EXPLANATORY MEMORANDUM TO

THE BUILDING AND APPROVED INSPECTORS (AMENDMENT) REGULATIONS 2009

2009 No. 1219

1. This explanatory memorandum has been prepared by the Department for Communities and Local Government and is laid before Parliament by Command of Her Majesty.

This memorandum contains information for the Joint Committee on Statutory Instruments.

2. Purpose of the instrument

2.1 This instrument concerns the provisions of the Building Regulations 2000 ("the Building Regulations") and the Building (Approved Inspectors) Regulations 2000 ("the Approved Inspectors Regulations") dealing with water. The main purposes of this instrument are to introduce a minimum water efficiency requirement for new homes, to introduce a maximum temperature requirement for water delivered to baths in new homes, to clarify and extend the provisions for the supply of water of suitable quality for hygienic purposes, and to strengthen the provisions for the safety of hot water systems. Detailed changes are also made to requirements for demonstrating compliance.

3. Matters of special interest to the Joint Committee on Statutory Instruments

3.1 None.

4. Legislative Context

- 4.1 The Building Act 1984 enables building regulations to be made for England and Wales with respect to the design and construction of buildings and the services, fittings and equipment provided in or in connection with buildings for a number of purposes. These purposes include securing the health, safety, welfare and convenience of persons in and about buildings, preventing waste, undue consumption, misuse or contamination of water, furthering the protection or enhancement of the environment, and facilitating sustainable development.
- 4.2 The Building Regulations and the Approved Inspectors Regulations have been made pursuant to these powers. The Building Regulations establish general functional requirements for buildings when constructed, and are supported by Approved Documents, which set out detailed practical statutory guidance on compliance. The Building Regulations also set out procedures for the control of building work by local authorities. The Approved Inspectors Regulations, in conjunction with Part 2 of the Building Act 1984, make provision for a private sector building control system as an alternative to that offered by local authorities.
- 4.3 The amendments in this instrument extend the provision for the supply of cold and hot water of appropriate quality along with suitable fittings for the purposes of personal and food hygiene in all buildings, in order to ensure that these meet appropriate standards. The amendments also strengthen requirements relating to the safety of hot water systems, and are designed among other things to prevent the recurrence of certain fatal incidents that have occurred in the recent past. A new safety requirement limits the

maximum temperature of water that can be delivered to baths in new dwellings. This instrument also introduces a minimum water efficiency requirement for new dwellings in order to contribute to the protection of the environment and to sustainable development of new housing.

5. Territorial Extent and Application

5.1 This instrument applies to England and Wales.

6. European Convention on Human Rights

6.1 As the instrument is subject to negative resolution procedure and does not amend primary legislation, no statement is required.

7. Policy background

• What is being done and why

The principal functional requirements of the Building Regulations 2000 are contained in Schedule 1, which is divided into Parts covering specific topics. Part G deals with water. Part G of the Building Regulations and the accompanying guidance on those requirements in Approved Document G have been in place with no significant revision since earlier regulations were made in 1992. The amendments made in this instrument and in the revised Approved Document in draft form that accompanies it cover three main areas. These are: the revision of the existing requirements and guidance; the introduction of a water efficiency standard for new homes; and the introduction of a requirement for baths in new dwellings (including those formed by a material change of use consisting of the conversion of a non-domestic building or the provision of a flat in a building) to be fitted with a thermostatic mixing valve (TMV) to limit the temperature of hot water delivered to them. The principal legislative provisions for these requirements are set out in regulation 2(9), introducing the minimum water efficiency requirement as regulation 17K of the Building Regulations, and in regulation 2(14) and the Schedule to this instrument which substitute Part G of Schedule 1 to the Building Regulations.

Requirement G1 Cold water supply

7.2 The Building Regulations already require a suitable installation for the supply of cold water to baths, showers and washbasins in all buildings. The new requirement G1 extends this to places where drinking water is drawn off, to sinks in food preparation areas and to bidets. It also specifies that such water must be wholesome within the meaning of that term as used in water legislation in relation to the supply of water for such purposes. Extending the requirement does no more than reflect obvious good practice and the requirement for wholesome supply does no more than make explicit what is required already if an installation is to be suitable. Aspects of these requirements are already covered in existing legislation, though only partially. So, for example, the Workplace (Health, Safety and Welfare) Regulations 1992, require a supply of wholesome water for drinking in workplaces, and the Building Act 1984 requires the supply of wholesome water to houses. Therefore requirement G1(1) essentially formalises good practice and brings certain current requirements in other pieces of legislation within the Building Regulations also. This will ensure that the Building Regulations reflect existing good practice and also make clear the full scope of current legislative requirements. In addition, and to encourage the more efficient use of wholesome water, G1(2) distinguishes the requirement for supply of water to WCs and

urinals fitted with flushing devices by describing it as 'water of suitable quality'. This means that the water in question need not be wholesome, so that recycled water or harvested rainwater may be acceptable.

Requirement G2 (Water Efficiency) and new Building Regulations regulation 17K

7.3 Requirement G2 is complementary to the provision in regulation 2(9) of this instrument (inserting new regulation 17K into the Building Regulations). New regulation 17K, requires that new dwellings, including those created by a material change of use consisting of the conversion of a non-domestic building or the provision of a flat in a building, should comply with a minimum water efficiency requirement, expressed as a potential consumption of wholesome water of no more than 125 litres per person per day. This figure is to be calculated in accordance with the methodology in the "Water Efficiency Calculator for New Dwellings", approved by the Secretary of State, which is published alongside this instrument and the new draft Approved Document giving guidance on the provisions of the substituted Part G generally. This provision seeks to contribute to improving water efficiency in the residential sector by requiring that the design of new dwellings and their fittings will be such as to lead to a lower average water usage given the increasing demands on water supplies from growing domestic consumption. The current average consumption of water is estimated at approximately 150 litres per person per day, however, by requiring housing developers to install more efficient fittings, for example, toilets, showers and taps, in their new properties, it is estimated that the water usage of a new dwelling could be reduced to 125 litres per person per day. It is hoped to achieve that reduction by the introduction of the minimum water efficiency requirement in regulation 17K and the application of the approved methodology, which uses the flow-rates of the water fittings installed and a number of standardised assumptions about their use and the use of water-using appliances to arrive at the figure for potential water use per person per day.

New requirement G2 applies to the same new dwellings as regulation 17K, which it complements by requiring reasonable provision to be made to prevent the undue consumption of water by the installation of fittings and fixed appliances that use water efficiently.

Requirement G3 (hot water supply and systems)

7.4 This extends the current provision in G3 in a number of ways. Requirement G3(1) operates in respect of hot water supply similarly to G1(1) in respect of cold water. expanding and making explicit the supply requirements of the existing Part G3 in order to ensure that the Building Regulations reflect existing good practice and also make clear the full scope of current legislative requirements. Requirement G3(2) amplifies existing provision for hot water safety. It newly specifies that hot water systems should be able to resist the effects of temperature and pressure during normal operation and in the event of such malfunction as may reasonably be anticipated, and be adequately supported. This is partly in response to two fatal incidents in recent years, where the discharge from the vent pipe from a hot water storage vessel heated the cold water in a cistern to such a high temperature that the cistern failed and a large volume of scalding water was discharged through the ceiling below it into the living accommodation below. In both cases a contributory factor was the inadequate support provided when the cistern had been changed. Requirement G3(3) also extends these hot water safety requirements to vented as well as unvented hot water systems. Entirely new is the requirement in G3(4) that the hot water supply to a bath should be so designed and installed as to limit the temperature of the water delivered to it to no more than 48°C. This requirement applies to baths in new dwellings (including those formed by a material change of use

consisting of the conversion of a non-domestic building or the provision of a flat in a building). It means in effect that a thermostatic mixing valve (TMV) must be fitted on the water supply to the baths concerned.

Requirement G4 (sanitary conveniences and washing facilities)

7.5 This is an update of the existing Part G requirement, which it largely reproduces, and covers the scale of provision and layout of sanitary conveniences in dwellings and in non-domestic buildings and the associated requirements for hand washing facilities. The guidance in Approved Document G has been updated and clarified, and should aid compliance with this requirement for designers, architects and building control bodies.

Requirement G5 (bathrooms)

7.6 This carries forward the existing requirement for the provision of a bathroom in a dwelling. The main change is that it now applies to buildings containing one or more rooms for residential purposes, which includes accommodation in hotels, hostels and residential homes, though not patient accommodation in hospitals and similar establishments, as well as to dwellings. Another new element is to include a requirement for a washbasin as well as a fixed bath or shower. Both these requirements though do no more than correspond to existing good practice.

Requirement G6 (kitchens and food preparation areas)

7.7 This is a new provision that requires a sink to be provided in a food preparation area. In reality it does no more than correspond to existing good practice.

Other provisions

Regulation 2 of this instrument contains the amendments to the Building Regulations, and regulation 3 those to the Approved Inspectors Regulations. Apart from giving effect to the provisions explained elsewhere in this memorandum, they deal mainly with the necessary provision to ensure building control body supervision and procedures to show compliance. There are also a number of amendments to the Building Regulations to update their wording to reflect the revised wording in the substituted Part G. Other new provision partially extends Part G to certain small buildings and extensions that are otherwise exempt from the Building Regulations but that share their water supply with a building that is covered by the Regulations. Thus any cold water supply to them must comply with wholesomeness provisions, and any hot water system must comply with the safety provisions for such systems. Amendments are also made to the schedule of building work that is wholly exempt from requirements to notify building control bodies, to include in it the replacement of any part of, or the addition of an output or control device to, an existing cold water supply, and the provision of a hot water storage system of up to 15 litres capacity.

Transitional provisions

7.9 Regulations 4 to 8 of this instrument set out transitional provisions that will apply when it comes into force. They set out how building work already commenced, will be governed by existing provisions. This will also be the case for work for which is the subject of an existing contract, and for which building notices of different descriptions have been given and approved, provided that the work is commenced before later specified dates.

• Consolidation

7.10 This statutory instrument amends the Building Regulations 2000 and the Building (Approved Inspectors) Regulations 2000. The Department intends to make a consolidated text of both available on the Planning Portal website before this instrument comes into force in order to assist dutyholders understand the cumulative effect of the Regulations and their subsequent amendments, though the consolidated versions will not have formal status for the purpose of compliance.

8. Consultation outcome

8.1 The Department issued a consultation document on changes to Part G on 13 May 2008. It sought views on proposals to update the existing Regulations and the associated Approved Document. The consultation closed on 5 August 2008 and 127 responses were received in total. A summary of the results of the public consultation exercise is available on the Department's website¹. In broad terms, the great majority of the proposed amendments were welcomed by respondents with a large number receiving very high levels of agreement. A summary of the responses on each of the requirements is set out below. The water efficiency requirement was the subject of separate consultation in late 2006 which is described below in relation to requirement G2 and new Building Regulations regulation 17K.

Requirement G1 Cold water supply

8.2 Given that the new requirement essentially brings together and makes explicit within the Building Regulations what is already required in the Building Regulations and elsewhere or represents existing good practice in relation to the supply of wholesome water to buildings, this proved a relatively uncontentious provision. On the general question as to whether this would be beneficial and impose no additional costs, seven of the 127 respondents answered "no". As none of these respondents chose to elaborate on their answer it is unclear why they felt this way. However, consultation did show that there was some concern with regard to the guidance in the Approved Document on appropriate uses for non-wholesome water. In particular, almost half the responses indicated that there was insufficient detail on risk assessment, testing and specification in relation to treatment systems for greywater (recycled water). In order to address these concerns the guidance has now been expanded and contains further sources of reference on the technical and economic feasibility and the specification of such systems in relation to water quality standards and, most importantly, points to the newly developed British Standard Code of Practice on their installation (which was not available at the time of consultation).

Requirement G2 (Water Efficiency) and new Building Regulations regulation 17K

8.3 Unlike the other provisions in this instrument, the principal consultation on introducing a requirement for water efficiency in new dwellings was conducted in an earlier joint consultation the department undertook with Defra titled *Water Efficiency in New Buildings*, issued in December 2006 and closing on 9th March 2007. An analysis of the consultation responses was published in June 2007² and a joint statement with Defra was published in July 2007 which indicated the Government's intention to introduce, through the Building Regulations, a minimum water efficiency standard of a consumption of 125 litres per person per day for all new dwellings.

¹ http://www.communities.gov.uk/publications/planningandbuilding/partgconsultsummary.

² http://www.communities.gov.uk/publications/corporate/analysis-consultation-responses

- 8.4 Respondents were almost without exception in favour of setting standards for water efficiency. However, there was a general feeling that as well as a whole building performance standard for new dwellings (as delivered by this instrument) there needed to be standards governing the water consumption of individual water fittings. Defra are the responsible department for the Water Supply (Water fittings) Regulations 1999, which govern such fittings, and they intend to consult later this year on proposals to revise those Regulations with a view to setting new performance standards for key fittings such as taps and flushing mechanisms.
- 8.5 The consultation also invited views as to the level at which the water efficiency standard should be set (within a range of 120 to 135 litres per person per day). Just over 40% favoured a limit set at 120 litres. However, there was some concern that setting a limit at that level could prove too challenging for developers using available water fittings. In addition, some of the support for a figure of 120 litres was apparently based on the misunderstanding that this would be the same as the current voluntary Code level 1 standard for water efficiency contained in the Code for Sustainable Homes. This is the starting level in the Code for Sustainable Homes, which provides for more stringent voluntary standards at higher Code levels. In fact, the Building Regulations standard will include an additional 5 litres per person per day element to account for external water usage, meaning that a figure equivalent to Code level 1 would actually be 125 litres per person per day. It is accordingly at this level that Government has decided to set the Building Regulations standard in the new Building Regulations 2000 regulation 17K introduced by this instrument. This provides consistency with the standard at the starting level in the Code for Sustainable Homes, and ensures at the same time that significant water savings can be delivered using currently available water fittings. Requirement G2 is complementary to this in requiring that reasonable provision be made for the prevention of undue consumption of water by the installation of fittings and fixed appliances that use water efficiently.

