domestic buildings and therefore have an affect on all sectors, businesses, building owners, developers, etc. with no adverse impact on equality of opportunity or the needs of rural customers.
- G37. The proposed changes are unlikely to have an adverse effect on the industry, particularly the building materials sector.

Small Firms Impact Test

G38. A small firms impact test will be carried out.

Enforcement and Sanctions

G39. The proposals will be enforced by District Councils through the existing mechanisms and sanctions provided through the Building Regulations (Northern Ireland) Order 1979 (as amended).

SUMMARY AND RECOMMENDATION

G40. Option 1 is not viable because the regulations and Technical Booklet need to be converted to a guidance based system.

G41. Option 2 imposes some costs on Government, but provides no long term benefits. The Regulations and Technical Booklet G would remain out-dated and not in technical harmony with the requirements and guidance elsewhere in the UK.

G42. Option 3 will provide up-to-date regulations and guidance broadly in technical harmony with building regulations in the UK.

G43. The net total cost per annum is estimated to be approximately £8,946,400. (additional annual building costs in N Ireland (para. G24 + G25) less benefits (para G31).

G44. On the basis of the assessments presented in this paper, the Department's recommendation is Option 3 – to amend Part G of the Building Regulations (Northern Ireland) 2000 and to provide updated guidance and standards in a new Technical Booklet G.

G Appendix

Table 1 Costs by Dwelling Type

Typical Additional Building costs	House Type									Rooms for Residential Purposes
	Detached		Semi Detached		Terraced Town House		Flats & Maisonettes			
	Cost per dwelling	Cost to Province per annum	Cost per dwelling	Cost to Province per annum	Cost per dwelling	Cost to Province per annum	Cost per dwelling	Cost to Province per annum	Cost per dwelling	Cost to Northern Ireland per annum
Walls	£8	£38,914	£101	£444,578	£101	£308,590				* This assumes 5% of the total cost of flats as there are no figures available upon which to base an estimate
Floors	£172	£826,916	£172	£755,783	£223	£678,897	£1,517	£4,942,665		
Reverberation							£354.01	£1,153,288.59		
Total costs		£865,829		£1,200,362		£987,487		£6,095,954		* £304,798
Addition Annual Building costs in N Ireland										£9,454,400
Robust Details cost assuming 90% adopted this route										£488,250
Total Additional Building costs in N Ireland										£9,942,650

Table 2 Total average Build by quarter

House Build Starts in Northern Ireland by Quarter ¹							
Year	Quarter 1	Quarter 2	Quarter 3	Quarter 4	Total	Adjusted Total ²	
2005	4,090	4,610	3,900	4,460	17060	16060	
2006	4,440	5,000	3,890	4,640	17970	16970	
2007 ³	4,270	3,690	3,490	3,060	14510	13510	
					Average	16513	15513

1 www.communities.gov.uk/housing/housingresearch/housingstatistics/housingstatisticsby/housebuilding/livetables/

2 Statistics adjusted to exclude average social housing figures as these are built to code 3 of the code for sustainable homes standard and as such should already meet the new standards

3. 2007 is the last year in which the “normal” annual rate of construction occurred

Table 3 House Types Built				
NHBC Percentage of House Types by Year ¹				
Year	Detached	Semi Detached	Terraced	Flats and Maisonettes
2005	34%	29%	22%	15%
2006	31%	30%	20%	19%
2007	28%	26%	17%	29%
Average	31%	28%	20%	21%

1 Source NHBC Published Statistics

Table 4 Building Costs

Building Costs by House Type				
	Detached	Semi Detached	Terraced Town House	Flats & Maisonettes
WALLS	£8	£101	£101	£0.00
FLOORS	£172	£172	£223	£1,517
REVERB				£354
TOTAL	£180	£273	£324	£1,871