Requirement G3 (hot water supply and systems)

- 8.6 There was no significant opposition to the proposal to update G3(1) to bring together and make explicit current regulatory requirements and to reflect existing good practice by requiring the supply of heated wholesome water to all personal washing facilities and food preparation areas. Similarly there was no significant opposition to what was proposed in Requirement G3(2) in relation to measures to resist the effects of temperature and pressure in normal use or in the event of malfunctions that may reasonably be anticipated. However, in the light of the responses to the consultation it has also been specified in G3(2), given the contributory role played in recent fatalities by inadequate support of water cisterns, that there must be adequate support for any cistern or vessel that supplies water to or receives expansion water from a hot water system.
- 8.7 The provision, in G3(3), that brings control of vented, as well as unvented, hot water systems within the Building Regulations was supported by a substantial majority of respondents. However, there was some concern regarding the removal of the words "shall be installed by a person competent to do so" from the requirement in the Regulations relating to the installation of unvented hot water storage systems. This led a number of trade organisations to suggest that the proposal potentially reduces safety standards for the installation of such systems. In practice however, this installation work is nowadays carried out in the great majority of cases by members of self-certification schemes approved in the Building Regulations as competent to carry out this work without it being notified to a building control body, or by someone holding a registered operative identity card that shows that person has undergone suitable training for such

work. Installation by a self-certification scheme member is a sufficient safeguard, because that installer will need to have demonstrated competence to the scheme operator before gaining the right to self-certify the installation. Similarly, holders of a registered operative skills certification card will have the necessary skills, but have chosen not to join a self-certification scheme. It will continue to be the case that persons in either of these categories will do most installation work. For work done by those in the latter category, and in any other cases, it will be the responsibility of the building control body to make sure the installation is safe, and the degree of supervision that is required will be apparent to the body from the plans and descriptions that it is given for the work. It is the safety of the installation that is at issue. However, in the light of concerns about how the change will be interpreted, there has been inserted text into the Approved Document that recommends the employment of a person who is able to demonstrate their competence through membership of a competent persons self-certification scheme or by the holding of a current registered operative card for unvented hot water systems.

- 8.8 The consultation paper indicated that the department was minded to require the installation of TMVs to prevent scalding injuries and deaths only if the costed benefits indicated a case to do so. The initial work of cost analysis that had been undertaken for the purposes of the consultation exercise did not support the case for requiring TMVs, but invited input from respondents on this topic. However, following the consultation (and in the light of the replies to the consultation exercise on the costs and benefits of the measure) a revised Impact Assessment was prepared. This now incorporates a fuller consideration of the social costs that could be prevented (as well as the medical costs associated with deaths and injuries) and is based on the approach taken by the Department for Transport when assessing the costs associated with road traffic accidents.
- 8.9 The revised Impact Assessment now shows a clear case to support a requirement to install a TMV on baths in new dwellings (including those formed by a material change of use consisting of the conversion of a non-domestic building or the provision of a flat in a building) with benefits outweighing costs by over two to one.
- 8.10 In relation to the principle of controlling water temperature, 91 responses supported a requirement that controlled the temperature at hot water outlets (subject to the further work on costs and benefits proving a case to regulate). Only 10 did not support a requirement for TMVs. Of those 10, six did not expand on why. Where there were comments, one consultancy objected to it as being a "nanny state" measure. One developer worried about the effectiveness of devices given they can be over-ridden (the Approved Document now makes clear that TMVs should not be fitted in such a way as to be easily alterable by building users), and that the measure could lead to increased energy use due to an increased use of hot water, without specifying why this was thought to be the case. The Department does not see a basis for this suggestion. One manufacturer suggested that it might increase risks because "one size fits all solutions very rarely work", and a building control body simply stated that the requirement would be "unenforceable" without elaborating further. Once again, the Department does not see a basis for such a suggestion.

Requirement G4 (sanitary conveniences and washing facilities)

8.11 The Part G4 requirement essentially restates the existing requirements for dwellings and non-domestic buildings, with the addition that it requires hand washing facilities to accompany urinals as well as water closets. As well as this, there was consultation on a change to the guidance in the Approved Document that deals with the provision of sanitary conveniences. The draft guidance in the consultation had pointed out that for workplaces the Workplace (Health, Safety and Welfare) Regulations 1992

would have to be complied with and drew attention to the accompanying Approved Code of Practice (ACOP) accompanying those Regulations that offers guidance on how to comply. The draft guidance also said that toilet provision should be in accordance with BS 6465. This was new and was an attempt to provide greater clarity on provision for a wider variety of buildings.

- 8.12 However, a small number of consultation responses expressed concern that compliance with BS 6465 could have significant cost implications for developers particularly for office development where it may have required a significant increase in the number of toilets over what is currently necessary to comply with the requirements in health and safety legislation. The Department had been unaware of this point when it consulted on the guidance and no estimate was made of the potential cost implications of requiring such an approach. The Department is now aware that because of the concern over the potential over-provision of toilets in offices caused by BS 6465 that standard is currently being reviewed. Also, the scale of provision in different building types that are workplaces is in the first instance a matter for the Health and Safety Executive's ACOP for the Workplace (Health, Safety and Welfare) Regulations 1992.
- 8.13 In the light of these considerations, the guidance in the draft Approved Document now refers simply to the minimum standards set out in that ACOP, whilst mentioning that further guidance on toilet provision is set out in BS 6465 for those who may want to provide something more than the minimum requirement, or who seek guidance in relation to building uses not covered by the ACOP.
- 8.14 Finally, the Department also consulted on whether the existing requirement for cleanability of sanitary appliances and washbasins should be extended to the walls and floors of rooms in which they are situated. There was no great support for this and, more generally, doubt expressed about the value added by a cleanability requirement at all given that appliances are designed to be cleanable, so that and if they are suitable they will be cleanable also. In the light of these responses this entire requirement has been omitted from the statutory instrument.

Requirement G5 (bathrooms)

- 8.15 There was overwhelming support for the slight extension of the existing requirement to provide a bathroom in a dwelling to buildings containing one or more rooms for residential purposes, essentially accommodation in hotels, hostels and residential homes, but not patient accommodation in hospitals and similar establishments, given that it would reflect existing good practice.
- 8.16 The Department also consulted on whether there should be guidance relating to slip resistance in baths and showers. The majority of respondents did not think it would be appropriate for Part G to cover the issue because of the lack of information about the scale of the problem and how it might be addressed. In addition, it was felt that solutions around slip resistance would often be delivered through things that were not part of the building, for example, slip resistant mats. The Department has also, therefore, not included this requirement in this instrument or the Approved Document text.

Requirement G6 (kitchens and food preparation areas)

8.17 As with G5 there was overwhelming support for the requirement to provide a sink in such areas, which again reflects existing good practice.

9. Guidance

9.1 Approved Document G has been published in draft form alongside these changes to the Regulations and is available via the Planning Portal website at www.planningportal.gov.uk. It sets out methods by which the requirements can be met, and following those methods can be relied on as evidence of compliance with the requirements. The Approved Document has been notified to the European Commission in respect of new technical standards that it contains and will be subject to approval by the Secretary of State at the end of the required three month period from that notification. The Approved Document also provides an extensive set of references to other documents that provide additional or more comprehensive, technical detail which it would be impractical to replicate in full or that provide a more general source of information.

10. Impact

- 10.1 The impact on business, charities and voluntary bodies will be first through any one-off training costs associated with them familiarising themselves with the new requirements and through any additional costs of complying with the new requirements themselves. The total one-off training costs were estimated at £1.5 million with most of this cost attributable to businesses. Secondly, the water efficiency and hot water safety measures will impose additional costs on housebuilders of approximately £34 and £30 respectively per dwelling.
- 10.2 The impact on the public sector will fall principally on local authorities as building control bodies. However, beyond initial training and familiarisation there will be no ongoing costs for these bodies. Any additional costs are recoverable through the fees set by local authorities. A programme of one-day training events is being arranged on behalf of this Department at a number of venues around the country, which we envisage will satisfy these training needs (although attendees will have to pay for the course) and other organisations are also likely to offer additional training on the new regime. In addition, the period of over four months between this instrument being made and the provisions coming into force will allow time for local authorities, as well as business, to prepare for the changes.
- 10.3 Three Impact Assessments, dealing with the changes to Part G generally, the water efficiency requirement, and the control of water temperature for baths in new dwellings, are annexed to this memorandum.

11. Regulating small business

- 11.1 The legislation applies to small business.
- 11.2 To minimise the impact of the requirements on firms employing up to 20 people, the approach taken is to provide them, along with other firms, a period of over four months from the laying of the Regulations and publication of the accompanying guidance to its coming into force. Although the Department is not proposing any additional provision for small firms, it believes that this period to familiarise themselves with the new requirements will be particularly beneficial to small firms.
- 11.3 The basis for the final decision on what action to take to assist small business recognised the limited scope there is for making exemptions or putting in place specific measures for smaller businesses given that the Regulations are focused on health and safety and on matters concerning sustainability and the environment. More information

from the Small Firm Impact Test that was carried out is contained in the Impact Assessment dealing with the general changes to Part G.

12. Monitoring & review

- 12.1 The Regulations and associated guidance will have succeeded if they deliver a better, more useable and up to date regime for those matters that are already subject to the Building Regulations. In terms of the new water efficiency measure we are looking to ensure new homes are built in such a way as to deliver a reduced level of water consumption with the average person in those properties using approximately a 125 litres per day. With regard to the fitting of TMVs to baths in new homes, we are seeking to reduce the incidence of scalding incidents occurring due to exposure to water in excess of 48°C .
- 12.2 It is the Department's general practice to monitor how new policy is working within a reasonable timeframe (usually about 3 years after implementation) and we intend to do this for the provisions this statutory instrument introduces However, the Department has an ongoing dialogue with users of the building control system and will monitor informally how the changes are working in practice prior to a more formal evaluation.

13. Contact

13.1 Shayne Coulson at Communities and Local Government, Tel: 020 7944 5711 or email: shayne.coulson@communities.gsi.gov.uk can answer any queries regarding the instrument.

Summary: Intervention & Options					
Department/ Agency: Communities and Local Government Title: Hot Water Safety - Impact Assessment of a revision to Approved Document G to the Building Regulations 2000 (England and Wales)					
Stage: FINAL Version: 1.0 Date: MAY 2009					
Related Publications: Approved	Document G: Sanitation, Hot Water	er Safety and Water Efficiency			
Available to view or download at:					
http://www.communities.gov.uk					
Contact for enquiries: Shayne Coulson Telephone: 020 7944 5711					

What is the problem under consideration? Why is government intervention necessary?

There are health and safety risks arising from excessively hot water delivered at water outlets from sanitary appliances. This continues to cause a number of severe injuries and fatalities each year, despite health awareness campaigns and the ready availability of technologies that can significantly reduce these risks. Some data were available on the benefits of preventing scalds and a public consultation in 2008 sought further information to assist with determining whether a case could be made for introducing a requirement for the use of technologies which would tackle this issue, and under what circumstances such a requirement should exist.

What are the policy objectives and the intended effects?

The policy objectives of such a requirement are to reduce the number of severe injuries and fatalities caused by scalding as a result of hot water from sanitary appliances. The scale of the effect would be determined by the limitations placed on the requirement (i.e. the type of sanitary appliances and buildings) and the extent to which the regulatory requirement could act as a catalyst to increase take-up of thermostatic mixing valves (TMVs) in the existing housing stock through greater public awareness, future reductions in the cost and changes to industry practice.

What policy options have been considered? Please justify any preferred option?

There are concerns about the ongoing effectiveness of awareness campaigns that operate in isolation from other initiatives in reducing the risks. We therefore sought information to help us assess whether a requirement to control hot water temperature through the Building Regulations would be cost effective.

In considering this, we looked at a number of options (described below) both in terms of the types of buildings and the types of sanitary appliances which should be covered. As a result of this analysis, we are introducing a requirement in the Building Regulations on the control of hot water temperature to baths in new dwellings and in the change of use to dwellings; those circumstances where benefits have been estimated to outweigh costs.

When will the policy be reviewed to establish the actual costs and benefits and the achievement of the desired effects?

A formal review will not be undertaken before 2013, however, we will monitor the impact of the measure and explore whether we are able to exploit further opportunities to increase the take-up of TMVs.

Ministerial Sign-off For consultation stage Impact Assessments:
I have read the Impact Assessment and I am satisfied that, given the available evidence, it
represents a reasonable view of the likely costs, benefits and impact of the leading options.
Signed by the responsible Minister:
- Since by the respectation immediate
lain Wright

			Summa	rv. An	alysis &	Evidenc	20		
Poli	cy Opti	on: 3A [Descriptio	n: Introdu	ice a require	ment on th		hot water	
		ANNUAL COS	STS	Description groups'	n and scale of	key monetis	sed costs by '	main affected	
ည		purchase price and installation by a				Installation of TMVs to all baths in new dwellings. This includes purchase price and installation by a plumber. These costs will primarily be borne by house builders. There will also be a cost to			
COSTS		ge Annual Co	st	householders should a TMV unit fail and need replacing.					
	£ 4.7 r					l Cost (PV)	£ 41.1 million	า	
	Other	key non-mon e	etised cost	t s by 'main a	affected groups	S'			
ANNUAL BENEFITS Description and scale of key monetised benefits by 'main affected groups'						oy 'main			
One-off (transition) Yrs We have examined the reduction in scalding incidents including fatalities caused by hot water to baths. Trauma, the long-term									
	£0			emotional problems associated with injury and lost work days and earnings have also been examined. The benefits will be shared between the NHS and the household occupants. Total Benefit (PV) £ 72.4 million					
BENEFITS	Avera (excludin	ge Annual Be ng one-off)	nefit						
	£ 8.3 r	nillion							
The health service and householders may benefit further if the introduction of the requirement also delivered a consequent increased take-up in the existing housing stock. Key assumptions/Sensitivities/Risks Proportion of injuries by appliance; total number of incidents proportional to population; package of care required for each specific injury; proportion of injuries requiring intensive care; household projections and proportion of each type of property to be built; number of bathrooms; cost of TMVs.									
Price	Base 2009	Time Period Years 10		nefit Range illion – £68		NET BENE £ 31.3 milli	FIT (NPV Best e	stimate)	
What	is the g	eographic cov	erage of the	e policy/opti	on?		England and	Wales	
On w	hat date	will the policy	be implem	ented?			October 2009		
Whic	h organi	sation(s) will e	nforce the	policy?			Building Control Bodies		
What	is the to	otal annual cos	t of enforce	ement for th	ese organisation	ons?	£ Nil		
Does	enforce	ment comply v	with Hampton	on principle	s?		Yes		
Will i	mplemei	ntation go bey	ond minimu	ım EU requi	rements?		No		
What	is the v	alue of the pro	posed offse	etting meas	ure per year?		£ N/A		
What	is the v	alue of change	es in greent	nouse gas e	emissions?		£ N/A		
Will t	he propo	osal have a sig	nificant imp	pact on com			No		
	al cost (uding one-	£-£) per organ	isation		Micro	Small	Medium	Large	
Are a	ny of the	ese organisation	ons exempt	:?	No	No	N/A	N/A	
		dmin Burdens						(increase – decrease)	
Incre	ase of £	[Decrease o	f £	Net Impact	£			

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Will implementation as boyand minimum ELL requirements?	5				
Will implementation go beyond minimum EU requirements? No					
What is the value of the proposed offsetting measure per year? £ N/A What is the value of changes in greenhouse gas emissions? £ N/A					
Will the proposal have a significant impact on competition? No					
Are any of these organisations exempt? No No N/A	ledium Large				
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Evidence Base (for summary sheets)

Purpose and intended effect

The objective of these proposals is to reduce the number of deaths and severe injuries caused by scalding by contact with hot water supplied from sanitary fittings in buildings.

This could be done through the introduction of a requirement similar to that already introduced in Scotland (in 2006), which requires the installation of a thermostatic mixing valve (TMV) to limit the temperature of water to 48°C.

This Impact Assessment looks at the balance between the costs of hot water injury and the benefits of preventing these, against the costs of placing a limit on the temperature of water discharged in a range of sanitary appliances. Although Scotland introduced legislation in 2006, at present data are not available for statistical analysis to determine whether there has been a subsequent reduction in scalding incidents. Similarly, reports of TMV installation in other countries e.g. Australia, New Zealand, have also been explored, but no suitable data could be found. Therefore, a risk assessment has been undertaken to estimate the number of scald incidents that could be averted by the introduction of this requirement.

Changes would only apply to installations within new homes and new dwellings created through a change of use. This would not apply to replacement appliances except where TMVs were previously fitted.

Rationale for government intervention

Scalding - serious injury from contact with, or immersion in, very hot water is a risk that exists every day in many buildings, particularly in our homes. The severity of possible injury depends on several factors – the temperature of the water, the period of contact, the extent of contact (spray or immersion) and the age and health of the affected person, with both very young and elderly people being particularly at risk from the effects of very hot water.

Inside buildings water should be stored at a temperature of above 60°C and distributed above 50°C to control legionella bacteria which can be harmful. Formal and legal guidance to the Water Supply (Water Fittings) Regulations 1999, G18.2 states that "hot water should be stored at a temperature of not less than 60°C and distributed at a temperature of not less than 55°C".

Recommendations for appropriate temperature control arrangements at hot water outlets are provided in guidance from the Health & Safety Executive and the NHS (http://www.hse.gov.uk/lau/lacs/79-5.htm) to cover health and social care premises.

At present there are no guidelines or legislation on the temperature of hot water at the point of delivery that cover all types of buildings.

While Part G3 of the Building Regulations 2000 currently requires that people be protected against injury from the discharge of steam or hot water, at present Approved Document G gives only guidance on unvented hot water storage systems and on discharges from overflow pipes. This is being extended in the new Part G. It is also proposed, moreover, that the hazard of excessively hot water from sanitary fittings should also be addressed.

The introduction of a requirement in the Building Regulations for England and Wales, and through associated guidance in the Approved Document, on the control of hot water temperature from sanitary fittings would act to address the hazard of scalding in a proactive manner. This would result in the significant reduction of such injuries in the buildings covered.

In addition, there is the potential for the regulatory provision to act as a catalyst to increase take-up of TMVs in the existing housing stock. The experience of introducing a similar health and safety-related provision on new dwellings (for mains-wired smoke alarms), shows it is

possible to deliver greater protection for the public more generally through increased public awareness, reductions in the costs of units and changes to industry practice³.

Consultation

Within government

The development of these proposals has been conducted by Communities and Local Government in conjunction with the members of the Building Regulations Advisory Committee (BRAC) who are appointed as independent statutory advisors to the Secretary of State. The Part G Technical Working Party (WP) steering the review of Part G includes members of BRAC and representatives from the manufacturing, plumbing and building development sectors. It also includes a number of seconded experts from Communities and Local Government, Defra and the Devolved Administrations.

Public consultation

A consultation document which includes proposed amendments and questions, together with this supporting Impact Assessment, was made available for public consultation. Consultees' responses have been compiled and reviewed. These have been used to inform the final proposals included in this IA. The consultation results are published at: http://www.communities.gov.uk/publications/planningandbuilding/partgconsultsummary.

This action is supported by a number of NHS consultants who also made representations during the earlier public consultation on water efficiency measures in 2006/7 as well as during the public consultation on proposed revisions to the Building Regulations: Part G in 2008. A circular was sent by the British Burn Association to a wide range of stakeholders during the 2006/7 consultation. As a result, 22 responses were received with the following key message: "Every year in the UK around 20 people die and 570 suffer serious scald injuries due to hot bath water. The under fives and the elderly are most at risk. These injuries and deaths are preventable by the installation of thermostatic mixing valves to regulate the maximum hot water temperature to 48 degrees".

More generally, consultation demonstrated that, subject to the cost/benefit analysis proving a case for action, over three-quarters of respondents would wish to see a provision which controlled the temperature at hot water outlets. Of those only 3% did not favour control on baths with almost a half favouring controls on other sanitary fittings.

Risk Assessment- overview

are caused by hot water from bath taps.

Hospital Episode Statistics⁴ show that there were 767 serious scalding injuries caused by contact with hot tap water that led to hospital admissions in England and Wales in 2006-07. In addition, 15 fatalities per year (ONS Mortality statistics, 2003-2005, http://www.statistics.gov.uk/StatBase/Product.asp?vlnk=618) and many more minor injuries, are attributed to hot water from taps (Sambrook, 1999). All fatalities and 93% of severe injuries

Table 1 shows an estimate of the current number of scalds injuries that can be attributed to each sanitary appliance. The total annual treatment cost of scald injuries (including fatalities) currently amounts to £66.5 million. This does not include ongoing treatment or social costs.

(See Annex A for a detailed health impact assessment and analysis of the cost of scald injuries including ongoing treatment and social costs.)

³ Safer Houses: Celebrating 20 years of fire prevention in the home http://www.communities.gov.uk/publications/fire/saferhouses

⁴Source: Hospital Episode Statistics (HES) is a data source containing details of all admissions to NHS hospitals in England. The data for admitted cases is organised in many ways, including by external cause of admission.

Appropriate temperature control

Distribution temperatures in excess of 50°C are ideal for the prevention of microbial growth; however, at these temperatures there is a higher risk of scalding. The risk of scalding depends on both the temperature of the water and the length of contact time with this water: the lower the temperature of the water, the longer an individual can be in contact before they will be scalded. Below a certain temperature threshold there will be no risk from scalding regardless of the length of contact time.

Research by the Industrial Injuries and Medical Research Council⁵ sets out the maximum length of time that an individual can be immersed in water of various temperatures before suffering from partial and full thickness burns. The research indicates that at 55°C it will take only approximately 12 seconds for a partial thickness scald, whilst at 48°C it will take approximately 10 minutes for the same injury to develop.

Following consultation, the BRAC Working Party agreed that, for reasons of safety, the hot water supply temperature to a bath should be limited to a maximum of 48°C. This would offer a reasonable level of protection whilst allowing efficient use of water for topping up a bath, rather than refilling it. To achieve this, TMVs would be required to be manufactured to a tolerance of 46°C plus or minus 2°C. The mean operating temperature would therefore be 46°C. At this temperature, it will take over an hour for partial thickness burns to develop. Even in cases where TMVs operate at the maximum temperature of 48°C, the risk will be significantly reduced.

Table 1 Number of scald injuries per year split by age, sanitary appliance and severity.

Age	Baths		Shower		Washbasin taps			
Agu	Fatalities	Category B	Category A	Minor	Category A	Minor	Category A	Minor
0-14		207	180		12		17	
15-59		57	117		6		7	
60-74		50	17		2		3	
75+		65	21		3		4	
Total	19	379	334	2599	23	405	31	371

Note: Injuries defined as "severe" in the Sambrook report may be divided into 2 further categories: Category A (involving 1-4 in-patient days) and Category B (involving 5 or more days as an in-patient and/or transfer to a specialist hospital/burns unit). Source: "The Sambrook Report: Burns and scalds accidents in the home"- DTi, Government Consumer Safety Research, 1999 http://www.humanics-es.com/burns.pdf.

The annual risk of any type of scald injury from hot tap water is very small: the total risk (including fatal injuries) is 1 in 13,000 whilst the risk of a fatal injury is just 1 in 3 million. However, vulnerable groups will be at greater risk.

Vulnerable persons

Young children are the group at greatest risk from scalding injuries. The sensitive skin of a child will burn more easily than that of an adult. Hot bath water is the number one cause of severe scalding injuries among young children.

Young children that fall into hot baths are likely to be severely scalded, often with 20%-50% body burns and occasionally 70% burns (Sambrook). Elderly people are also a high-risk group as they have thin skin and slower reaction times. For example, a less able person may take longer to get out of a bath that is too hot.

Many vulnerable persons are already protected in NHS and housing association premises (see Annex C). However, vulnerable persons including children living in private accommodation do not enjoy the same level of protection.

TMVs (thermostatic mixing valves)

Under Options 3 and 4 of this Impact Assessment, it is proposed that TMVs are fitted to control the temperature of hot water from sanitary fittings.

Hot and cold water entering a TMV is mixed to a temperature pre-selected by the user or installer. This temperature limitation is achieved automatically by a thermally sensitive mechanism within the valve that proportions the amount of hot and cold water entering to produce the required blend⁶. The mechanism then automatically compensates for any variations in supply pressures or temperatures to maintain the pre-selected temperature. In the event of a cold water supply failure, the in-line blending mechanism will automatically shut down the flow to prevent discharge of dangerously hot water.

Fitting a TMV to a sanitary appliance should prevent injuries in all cases except where the person is less mobile and has no-one to assist them out of the bath and they are unable to pull out the plug or summon assistance. In the absence of further data to quantify this risk, it has been assumed that the installation of a TMV reduces the risk of scalding from an appliance to zero given the length of time needed to suffer even a more minor burn and the fact that people who would be incapable of either getting out of the water or releasing the water down the plughole are unlikely to be unattended (see also the section on *Appropriate Temperature Control* on page 6 and 7 above). This is a key premise in calculating reduced risk by the addition of TMVs to certain sanitary appliances.

The provision of temperature control, normally by thermostatic control at, or close to, outlet points creates a situation where a small portion of supply pipework never reaches the temperature recommended to prevent microbial growth and a small additional risk of contamination may arise. The guidance in Approved Document G sets out the need to minimise the distance between the thermostatic control and the outlet. However, in NHS estates (where TMVs are installed, see Annex C), no incidents of legionnaires disease have been reported in the last 5 years.

Options

The options considered were:

Option 1 Do Nothing

Option 2 A public awareness campaign to increase awareness of the risks of scalding from hot water and the particular risks to young children and the elderly.

Option 3-5 Introduce a requirement and associated guidance to the Building Regulations on the control of hot water temperature from sanitary appliances.

- Option 3A Introduce a requirement on the control of hot water temperature to baths in new dwellings.
- Option 3B Introduce a requirement on the control of hot water temperature to showers and taps in new dwellings.
- Option 4A Introduce a new requirement on the control of hot water temperature to baths in new dwellings and baths in dwellings created by a change of use.
- Option 4B Introduce a new requirement on the control of hot water temperature to showers and taps in new dwellings and in dwellings created by a change of use.
- Option 5A Introduce a new requirement on the control of hot water temperature to baths in new dwellings, dwellings created by a change of use, and in extensions to dwellings

⁶ Source: BRE IP 14/03 'Preventing hot water scalding in bathrooms: using TMVs'. 2003

 Option 5B Introduce a new requirement on the control of hot water temperature to showers and taps in new dwellings, dwellings created a by change of use, and in extensions to dwellings

Buildings other than dwellings

Options 3, 4 and 5 consider the protection of people in their homes. It should be noted that there would also be a risk to people using sanitary appliances in other buildings. However, the number of different building types, the lack of data on incidents in those buildings and the variability of time spent in those buildings makes it difficult to assess the costs and benefits. Neither was there any additional information presented as a result of the consultation.

It should be noted that a number of buildings are already covered by existing standards and regulations, for example, NHS premises. These are listed in Annex C of this Impact Assessment.

Sectors and groups affected

Overview

The introduction of temperature control would impose burdens across all sectors of the building industry (developers, builders, etc.) and on home purchasers as well as on householders who are having relevant building work carried out.

TMVs are already commonly used in the healthcare sector, therefore, this proposal is unlikely to impose an additional burden on manufacturers of such devices due to an increase in testing, product development or availability of manufacturing equipment.

Building Control Bodies (BCBs) would have to bear the cost of familiarisation with the proposed new guidance. As these changes on hot water safety are being implemented alongside other amendments to Part G of the Building Regulations, the cost of familiarisation has been split equally between this impact assessment and the impact assessments for the more general changes to Part G and the introduction of water efficiency measures.

There could also be minimal impacts on charities and the voluntary sector. However, many homes for children and the elderly are already covered by existing Standards and Regulations, see Annex C of this Impact Assessment.

Detailed costs and benefits

This section estimates the costs and benefits (a reduction in costs from scalding fatalities and injuries caused by hot tap water) for the baseline Option 1 and the preferred Options 3A and 4A identified in this final Impact Assessment.

Note: The costs and benefits of Options 2, 3B, 4B, 5A and 5B are included in Annex D for completeness.

All costs (and benefits) are calculated using central estimates. A ten-year period of analysis has been chosen. In accordance with The Treasury's Green Book guidance, a discount rate of 3.5% has been applied to calculate present values. Unless stated otherwise, costs and benefits are quoted below in present values.

A sensitivity analysis has been carried out on the cost of TMVs; the number of newly built dwellings (range of 50,000 to 250,000 dwellings per year); the social costs of injury with respect to loss of earnings (range of no loss of output to those given in Annex A Table 11) and the ongoing costs of treatment with respect to the period over which treatment is given (range serious 1-3 years, very serious 13-15 years. The overall range costs and benefits are shown on the summary sheets as the Net Benefit Range.

Both <u>total</u> costs and benefits are dependent on assumptions around how many new dwellings will be built. As stated above, a sensitivity analysis has been carried out based on an indicative

range of between 50,000 and 250,000. However, these total costs and benefits are simply proportional to the new build figure used, that is, the benefit relative to cost remains the same irrespective of the figure used. For the basis of calculating single total cost and benefit figures for this assessment, 150,000 dwellings per year has been used.

(See Annex A for a detailed health impact assessment and analysis of the cost of scald injuries including ongoing treatment and social costs.)

Benefits

Option 1: Do Nothing

Option 1 would produce no additional benefits because there would be no reduction in scalding.

Options 3A & 4A: Introduce a requirement and associated guidance to the Building Regulations on the control of hot water temperature from baths.

Benefits will accrue where scalds and fatalities that would be caused by hot water from bath taps are prevented by the installation of TMVs: the benefit is the cost of injury or death that has been prevented. The benefits of adding temperature control, through the use of TMVs, to baths are presented.

Because of regulation 3(2) of the Building Regulations 2000, where a TMV had been fitted to a bath in order to comply with the hot water safety provision in part G, any subsequent work to the hot water supply to the bath would have to maintain that same level of protection. Therefore, where a TMV at some point in the future fails it will have to be replaced with another TMV to ensure adequate protection from the risk of scalding. Accordingly, the benefits are not time-limited, as any replacement for a bath tap that must be equipped with a TMV under the new provision will have to be similarly equipped.

Option 3A: Introduce a requirement on the control of hot water temperature to baths in new dwellings

Monetised benefits

Assuming a yearly build rate of 150,000 new homes and an average household occupancy of 2.26), 339,000 people could be protected from potential scald injuries in the first year after TMVs are fitted to sanitary appliances in all new homes. A consistent figure of 150,000 new homes and projected household occupancies were used to estimate the number of people that would be protected against scalds in subsequent years of the analysis. Benefits will increase year on year as more households are protected.

The total benefits associated with this Option (3A) were estimated by applying the proportion of the total current population that will be protected against the total costs of fatalities and injuries from baths (see Annex A, Table 9). This is included as a reduction in acute (immediate) treatment and ongoing medical treatment. The costs of additional factors such as reductions in trauma and long-term emotional problems for the individual, lost working days to industry (minor injuries) and loss of income to individuals (serious injuries), loss of earnings to the parents or carers of young/elderly and costs associated with living (adapted accommodation, transport costs etc.) were also included as "social benefits".

Table 2 – the total benefits associated with Option 3A (in constant prices)

Year	0	1	2	3	4
Number of people protected	339,344	677,281	1,013,812	1,349,170	1,683,383
Reduction in acute treatment costs (£)	1,052,504	2,100,643	3,144,422	4,184,563	5,221,152
Reduction in ongoing medical costs and social benefits (£)	471,665	941,375	1,409,130	1,875,256	2,339,789
Total benefits (£)	1,524,169	3,042,018	4,553,553	6,059,819	7,560,941

Year	5	6	7	8	9
Number of people protected	2,016,452	2,348,406	2,679,258	3,009,317	3,338,597
Reduction in acute treatment costs (£)	6,254,196	7,283,778	8,309,942	9,333,647	10,354,936
Reduction in ongoing medical costs and social benefits (£)	2,802,733	3,264,126	3,723,988	4,182,748	4,640,425
Total benefits (£)	9,056,929	10,547,904	12,033,930	13,516,395	14,995,361

Total benefits of Option 3A, installing TMVs in baths in new homes: £72.4 million.

Non-monetised benefits

There is a potential benefit for the regulatory change to act as a catalyst for the greater take-up of TMVs in the parts of the existing stock that would remain unregulated through greater publicity and awareness of the issue and falling costs in the future.

Option 4A: Introduce a new requirement on the control of hot water temperature to baths in new dwellings and baths in dwellings created by a change of use.

There are 16,380 changes of use per year across England and Wales (based on 2007 figures for change of use, Planning Statistics, CLG). It is assumed that any buildings converted to dwellings will require hot water temperature control to all baths as with a new dwelling. Therefore, TMVs will be fitted to all baths in these dwellings and the risk of scalds from hot bath water will be reduced to zero. Benefits will increase year on year as more households are protected.

Table 3 – the benefits associated with installing TMVs where there is a change of use to a dwellings (in constant prices)

Year	0	1	2	3	4
Number of people protected	37,056	73,959	110,708	147,329	183,825
Reduction in acute treatment costs (£)	114,933	229,390	343,371	456,954	570,150
Reduction in ongoing medical costs and social benefits (£)	51,506	102,798	153,877	204,778	255,505
Total benefits (£)	166,439	332,188	497,248	661,732	825,655

Year	5	6	7	8	9
Proportion of population protected	220,197	256,446	292,575	328,617	364,575
Reduction in acute treatment costs (£)	682,958	795,389	907,446	1,019,234	1,130,759
Reduction in ongoing medical costs and social benefits (£)	306,058	356,443	406,659	456,756	506,734
Total benefits (£)	989,017	1,151,831	1,314,105	1,475,990	1,637,493

Total benefit of installing TMVs in baths where there is a change of use to a dwelling: £7.9 million.

Non-monetised benefits

There is a potential benefit for the regulatory change to act as a catalyst for the greater take-up of TMVs in the parts of the existing stock that would remain unregulated through greater publicity and awareness of the issue and falling costs in the future.

Costs

The current total costs of treatment due to hot water injuries from sanitary appliances are given in Annex A, Table 9. This would be ongoing if no further action were to be taken.

Option 1: Do nothing

There are no direct costs associated with this option. However, selecting this option would mean that the benefits realised under Option 3A or 4A would be missed.

Options 3A & 4A: Introduce a requirement and associated guidance to the Building Regulations on the control of hot water temperature from baths.

Costs will arise from the purchase and installation of TMVs.

Table 4: Assumptions: sanitary accommodation in properties of various sizes.

Size of property	Average Room included
1 bedroom flat	1 bathroom
2 bedroom flat	1 bathroom and 1 en-suite
2 bedroom house	1 bathroom and 1 cloakroom
3 bedroom property	1 bathroom, 1 en-suite and 1 cloakroom
4 or more bedroom property	1 bathroom, 1 en-suite and 1 cloakroom

Source: Home Builders Federation/ National House-Building Council

Note: Communities and Local Government Housebuilding Statistics (Table 254) were used to split the total housing stock by size of dwelling (i.e. number of bedrooms) - see Table 10 in Annex A.

Table 5: Assumptions: sanitary appliances in bathrooms, cloakrooms and en-suites

Room	Hot water outlets	Number of TMVs
Bathroom	1 wash basin	2
	1 bath (with showerhead)	
En-suite bathroom	1 wash basin	2
	1 shower	
Cloakroom	1 wash basin	1

Note 1: Although we recognise that different houses of a particular type (e.g. one bed flat) could have different appliances, after consultation with HBF and NHBC a standard list of the number of sanitary appliances in each type of sanitary accommodation has been developed.

Note 2: The HBF and NHBC confirmed that bidets are not normally installed in new dwellings.

The purchase and installation costs of TMVs to baths has been estimated using currently available products.

The design and range of thermostatic mixers available to the market is wide and varied because manufacturers are very pro-active in meeting the demands of their customers. However the designs can be grouped into 5, as follows:

- Tee type valve, usually hidden from view;
- Single sequential mixer, mounted on the washbasin;
- Thermostatic shower valve exposed or concealed;
- Remote blending valve for large supplies;
- Bar type thermostatic valve, bath.

The cost of these products varies greatly with the exception of the tee type valve. This valve is the cheapest valve available and can be fitted to the supply pipework leading to each terminal fitting; therefore it has been assumed that this type of valve will be used. The cost to a builder/developer will vary as they usually buy in bulk and will therefore receive a discounted price dependent upon the number of valves purchased.

There will be a cost associated with the installation of TMVs which is over and above the cost of installing bath taps for the tee type valve. We have assumed 15 minutes to install a TMV at an hourly rate of £20 (rate for plumber contracted as part of development team)

Therefore we have estimated the cost of purchasing and installing each TMV to be £30 (this is based on £25 for purchase and £5 for installation). These assumptions were tested during the public consultation and confirmed by a review of current product prices.

Note: The lowest price TMVs are generally designed to operate with a temperature differential of 10°C. It is important that hot water systems are appropriately selected to take this into account and facilitate correct operation of the TMVs. This needs to be reflected in the wording of Part G. In the event that the temperature differential was less than 10°C for a short period,

the TMV might not respond immediately to limit the temperature at the outlet. When filling a bath, this lag in response time would be less significant that than a slow response on a shower or basin tap.

TMVs have a finite service life and therefore it is reasonable to assume that a small number would have to be replaced each year. An allowance for replacement at a rate of 0.5% per year has been made. This is based on an annual % failure rate and a 15 year asset life, i.e. total failure rate over lifetime = %failure rate x 15.

Option 3A: Introduce a requirement on the control of hot water temperature to baths in new dwellings

Monetised costs

The number of new homes built per year can be split according to size of house (Annex A, Table 10). The number of TMVs that will be installed in new houses (Table 3) is multiplied by the value for TMV purchase and installation to give the total cost. An allowance for replacement is also made.

One-off monetised costs associated with changes to Part G

Although there will be a small cost of publishing the new edition of Approved Document G, the main implementation cost (one-off costs in year 1) would be the need for training and familiarisation with the new legislative requirement and the amended guidance. An industry sector that would require particular training is the Building Control Bodies (BCBs) who are responsible for enforcing compliance. These can be either local authority building control departments or Approved Inspectors (Als).

There will be training and familiarisation costs to BCBs and for all parts of the construction industry including builders, developers, consultants, installers etc.

An estimated 4000 people are employed by BCBs in England and Wales (based on a recently published CLG survey of building control bodies (http://www.communities.gov.uk/documents/planningandbuilding/pdf/surveybuildcontrol1).

Training costs will vary according to the size of the organization, with economies of scale allowing cost per person to fall in larger organisations. BCBs employ about 4000 staff. A value of £100 - £300 per person has been proposed by BRAC Working Party members for training costs. £140 per person used in the assessment of impacts for the update to Approved Document B has been adopted, giving a total cost of £560,000.

There will also be training and familiarisation costs for all parts of the construction industry including builders, developers, consultants, installers etc. Most installers will be executing work that complies with the Water Supply (Water Fittings) Regulations 1999 and the guidance set out in the Water Regulations Guide. Many of the changes to Part G are already covered in this guide. This should ease the learning and training burden.

Giving consideration to previous exercise the cost of training and familiarisation related to the changes in Part G are estimated at £1.5 million, including the £560,00 costs to Building Control Bodies. The introduction of a requirement for hot water safety would be part of an overall package of changes to Part G including water efficiency. Therefore, these costs, which would be a one-off expense in the first year, have been apportioned equally between the three impact assessments: general changes to Part G, water efficiency and hot water safety.

Total costs Option 3A, of installing TMVs in baths in new dwellings: £41.1 million. This includes the £0.5 million administrative cost.

Non-monetised costs

None identified.

Option 4A: Introduce a new requirement on the control of hot water temperature to baths in new dwellings and baths in dwellings created by a change of use.

The assumptions on change of use are presented against the benefits.

Splitting the 16,380 changes of use by the size of dwelling (using Table 10 in Annex A) and using the assumptions already discussed about number of bathrooms cloakrooms and ensuites in different sized dwellings (Table 4), and about sanitary appliances in each of these (Table 5), allows an estimate of the number of TMVs that will be installed to be made. Assuming a central figure of £30 per TMV it was then possible to estimate the cost of introducing a requirement for all change of use to dwellings on the control of hot water temperature to sanitary appliances.

Total costs of installing TMVs in baths in changes of use to dwellings: £4.4 million

Non-monetised costs

None identified.

Ensure that the results of any tests that impact on the cost-benefit analysis are contained within the main evidence base; other results may be annexed.

Type of testing undertaken	Results in Evidence Base?	Results annexed?
Competition Assessment	Yes (see below)	No
Small Firms Impact Test	Yes (see below)	No
Legal Aid	Yes (see below)	No
Sustainable Development	Yes (see below)	No
Carbon Assessment	Yes (see below)	No
Other Environment	Yes (see below)	No
Health Impact Assessment	Yes	Yes
Race Equality	Yes (see below)	No
Disability Equality	Yes (see below)	No
Gender Equality	Yes (see below)	No
Human Rights	Yes (see below)	No
Rural Proofing	Yes (see below)	No

Competition Assessment

The measures considered are deemed unlikely to raise any competition concerns. As TMVs are already widely used in the NHS, Housing Associations and in Scotland there are a range of suppliers currently in the market. The proposed new requirement to Part G of the Building Regulations will not limit the number or range of suppliers since it does not specify any particular design of TMV that must be used. Furthermore, since it is not specified that the TMV should be incorporated into an appliance, the suppliers of certain sanitary appliances will not be disadvantaged.

Small Firms Impact Test

Firms spend a significant amount of time keeping up to date with revised and new regulations. The cost of this is likely to be proportionately higher for small firms than large ones. The proposals for the revision of Part G apply to small businesses and accordingly, a small firms' impact test was undertaken. In addition to small firms responding to the public consultation, 13 SMEs or associations representing SMEs were directly contacted to explore whether the financial and other impacts of the proposed changes to Part G (Sanitation) are more burdensome for small businesses i.e. bring about disproportionate costs or bring more benefits to small businesses.

The results of the small firms impact test is contained in the main Part G impact assessment.

Legal Aid

It is envisaged that the proposal will have no impact on legal aid.

Sustainable Development

The measures considered were not considered to have a significant impact.

Carbon Assessment

The measures considered were not considered to have a significant carbon impact, although we will consider further the possibilities of low water and energy use.

Other Environment

The environmental impacts such as additional use of materials and energy in production of equipment in the measures considered will not have a significant environmental impact.

Health Impact Assessment

A new requirement in the Building Regulations to control the temperature of hot water from sanitary appliances would be a response driven by the health impacts of scalding from hot tap water. A full Health Impact Assessment has been carried out in Annex A.

Race Equality

The provisions considered for hot water temperature control focus on reducing scald incidents through the design of the fittings rather than user's habits and we are not aware of any disproportionate impact on any particular racial groups.

Disability Equality

The 'do nothing' option will not have a positive or negative impact although the other options considered could have positive impacts for vulnerable groups and could be of benefit to people with certain disabilities.

Gender Equality

The measures considered were not considered to have a gender specific difference in impact.

Human Rights

The measures considered were not considered to have an impact on human rights.

Rural Proofing

We do not consider there to be a difference in risk in rural communities such that the measures considered have a specific impact relative to – or a difference in impact on – rural communities.

Enforcement and Sanctions

Local authority building control departments and private approved inspectors will enforce the proposals through the existing mechanisms and sanctions provided through the Building Act.

Implementation and Delivery Plan

The revised Part G and Approved Document was published on 13 May 2009 and comes into force on 1 October 2009. A Circular explaining the changes made to the existing regime and explaining clearly the transitional provisions was also published at the same time. Following publication of the package we will carry out further dissemination through a series of events across the country for industry and building control bodies.

In advance of the coming into force date we will explore the potential to work with other Government departments, campaign groups and manufacturers to maximise the potential benefits of an increased voluntary take-up of the measure in the unregulated sector of the existing housing stock.

Post-Implementation Monitoring and Review

It is the department's general practice to monitor how new policy is working within a reasonable timeframe (usually about 3 years after implementation). However, in the light of some previous

concern about the unstructured nature of how the building control system is reviewed and changed, the department has signalled that it will move to a system whereby Parts would generally only be changed every six years. It is not envisaged, therefore, that Part G would be amended again before 2016 meaning that a formal review would not start before 2013. However, the department has an ongoing dialogue with users of the building control system and will monitor informally how the changes are working in practice. More broadly, as part of this it will be important to reconsider whether any potential changes to the existing market would indicate there was an opportunity for other policy mechanisms to deliver ways to better target vulnerable groups in the unregulated sector.

Summary and Conclusions

Four options were considered initially: (1) do nothing; (2) public awareness campaign; (3) introduce a new requirement to the Building Regulations for all new dwellings on the control of hot water temperature to sanitary appliances; and (4) introduce a new requirement to the Building Regulations for all new dwellings, extensions to, and changes of use of, dwellings on the control of hot water temperature to sanitary appliances. For Options 3 and 4 we have evaluated the costs and benefits of introducing TMVs to (a) baths and (b) showers and wash basin taps.

A summary of costs and benefits for the options is given below.

Option	Total Costs (NPV)	Total Benefits (NPV)
1	No direct costs, but would	None
	forego the benefits of other	
	options	
2	Small	Limited unless sustained
3A Baths in new dwellings	£40.6 million	£72.4 million
	+ £0.5 million for training &	
	familiarisation	
3B Showers & taps in new	£133.2 million	£2.6 million
dwellings		
4A Baths in new dwellings	£4.4 million	£7.9 million
created by material change of		
use only		
4B Showers & taps in new	£14.5 million	£0.2 million
dwellings created by material		
change of use only		
5A Baths in extensions only	£0.8 million	£0.7 million
5B Showers & taps in	£10.6 million	£0.2 million
extensions only		

Most very severe and all fatal injuries from hot tap water are associated with baths. Therefore, although there would be benefits associated with requiring TMVs on other sanitary conveniences, these would be outweighed by the additional costs that would be imposed.

Looking more closely at the type of dwelling where there is a case for regulation of baths indicates that there is a net benefit for requiring TMVs on baths in newly built dwellings, where a dwelling is created through a change of use and for baths in new extensions.

Annexes

ANNEX A

Control of hot water temperature from sanitary fittings: detailed health impact assessment and analysis of the cost of scald injuries

Introduction

The impact assessment looks at the balance between the costs of hot water injury and the benefits of preventing these, against the costs of placing a limit on the temperature of water discharged in a range of sanitary appliances.

This Annex A fully evaluates the benefits and costs of a range of options:

- Control of hot water delivery to baths, showers and washbasins
- Introduction of controls to each of the sanitary appliances above for new buildings, extensions to existing buildings and change of use (conversions)

Risk Assessment

Number of incidents in England and Wales

1. Number of fatalities

The latest ONS Mortality statistics indicate that, on average, 15 people die per year from 'Contact with hot tap water' (based on fatalities over the three-year period 2003-2005; source: ONS Mortality statistics: Cause (Series DH2), http://www.statistics.gov.uk/StatBase/Product.asp?vlnk=618).

There is no breakdown of fatalities by hot water from individual sanitary appliances.

2. Number of serious incidents

The 2006-07 Hospital Episode Statistics (HES) data is the most reliable source of total admitted cases by NHS hospitals. Information on admitted patient care delivered by NHS hospitals in England is provided against Code X11, Contact with Hot Tap Water. The data are categorised by age of patient. The total number of bed days is also

Source: HES Online, http://www.hesonline.nhs.uk. Admission episodes: Episodes that were the first in the spell of admitted patient treatment (episodes with an episode order of 1). Note that this includes patients who were admitted in previous years (ie prior to 1 April).

provided.

Total finished consultant episodes (England) = 725.

Total bed days (England) = 4,394

Note 1: Bed days is the sum of all the days that patients in the group occupied hospital beds during the HES year (1 April 2006 to 31 March 2007).

Note 2: There is no further breakdown of 'Contact with Hot Tap Water'. For the purposes of this assessment, we have assumed all incidents are associated with wash basins, showers and baths. There may be cases associated with kitchen sink taps.

Note 3: For the purposes of this assessment, we have assumed that 'admitted cases' are serious cases (Categories A and B⁹) only. There is no indication of whether the HES figures for admitted cases include fatalities. Therefore, it has been assumed that fatalities are excluded from the number of admitted cases (these will be dealt with separately).

This data has been adjusted to provide a total for England and Wales (Table 1) based on population (Table 2). The HES data included a count of episodes relating to patients of distinct age groups; the split of the total number of admitted cases by these age groups is also shown in Table 1. This will be used later in our analysis to model the different levels of risk faced by the different age groups.

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Finished Consultant episodes: A count of the number of HES records, submitted on behalf of English NHS hospital providers, that relate to episodes of admitted patient care that ended during the financial year (1 April to 31 March). (HES Online-Explanatory Notes).

Injuries defined as "severe" in the Sambrook report may be divided into 2 further categories: Category A (involving 1-4 in-patient days) and Category B (involving 5 or more days as an in-patient and/or transfer to a specialist hospital/burns unit). Source: "The Sambrook Report: Burns and scalds accidents in the home"- DTi, Government Consumer Safety Research, 1999 http://www.humanics-es.com/burns.pdf.

Table 1: Finished consultant episodes (Source: HES 2006-7)					
Age group	England (HES 2006-7)	England and Wales (adjusted)			
0–14	393	416			
15–59	177	187			
60–74	67	71			
75+	88	93			
Total finished consultant episodes	725	767			
Total bed days	4394	4651			

Table 2: Population by country (Source: National Statistics Online)			
	Population		
England	50,762,900		
Wales	2,965,900		
Scotland	5,116,900		
Northern Ireland	1,741,600		
UK Total	60,587,300		
England and Wales Total	53,728,800		
Percentage increase England: England & Wales	5.84%		

3. Number of minor incidents

The Sambrook Report stated a total number of minor injuries per year. It has been assumed that minor injuries continue to occur at the same level as 1999 when the report was prepared. There is no reason to consider otherwise.

The estimated number of minor injuries for England and Wales in 2008, based on current population, is therefore 3,375.

There is no breakdown of minor injuries by hot water from individual sanitary appliances or by age.

Number of incidents by individual sanitary appliances

1. Attribution of cases to individual sanitary appliances

The former DTi commissioned a detailed study into the attribution of incidents of scalding by hot tap water, published as "The Sambrook Report: Burns and scalds accidents in the home"- DTi, Government Consumer Safety Research, 1999 (http://www.humanics-es.com/burns.pdf).

The number of minor and severe scald incidents that can be directly attributed to (hot water from) baths, showers and taps is taken from the Sambrook report and reproduced in Table 3 below. All values are annual estimates.

Note: This table was constructed using HASS and LASS datasets¹⁰ over the 5-year period 1992-1996 and the HADD database¹¹ (for fatal injuries) over the 3-year period 1993-1995. HASS and LASS databases are taken from a representative sample of hospital attendances around the UK.

In addition, the Sambrook report provided data on the number of minor injuries due to hot tap water: this is not now recorded in the HES.

Table 3: Number of injuries caused by hot tap water from sanitary appliances per year in the UK					
	Total injuries	Minor injuries	Severe injuries	Fatal injuries	
Shower	340 (10%)	324 (12%)	16 (3%)	0	
Taps	331 (10%)	306 (11%)	25 (4%)	0	
Baths	2677 (80%)	2103 (77%)	574 (93%)	21 (100%)	
Total	3348	2733	615	21	

This is the most recent detailed and published study attributing scalds to sanitary appliances. Therefore we have assumed the ratio of scalds attributed to each sanitary appliance and the ratio of minor to severe injuries is still current.

Note: The Sambrook report did not record injuries associated with bidets.

2. Severity of scalds by individual sanitary appliances

The further division of data into the severity of scalds and the age of the injured person allows more accurate costing of the care offered to patients in this Impact Assessment.

In line with evidence from the Sambrook report, it has been assumed that all fatal scald injuries are associated with hot bath water.

Injuries defined as "severe" in the Sambrook report may be divided into 2 further categories: Category A (involving 1-4 in-patient days) and Category B (involving 5 or more days as an in-patient and/or transfer to a specialist hospital/burns unit).

The Sambrook report only presents the division of Categories A and B for bath injuries; Table 4 reproduces this information. This has been used to estimate a split in the current number of severe injuries (HES) to give a split by age band.

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Home Accident Surveillance System and Leisure Accident Surveillance System (www.hassandlass.org.uk)

¹¹ Home Accidents Deaths Database

Table 4: Division of 'severe' cases into Category A and Category B (for baths only) – Sambrook				
Age group	Percentage of severe injuries in Category B	Percentage of severe injuries in Category A = (100%-Cat. B%)		
0–4	67%	33%		
5–10	33%	67%		
11–17	33%*	67%		
65+	75%	25%		
* Sambrook report: 'There are insufficient cases to differentiate between Category A and B injuries.'. For this impact assessment, we have assumed same % as for 5-10 year olds.				

The age bands used in the Sambrook Report do not match those used in HES data, so the HES age bands have been used. This re-allocated information is presented in Table 5.

Table 5: Division of 'severe' cases into Category A and Category B (for baths only) – HES age bands				
Age group	Percentage of severe injuries in Category B	Percentage of severe injuries in Category A = (100%-Cat. B%)		
0–14	53.5%	46.5%		
15–59	33%	67%		
60–74	75%	25%		
75+	75%	25%		

There are no similar data available for showers and wash basins (to split severe cases down any further into category A and category B), therefore we have assumed that all severe injuries due to hot water from showers and wash basin taps are Category A.

Using the information in Tables 3 and 5, together with the assumption above on showers and wash basins, we have summarised the number of injuries in England in Wales per year by sanitary appliance, by age group and by severity of injury in Table 6.

Table 6: Summary of injuries by sanitary appliance, by age group and by severity of injury							
Age band	No. severe cases (E&W)	Total Baths	Baths Category B (5 days	Category A (1–4	Showers Category A	Washbas ta Category	ıps
			+)	days)			
0-14	416	387	207	180	12	,	17
15-59	187	174	57	117	6		7
60-74	71	66	50	16	2		3
75+	93	86	65	21	3		4
Total	767	713	379	334	23	,	31
Source of data	HES 2006-7 pro- rata for England and Wales	Percentage by appliance from Sambrook	Number of severe cases in B Sambrook	Balance of total severe cases – calculation	Percentage by appliance from Sambrook. Category A assumed.	Percentage by appliance from Sambrook. Category A assumed.	

Consultation Note: It is anticipated that this can be verified by information provided during the public consultation.

The Cost of Care

1. Cost of hospital beds

The average cost of a 'Normal' NHS hospital bed day for a burns victim is £1,345.

An experienced medical professional specialising in burns treatment advised that the cost of a 'normal' bed day for a burns victim is equivalent to the cost of General Level 2 intensive care nursing, £1345. Source: National Schedule of Reference Costs 2005-06 for NHS Trusts, Critical Care Services Data (Worksheet TCCS, service code CC1L2); available online from Department of Health: http://www.dh.gov.

uk/en/Publicationsandstatistics/Publications/PublicationsPolicyAndGuidance/DH 062884

Following consultation, the cost of a hospital bed day in a Burns Intensive Care Unit has been estimated as £3,303. This is the national average unit cost of bed day for Level 3 care in a burns intensive care unit.

Source: National Schedule of Reference Costs 2005-06 for NHS Trusts, Critical Care Services Data (Worksheet TCCS, service code CC2L3)); available online from Department of Health: http://www.dh.gov.

uk/en/Publicationsandstatistics/Publications/PublicationsPolicyAndGuidance/DH 062884

It has been assumed that all cases will require 'normal' bed days, but that a proportion of cases will also required additional nursing in intensive care. It has been assumed

that these are Category B cases only. There is no published evidence of the proportion of severe cases requiring intensive care. Therefore, based on expert judgement from a medical professional in this field, it has been assumed that 75% of Category B cases will require additional care.

The <u>additional</u> cost of an intensive care unit bed day (over a normal bed day) is assumed to be £3303 - £1345 = £1958.

2. Cost of hospital beds attributed to sanitary appliances

There is no breakdown of number of bed days for scalds from individual sanitary appliances. Therefore the total number of bed days has been divided in the same proportion as number of cases attributed to each sanitary appliance (see Table 3). This is presented in Table 7.

Table 7: Cost of 'normal' NHS bed days attributed to hot tap water scalds by appliance					
	% cases by sanitary appliance	Total number of bed days	Cost of normal bed days (£) @ £1345/day		
Baths	93	4325	£5,817,215		
Showers	3	140	£187,652		
Taps	4	186	£250,203		
TOTAL		4651	£6,255,070		
Source of data	Table 3	Total bed days divided by % of cases – calculation	Bed days x cost of 'normal' bed day – calculation		

3. Treatment costs for hot water scalds (acute phase of treatment only)

To estimate the cost of treatment for scald patients, data from the NHS costing manual were used. The NHS costing manual was introduced in November 1999 to bring greater consistency to the production of cost information. Cost codes J12 to J28 are used for the treatment of burns and have been used in these calculations.

To determine the treatments required for scalding incidents is extremely difficult, as each case is individual and will require varying treatments dependent upon the location, depth and area of the injury. Therefore to determine generic costs we have made some assumptions upon the treatment undertaken to give a standard "package" of care for each age band/severity group.

Care packages have been estimated for patients by age and severity of injury, as follows:

- Very Serious (Category B): children under age 0 14;
- Very Serious (Category B): aged 15 to 59;

- Very Serious (Category B): aged 60 to 74; and aged 75+
- Serious (Category A): children under age 0 14;
- Serious (Category A): aged 15 to 59;
- Serious (Category A): aged 60 to 74; and aged 75+
- Minor injuries: all ages

Detailed descriptions of the "package of care" for each of these groups can be found in Annex C.

Price per unit for initial treatment cost has been established from a number of sources:

- Ambulance and A & E visit for severe injuries: Unit Costs of Health and Social Care, 2007, p.99: A&E Services: High cost investigation (referred/discharged)
 National Average value.
- A & E visit (minor injury): Schedule of Reference Costs NHS Trusts 2005-06. Lower Cost Investigation (Referred/Discharged) Code (page TA&E, code V06).
- Extra cost of ITU bed day: see above.
- Procedures for burns treatment: National Schedule of Reference Costs NHS Trusts 2005-06 (codes J12-J28).
- The cost per death is estimated to be £1,558,612 (2005 prices from Highways Economics Note No. 1, 2005 Valuation of the Benefits of Prevention of Road Accidents and Casualties uprated to 2009-2010 prices).

Taking account of the cost of hospital beds, the cost of treatment for each injury (Annex C) and the number of injuries each year split by age group (Table 6), we can estimate the total cost of hot tap water scalding.

For 2009, the total cost of scald injuries and fatalities from hot tap water was estimated as £**66,545,077** (Table 8).

The total cost of scalds caused by contact with hot tap water can be broken down to costs associated with scalds from each sanitary appliance. As stated above, it has been assumed that all fatalities and very serious (Category B) scalds are caused by contact with hot bath water.

As the most recent detailed and published study attributing scalds to sanitary appliances, the ratio of scalds per sanitary appliance presented in the Sambrook Report (Table 3) have been used to calculate the proportion of severe (Category A injuries) and minor injuries that can be attributed to each sanitary appliance.

Table 8: Summary of costs by age and severity of injury					
Age/Severity	Cost per person (£)	No. people affected per year	No. people affected per year (Category B ratio assumed 1:3 ITU: non□ITU)	Total cost by age/severity	
All ages Fatal	1,558,612	15	15	23,379,180	
0–14 very serious with intensive care	109,025		155	14,400,939	
0–14 very serious without intensive care	88,362	207	52	3,756,792	
15–59 very serious with intensive care	39,994		43	1,719,742	
15–59 very serious without intensive care	17,824	57	14	249,536	

Table 8: Summa	Table 8: Summary of costs by age and severity of injury (continued)						
Age/Severity	Cost per person (£)	No. people affected per year	No. people affected per year (Category B ratio assumed 3:1 ITU: non-ITU)	Total cost by age/severity (£)			
60–74 very serious with intensive care	40,734		38	1,547,892			
60–74 very serious without intensive care	18,564	50	12	222,768			
75+ very serious with intensive care	40,734		49	1,995,966			
75+ very serious without intensive care	18,564	65	16	297,024			
0-14 serious	57,250	209	209	8,597,084			
15–59 serious	13,872	130	130	1,803,389			
60-74 serious	14,555	21	21	305,655			
75+ serious	14,555	28	28	407,540			
Minor injuries	476	3375	3375	1,606,500			
Normal bed days	1345	4651		6,255,070			
TOTAL				66,545,077			

Note: the extra cost of intensive care bed days (over normal bed days) is included in cost of care as part of the package of care for (75% of) very serious scalds.

Table 9: Summary of costs by sanitary appliance								
	Tota	I cost by san	nitary applian	ice (£)	Cost of	TOTAL (£)		
	Minor	Serious (Category A)	Very serious (Category B)	Fatal	normal bed days			
Baths	1,494,045	9,574,570	24,190,659	23,379,180	5,817,215	64,455,669		
Showers	48,195	659,613	0	0	187,652	895,460		
Taps	64,260	879,484	0	0	250,203	1,193,947		
TOTAL (£)	1,606,500	11,113,668	24,190,659	23,379,180	6,255,070	66,545,077		

Table 10: Housing stock split by size (completed house building 2006-07, Source: CLG)				
Type of dwelling	Number of bedrooms	% of total private enterprise housing		
House	1	0%		
	2	6%		
	3	27%		
	4 or more	22%		
Flat	1	9%		
	2	34%		
	3	1%		
	4 or more	0%		
Houses and flats	1	9%		
	2	40%		
	3	28%		
	4 or more	22%		

4. On-going medical costs of hot water scalds

Children scalded at a young age will require medical treatment until adulthood, therefore there will be additional costs associated with medical treatment following the

initial acute phase of treatment.

The following "average package of care" has been assumed per patient:

- Three substantial procedures over 15-16 years, each with:
 - An inpatient stay of 5 days at a cost of £500 per day
 - One major surgical procedure at a cost of £600

Outpatient visits

- Dressings and clinic visits needed immediately post-discharge, assumed average of 8 visits in the first 3 months, at £198.80 each
- Scar review every 2-3 months for 18-24 months (assumed 8 scar reviews over this period) at £142 each
- Average of one outpatient visit per year for 13 years at £142 per visit
- Cost of pressure garments required in first 2 years is £1500

In total, these additional medical costs sum to £16,116 per patient. These costs have been applied to all under-14 Category A and Category B cases (416 cases).

4. Social Costs of hot water scalds

1. Data sources

Table 1 in The Department of Transport (2007) 'Highways for Economics Note 1: 2005 Valuation of the benefits of the Prevention of Road Accidents and Casualties' provided estimates for loss of output and human costs.

To examine the methodology more closely, a more detailed note was consulted; The Transport Research Laboratory's report on *'Valuation of Road Accidents'* 1995. This report provided the classifications used in the later Highways study.

The costs are broken down into three main categories of injury (fatal, serious and slight) and two cost categories, casualty related costs (human costs, lost output and medical and ambulance costs) and accident related costs

For the purposes of this impact assessment, only the casualty related costs are relevant to scalding and of these medical and ambulance costs have already been taken into account in the treatment costs above.

The three main categories of injury as given in the TRL report are:

 Fatal - Casualties who die as a result of there injuries within 30 days of the accident;

Serious

- Casualties who die as a result of their injuries more than 30 days after the accident
- all casualties who are admitted to hospital as an in-patient as a result of their injuries
- casualties who are not detained in hospital but have fractures, concussion, internal injuries, crushing, severe lacerations and severe shock requiring medical treatment
- Slight sprain or bruising or cuts which are not judged to be severe, or slight shock requiring roadside attention

The cost of lost output and human costs include the following elements of cost:

- The cost of loss of output due to injury was calculated as the present value of the expected loss of earnings plus any non-wage payments (national contributions etc.) paid by the employer
- The human costs were based on willingness to pay values which represent pain, grief and suffering to the casualty, relatives and friends.

The validated social costs are built up from the road accident data and other available information.

2. Comparison of road accident data and hot water scalding

In the fatal category the loss of output and human costs are already taken into account in the cost of life.

The "serious" category from the Highways Agency note aligns with Category A and B.

The "slight" casualties can be aligned with the minor category in this Impact Assessment.

Age groups were not used in the road accident study; for the purpose of the social costs the same age categories used earlier in the Impact Assessment will be used. These are: 0-14, 15-59, 60-74 and 75+.

3. Loss of output to patient

Category B Patients (very serious)

For Category B patients it has been assumed that the loss of output would be over a period in excess of the 10 year period used in this impact assessment, so:

- 0-14, the loss of output would be that of the carer in the early years (provided the carer was not economically inactive prior to the accident) and thereafter the patient for their full working life;
- 15-59, the loss of output would be that on the patient. No account of those out of work and/or claiming benefits has been considered;
- 60-74, the loss of output would be that of the patient for the balance of their working life;

 74+ there would be no loss of output as they will have completed their natural working life

For carers of 0-14 year olds, it was assumed that there would be no loss of output where the carer was economically inactive prior to the scalding accident. Statistics from the 2008 Labour Force Survey indicate that 41.9% of households with children include at least one economically inactive person(Office of National Statistics, http://www.statistics.gov.uk/pdfdir/work0808.pdf). Therefore, it was assumed that 58.1% of carers would suffer from loss of output.

For Category A patients it has been assumed that the loss would be over 1-3 years, so:

- 0-14, there would be no loss of output as they will have recovered by the time they have reached working age;
- 15-59, the loss of output could range from 1-3 years;
- 60-74, the loss will be calculated according to the balance of their working life they have left;
- 75+, there would be no loss of output as they will have completed their natural working life.

To calculate the balance of working life left for people aged 60-74 years, the number of people in work over 60 was calculated using the figure that 70% of men over the age of 60 are collecting a pension or benefits (*Third Age Employment Network, www.taen.org.uk/Publications/factsweb.html*). The population figures were taken from the Office of National Statistics. It has been assumed that all women over 60 are collecting pensions or benefits.

able 11: Loss of output per year per person					
	Loss of ou	ıtput per year			
Age	Category B	Category A			
0-14	23737 ¹²	0			
15-59	23737	23737			
60-74	1661	1661			
75+	0	0			

Note: the figures were scaled up to 2008 from 1994 using GDP deflator prices from the HM treasury website so;

2008 cost = Cost x (2008-09 GDP deflator/1994-95 GDP deflator)

Human costs

To compare human costs from the road accident data, we mapped the classification

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¹² This loss of output only applies to 58.1% of carers of patients in this age category

scale that was used in the Transport Research Laboratory's Report (TRL) on 'Valuation of Road Accidents' 1995 (Table 12) on to Categories A and B used in this Impact Assessment.

The TRL report used results from a Willingness to pay survey looking at how injuries were categorised and how much people were willing to pay to prevent an accident.

Table12: Cla	assification scale used to compare the human costs of road accidents
Category	Description
F	No overnight stay in hospital (seen as an out-patient); experience slight to moderate pain for 2-7 days followed by some pain or discomfort for several weeks: some restrictions to work/leisure activities for several weeks/months: after 3-4 months, return to normal health with no permanent disability
W	In hospital 2-7 days in slight to moderate pain: after hospital, some pain/discomfort for several weeks: some restrictions to work and/or leisure activities for several weeks/months: after 3-4 months return to normal health with no permanent disability
Х	In hospital 1-4 weeks in slight moderate pain: after hospital, some pain/discomfort, gradually reducing; some restrictions to work and leisure activities, steadily improving, after 1-3 years, return to normal health with no permanent disability
S	In hospital 1-4 weeks in moderate to severe pain; after hospital some pain gradually reducing but may reoccur when taking part in some activities; some permanent restrictions to leisure and possibly some work activities
R	In hospital several weeks, possibly several months in moderate to severe pain, possibly requiring frequent medical attention, substantial and permanent restrictions to work and leisure activities; possible prominent scaring
N	In hospital several weeks, possibly several months; loss of use of legs and possibly other limbs due to paralysis and/or amputation; after hospital permanently confined to a wheelchair and dependant on others for many physical needs, including dressing and toileting.

The categories were mapped onto Categories A and B as shown in Table 13.

Table 13: Categories mapped onto categories A and B				
TRL Report Category				
Category B - Very Serious Category A - Serious				
S, R, N	W, X			

It has been assumed that for Category B injuries, all age groups will suffer the full human costs per year (equated to TRL category R, as a mean of S-R-N, to exclude head injuries).

It has been assumed for Category A injuries, all age groups will suffer the full human costs for 1-3 years (equated to mean of TRL categories W and X).

Table 14: Human costs (per person over lifetime)						
	Human Costs (per	person over lifetime)				
Age	Category B	Category A				
0-14	244475	39348				
15-59	244475	39348				
60-74	244475	39348				
75+	244475	39348				
	Note: Costs have been scaled from 1994 using GDP deflator prices from the HM Treasury website					

Travel costs to a specialist burns unit

The locations of specialist burns units in the UK where obtained. These were then used to calculate the furthest distance a patient would have to travel to their nearest specialist centre for treatment. This was calculated to be from North Wales with a journey time of 3 hours and a distance of about 180 miles. This figure and an average cost of petrol of 40 pence per mile were used to calculate the cost of travel to one appointment per year.

An experienced medical professional specialising in burns treatment advised that for Category B (very serious), one appointment would be required per year over 13 years. Similarly, for Category A (serious), one appointment would be required per year over a maximum of 3 years.

Table 15: Travel costs to specialist burns centre per person						
Age	Category B	Category A				
0-14	1872	1872				
15-59	1872	432				
60-74	1872	432				
75+	1872	432				

ANNEX B

Treatment Costs

Table 1: Very Serious, Ch	ildren aged 0–1	4			
Activity	Cost code	Price per unit (£)		Number of units	Cost (£)
Ambulance		257	per admission	1	£257
A&E		111	per admission	1	£111
"Major burn procedure >29% burns"	J15	6,198	per procedure	1	£6,198
"Soft tissue procedure"	J12	2,678	per procedure	2	£5,356
"Other burn with significant graft procedure >49"	J20	3,581	per procedure	15	£53,715
Plastic surgery	160/160F	85		15	£1,275
Pain management	191/191F	88		10	£880
Community nursing specialist	N29	66		4	£264
Community nursing district	N3	55		10	£550
Health visiting	N4/'CN403FG	50		20	£1,000
Physiotherapy	N5/N5C1	64		10	£640
Play specialist		200	approx	10	£2,000
TOTAL PER PATIENT (without ICU bed days)					£72,246
"Intensive care nursing"	N26/CN206C F	10	per day	10	£1,083
Extra cost of ITU bed day		1,958	per bed day	10	£19,580
TOTAL PER PATIENT (with ICU bed days)					£92,909

Table 2: Very Serious 1	5–59				
Activity	Cost Code	Price	e per unit	Number of Units	Cost (£)
Ambulance		£257	per admission	1	£257
A&E		£111	per admission	1	£111
"Major burn procedure >29% burns"	J15	£6,198	per procedure	1	£6,198
"Soft tissue procedure"	J12	£2,678	per procedure	1	£2,678
"Other burn with significant graft procedure >49"	J20	£3,581	per procedure	2	£7,162
Plastic surgery	160	£73		2	£146
Pain management	191	£95		5	£475
Community nursing specialist	N29	£66		2	£132
Community nursing district	N3	£55		4	£220
Health visiting	N4/CN403FG	£50		6	£300
Physiotherapy	N5/N5A1	£29		5	£145
TOTAL PER PATIENT (Without ICU bed days)					£17,824
Extra cost of ITU bed day	See Annex B, Table 7	£1958	Per bed day	10	£19,580
"Intensive care nursing"	N26/CN206AF	£259	Per day	10	£2,590
TOTAL PER PATIENT (with ICU bed days)					£39,994

Table 3: Very ser	rious (Category	B): aged 60 -	- 74 and aged	l 75+	
Activity	Cost Code	Price p	oer unit	Number of	Cost
				Units	(£)
Ambulance		£257	per admission	1	257
A&E		£111	per admission	1	111
"Major burn procedure >29% burns"	J15	£6,198	per procedure	1	6,198
"Soft tissue procedure"	J12	£2,678	per procedure	1	2,678
"Other burn with significant graft procedure >49"	J20	£3,581	per procedure	2	7,162
Plastic surgery	160	£73		2	146
Pain management	191	£95		5	475
Community nursing specialist	N29	£66		2	132
Community nursing district	N3	£55		12	660
Health visiting	N4/'CN403FG	£50		12	600
Physiotherapy	N5/N5A1	£29			145
TOTAL PER PATIENT (without ICU bed days)					£18,564
"Intensive care nursing"	N26/CN206AF	£259 per da	у	10	£2590
Extra cost of ITU bed day		£1,546 per b	ed day	10	£19580
TOTAL PER PATIENT (with ICU bed days)					£40,734

Table 4: Serious (Category A): aged 0 – 14							
Activity	Cost Code	Price p	Price per unit		Price per unit Number of Units		Cost (£)
Ambulance		£257	per admission	1	£257		
A&E		£111	per admission	1	£111		
"Major burn procedure >29% burns"	J15	£6,198	per procedure	1	£6,198		
"Soft tissue procedure"	J12	£2,678	per procedure	1	£2,678		
"Other burn with significant graft procedure >49"	J20	£3,581	per procedure	8	£28,648		
Plastic surgery	160/ 160F	85		3	£255		
Pain management	191/ 191F	£88		5	£440		
Community nursing specialist	N29	£66		2	£132		
Community nursing district	N3	£55		5	£275		
Health visiting	N4/CN403F O	£50		10	£500		
Physiotherapy	N5/ N5C1	£64		10	£640		
Play specialist		£200	approx	5	£1,000		
TOTAL PER PATIENT					£41,134		

Table 5: Serious	(Category A)	: aged 15–59			
Activity	Cost Code	Price p	er unit	Number of Units	Cost (£)
Ambulance		£257	per admission	1	£257
A&E		£111	per admission	1	£111
"Major burn procedure >29% burns"	J15	£6,198	per procedure	1	£6,198
"Soft tissue procedure"	J12	£2,678	per procedure	1	£2,678
"Other burn with significant graft procedure >49"	J20	£3,581	per procedure	1	£3,581
Plastic surgery	160/ 160F	73		1	£73
Pain management	191/ 191F	£88		5	£440
Community nursing specialist	N29	£66		2	£132
Community nursing district	N3	£55		3	£165
Health visiting	N4/CN403F O	£50		3	£150
Physiotherapy	N5/ N5C1	£29		3	£87
TOTAL PER PATIENT					£13,872

Table 6: Serious	(Category A):	aged 60 – 74	and aged 75	l	
Activity	Cost Code	Price p	er unit	Number of Units	Cost (£)
Ambulance		£257	per admission	1	£257
A&E		£111	per admission	1	£111
"Major burn procedure >29% burns"	J15	£6,198	per procedure	1	£6,198
"Soft tissue procedure"	J12	£2,678	per procedure	1	£2,678
"Other burn with significant graft procedure >49"	J20	£3,581	per procedure	1	£3,581
Plastic surgery	160/ 160F	73		1	£73
Pain management	191/ 191F	£88		5	£440
Community nursing specialist	N29	£66		2	£132
Community nursing district	N3	£55		8	£440
Health visiting	N4/CN403F O	£50		10	£500
Physiotherapy	N5/ N5C1	£29		5	£145
TOTAL PER PATIENT					£14,555

Table 7: Minor injuries- all age groups									
Activity	Cost Code	Price	per unit (£)	Number of Units	Cost (£)				
A&E visit		80	Per admission	1	80				
Outpatient visit		198	Per visit	2	396				
TOTAL PER 4 PATIENT									

ANNEX C

Table 1: Ap	plication	of TMVs				
Location		Is a TMV required by legislative or authoritativ e guidance?	Is a TMV recommende d by legislative of authoritative guidance?	Is a TMV suggeste d best practice?	Reference documents	What type of valve?
Private	Bath			Yes		TMV 2
dwelling	Basin					
	Shower					
Housing	Bath		Yes		Housing	TMV2
Associatio n dwelling	Basin				Corp Standard	
in aweiling	Shower				Staridard	
Housing	Bath	Yes			Housing	TMV2
Associatio n dwelling	Basin				Corp Standard	
for the elderly	Shower				Staridard	
Hotel	Bath			Yes	Guidance	TMV2
	Basin				to the Water	
	Shower				Regulations (G18.5)	
NHS	Bath		Yes		NHS Health	TMV3
Nursing Home	Basin				Guidance Note, Care	
Tiome	Shower				Standards Act, Care Homes Regulations and DO8	

Table 1: Application of TMVs										
Location	Is a TMV required by legislative or authoritativ e guidance?	Is a TMV recommende d by legislative of authoritative guidance?	Is a TMV suggeste d best practice?	Reference documents	What type of valve?					

Private	Bath		Yes	Guidance	TMV3
Nursing	Basin			to the	
Home	Shower			Water Regulations (G18.6), Care Standards Act, Care Homes Regulations and HSE Care Homes	
Young	Bath	Yes		Guidance Regulations	TM\/3
_		165		, Care	110103
persons care home	Basin			Standards	
care nome	Shower			Act, Care Homes Regulations and HSE Care Homes Guidance	

Table 1: Application of TMVs										
Location	Is a TMV required by legislative or authoritativ e guidance?	Is a TMV recommende d by legislative of authoritative guidance?	Is a TMV suggeste d best practice?	Reference documents	What type of valve?					

Schools, including nursery	Bath	Yes, but 43°C max		The School Premises Regulations /National minimum care Standards Section 25.8	TMV2
	Basin		Yes	Building Bulletin 87 2nd Edition	TMV2

Table 1: Ap	oplication	of TMVs				
Location		Is a TMV required by legislative or authoritativ e guidance?	Is a TMV recommende d by legislative of authoritative guidance?	Is a TMV suggeste d best practice?	Reference documents	What type of valve?
	Shower	Yes			The School Premises Regulations /National minimum care Standards Section 25.8	TMV2
Schools for severely disabled, including nursery	Bath	Yes, but 43°C max			The School Premises Regulations and, if residential, Care Standards Act	TMV3
	Basin		Yes		Building Bulletin 87 2nd Edition	TMV3
	Shower	Yes			The School Premises Regulations	TMV3
NHS hospital	Bath Basin Shower	Yes			NHS Health Guidance Note and DO8	TMV3
Private hospital	Bath Basin		Yes		NHS Health Guidance	TMV3

Table 1: Application of TMVs											
Location		Is a TMV required by legislative or authoritativ e guidance?	Is a TMV recommende d by legislative of authoritative guidance?	Is a TMV suggeste d best practice?	Reference documents	What type of valve?					
	Shower				Note and DO8						

Annex D

This annex includes the Analysis & Evidence for Options 3B (Introduce a requirement on the control of hot water temperature to showers and taps in new dwellings), 4B (Introduce a new requirement on the control of hot water temperature to showers and taps in new dwellings and in dwellings created by a change of use), 5A (Introduce a new requirement on the control of hot water temperature to baths in new dwellings, dwellings created by a change of use and extensions to dwellings) and 5B (Introduce a new requirement on the control of hot water temperature to showers and taps in new dwellings, dwellings created by change of use and extensions to dwellings).

Options 3B, 4B and 5B were considered alongside those for introducing similar requirements for baths, but the costs exceed the benefits for these options. The costs also outweighed the benefits of introducing a requirement for baths in extensions.

Detailed costs and benefits

This section estimates the costs and benefits (a reduction in costs from scalding fatalities and injuries caused by hot tap water) for Options 2, 3B, 4B, 5A and 5B.

Benefits

Option 2: Public Awareness Campaign

Monetised benefits

It has not been possible to monetise the benefits arising from an awareness campaign.

Non-monetised benefits

There may be short-term benefits to the NHS through the reduction of direct costs for healthcare.

In support of a review of Part G, BRE (2002) considered experience in other countries. The report draws on the experience of New Zealand and the educational programmes in place. Unfortunately these programmes have not been effective in reducing accidents. This was due, in part, to the variable quality of equipment used for hot water heating. Plumbers responsible for installation, modification and maintenance of hot water heating systems lacked a detailed knowledge of the risk of scalding posed by such systems. Awareness campaigns need to be repeated to maintain effectiveness.

Option 3B: Introduce a requirement on the control of hot water temperature to showers and taps in new dwellings

Monetised benefits

Total benefits of Option 3B, installing TMVs in showers and taps in new homes: £2.6 million.

Non-monetised benefits

None identified.

Option 4B: Introduce a new requirement on the control of hot water temperature to showers and taps in new dwellings and in dwellings created by a change of use

Monetised benefits

Total benefit of installing TMVs in showers and taps where there is a change of use to a dwelling: £0.15 million

Total benefits of Option 4B, installing TMVs in showers and taps in new dwellings and where there is a change of use to a dwelling: £2.7 million.

Non-monetised benefits

None identified.

Option 5A: Introduce a new requirement on the control of hot water temperature to baths in new dwellings, in dwellings created by a change of use and in extensions to dwellings

Monetised benefits

Total benefit of installing TMVs in baths in extensions to dwellings: £0.72 million

Total benefit of installing TMVs in baths in new dwellings, in dwellings created by a change of use and in extensions to dwellings: £81.0 million

Non-monetised benefits

None identified.

Option 5B: Introduce a new requirement on the control of hot water temperature to showers and taps in new dwellings, in dwellings created by a change of use and in extensions to dwellings

Monetised benefits

Total benefit of installing TMVs in showers and taps in extensions to dwellings: £0.18 million

Total benefit of installing TMVs in showers and taps in new dwellings, in dwellings created by a change of use and in extensions to dwellings: £2.9 million

Non-monetised benefits

None identified.

Costs

Option 2: Public Awareness Campaign

Monetised costs

It was not possible to quantify costs for this Option.

Non-monetised costs

It is anticipated that the cost of this Option would be small.

Option 3B: Introduce a requirement on the control of hot water temperature to showers and taps in new dwellings

Monetised costs

Total costs of Option 3B, installing TMVs in showers and taps in new dwellings: £133.2 million

Non-monetised costs

Once the building work has been completed (obviously to the required standards to meet the relevant functional requirements) and signed off then there is no requirement under the Building Regulations for continued maintenance. If maintenance is required, costs will fall to the householder. In addition there is a risk that maintenance may not be carried out and products will need to be designed with a fail-safe mode.

Option 4B: Introduce a new requirement on the control of hot water temperature to showers and taps in new dwellings and in dwellings created by a change of use

Monetised costs

Total costs of installing TMVs in showers and taps in changes of use to dwellings: £14.5 million

Total costs of Option 4B, installing TMVs in showers and taps in new dwellings, new extensions and where there is a change of use to a dwelling: £147.7 million.

Non-monetised costs

These will be the same non-monetised costs that arise under Option 3.

Option 5A: Introduce a new requirement on the control of hot water temperature to baths in new dwellings, in dwellings created by a change of use and in extensions to dwellings

Monetised costs

Total costs of installing TMVs in baths in extensions to dwellings: £0.81 million

Total costs of installing TMVs in baths in new dwellings, in dwellings created by a change of use and in extensions to dwellings: £46.3 million

Non-monetised costs

These will be the same non-monetised costs that arise under Option 3.

Option 5B: Introduce a new requirement on the control of hot water temperature to showers and taps in new dwellings, in dwellings created by a change of use and in extensions to dwellings

Monetised costs

Total costs of installing TMVs in showers and taps in extensions to dwellings: £10.6 million

Total costs of installing TMVs in showers and taps in new dwellings, in dwellings created by a change of use and in extensions to dwellings: £158.3 million

Non-monetised costs

These will be the same non-monetised costs that arise under Option 3.

Summary: Intervention & Options Department/ Agency: Communities and Local Government Stage: FINAL Title: Impact Assessment of changes to Part G of the Building Regulations 2000 & Approved Document G on water efficiency Date: May 2009

Related Publications: Approved Document G: Sanitation, Hot Water Safety and Water Efficiency and Water efficiency in new buildings – A joint Defra and Communities and Local Government policy statement

Available to view or download at:

http://www.communities.gov.uk

Contact for enquiries: Shayne Coulson Telephone: 020 7944 5711

What is the problem under consideration? Why is government intervention necessary?

Assuring a safe balance between water supply and demand needs to be addressed by both resource development and demand management. Increasing demands on water supplies from growing domestic consumption, new home build and redevelopments, particularly in the water scarce South East region of the UK, exert growing pressure on a finite water resource. Demand can, in part, be managed by modifying the Building Regulations to require the installation of more water efficient devices in new dwellings, which are likely to be the focus of water demand growth.

What are the policy objectives and the intended effects?

The objective of the proposal is to reduce consumption of water in new dwellings to a nominal level of litres per head per day. This would be achieved through changes to Part G of the Building Regulations 2000 and the associated Approved Document G (AD G).

What policy options have been considered? Please justify any preferred option?

The options considered are: 'Do Nothing' (Option 1) and 'Whole Building Performance at 125 litres per head per day' (Option 2) for new dwellings.

The Government has previously consulted on three options for reducing water consumption through a whole building performance at various levels; an appliance-based approach through the Water Supply (Water Fittings) Regulations 1999; or a do nothing option. This consultation completed in 2007 with the majority response suggesting that a whole building approach should be followed with the level set at 125 litres per head per day. This is therefore the preferred option for this Impact Assessment.

When will the policy be reviewed to establish the actual costs and benefits and the achievement of the desired effects?

A formal review of the whole of Part G will not be undertaken before 2013. However, further research is planned for 2009/10 to refine further aspects of the water efficiency calculator. This will provide the opportunity to reflect on the efficiency savings delivered by the current methodology and consequently the associated costs and benefits.

Ministerial Sign-off For consultation stage Impact Assessments:
I have read the Impact Assessment and I am satisfied that, given the available evidence, it represents a reasonable view of the likely costs, benefits and impact of the leading options.
Signed by the responsible Minister:
lain WrightDate:12 May 2009

	Summary: Analysis & Evidence										
Polic	Policy Option: 2 Description: Include whole building performance at 125 litres per head per day for new dwellings										
		ANNUAL CO	STS	Description groups'	escription and scale of key monetised costs by 'main affected oups'						
		ff (transition)	Yrs 1	appliance	House builders will bear the additional cost of water efficient appliances over standard appliances which would otherwise be installed. There will also be costs associated with using the 'water						
COSTS	Avera (excludi	ge Annual Co ng one-off)	ost	calculator There will control bo	' to meet the re also be one-of	equirement of f costs for d familiarise th		ouilding			
	£ 5.1 r	million		-	Tota	I Cost (PV)	£ 44.1 million				
	Other	key non-mon	etised cost	s by 'main a	affected groups	6'					
	A	NNUAL BENI	EFITS	Description affected g		key moneti	sed benefits b	y 'main			
	One-o	ff (transition)	Yrs				duced operatio				
SLI	£0			electricity	deferred capital expenditure. Society will benefit from reduced electricity and gas usage and, subsequently, from less carbon						
BENEFITS		ge Annual Be ng one-off)	enefit	emissions.							
<u> </u>	£ 32.4	million		Total Cost (PV)			£ 264.2 million				
Numl	and so marke assumpt per of ne	ocial benefits a t for water efficions/Sensitivit	issociated w cient device ies/Risks	vith preventi s in new dw	ing or delaying vellings.	resource de	nay be further evelopment; ope	ening up of the			
Price	Base 2009	Time Period Years 10		nefit Range		NET BENE £ 220.1 mi	EFIT (NPV Best es	stimate)			
What	is the g	eographic cov	rerage of the	e policy/opti	ion?		England and	Wales			
On w	hat date	will the policy	be implem	ented?			October 2009				
Whic	h organi	sation(s) will e	enforce the	policy?			Building Conti	rol			
What	is the to	otal annual cos	st of enforce	ement for th	ese organisatio	ons?	£ Nil				
Does	enforce	ement comply	with Hampto	on principle	s?		Yes				
Will in	mpleme	ntation go bey	ond minimu	m EU requi	irements?		No				
What	What is the value of the proposed offsetting measure per year?										
What	What is the value of changes in greenhouse gas emissions? - £ 37.9 million										
Will t	he propo	osal have a sig	gnificant imp	act on com			No				
Annual cost (£-£) per organisation ((excluding one-off) Micro Small Medium Large							Large				
Are a	ny of th	ese organisati	ons exempt	?							
Impa	Impact on Admin Burdens Baseline (2005 prices) (increase – decrease)										
Incre	Increase of £369,835 Decrease of £ Net Impact £ 369,835										

Key:

(Net) Present Value

63

Evidence base (for summary sheets)

Purpose and intended effect

To reduce consumption of wholesome water in new dwellings by improving the efficiency of water using sanitary appliances and white goods installed in new homes.

This Impact Assessment (IA) discusses changes to the Building Regulations 2000 and to Approved Document G (AD G) which provides guidance on implementing the functional requirements of the Regulations with respect to sanitation, hot water safety and water efficiency.

The change proposed involves modifying the Building Regulations for the inclusion of a whole building water efficiency requirement set at a level of 125 litres per person per day. This would be calculated based on the estimated water use of the fixtures and fittings to be installed, along with nominal values for white goods and external use which cannot be regulated through the Building Regulations.

Defra are also reviewing the Water Supply (Water Fittings) Regulation 1999 to support the Building Regulations and include water efficiency requirements.

The changes will affect all those dealing with relevant building work in England and Wales (separate legislation applies in Scotland and Northern Ireland). This may include architects, developers, builders, Building Control Bodies, manufacturers, property owners/occupiers etc.

Background

Assuring a balance between water supply and demand is a vital requirement and needs to be addressed by both resource development and demand management. Finite water resource is being pressured by decreased rainfall levels and increasing demands on water supplies from growing domestic consumption. Growth in water demand has exceeded growth in supply capacity, particularly in the South East of England. This has introduced more vulnerability into the supply demand balance and made the system less able to cope with fluctuations.

Demand for new housing continues to grow and average household occupancy is declining. Since water-using activities are largely unrelated to number of household occupants, there will be an increasing use of water per occupant. These drivers will continue to increase demand for water and

current predictions are that all of these factors will continue to increase stress on the water supply system.

It is likely that over the short to medium term, growth in demand will continue to outstrip growth in supply unless further water resource development is permitted and restrictions on use apply, particularly in periods of prolonged high demand with insufficient resource replenishment. Typically a new reservoir will take 20 years to develop due to long lead times in planning, design, procurement and construction. Alternative resources such as desalination plants are controversial, require considerable amounts of investment and are energy intensive.

The UK, uniquely in the developed world, has wholesome water pricing that is not directly related to the volume consumed because the majority of households are not currently metered. This situation arose because the UK was the earliest industrialised and urbanised nation. A compulsory metering programme would have some effect on demand, although the scale of the effect would depend on the extent to which metering secures substantial, long-term behavioural changes by water consumers; such changes might require significant changes to tariffs. However, even if metering allied to tariff changes were accelerated, it would take several years for most companies to secure a high enough level of meter penetration (80-90%) to make much difference to patterns of water demand overall. Furthermore, substantial changes to tariffs may have political and public health costs.

Demand can be managed through increased prevalence of water efficient fixtures and fittings in houses. Modifying the Building Regulations to require the installation of more water efficient devices means water savings could be achieved independently of any change to customers' behaviour and use of water. The modification to the Regulations relates to new dwellings only.

Current Legislative Background

The majority of building works in England and Wales are required to comply with the Building Regulations 2000. They exist to ensure the health and safety of people in and around all types of buildings, i.e. domestic, commercial and industrial. They define the type of buildings and type of works which are included and set out the requirements with which individual aspects of the building design and construction must comply. The Building Regulations have previously had no provision to provide for water savings.

There is some overlap between Part G of the Building Regulations and the Water Supply (Water Fittings) Regulations 1999 (SI 1999/1148) which principally specify requirements for fittings connected to the public water supply in order to prevent contamination of water supplied for consumption, loss of water through leakage, undue consumption, misuse, erroneous measurement of water and to ensure the safety of fittings. Some water savings could be made by strict enforcement of these Regulations by ensuring leak-tightness tests are conducted on installation of water fittings in all

buildings. However, these measures do not actively encourage manufacturers to design products that are more water efficient or developers to include these products in new buildings.

Neither of these regulations have previously specifically covered water conservation or the minimisation of water use.

Rationale for Government intervention

Without action to address water conservation, it is likely that the demand for water would continue to increase. In order to avoid water shortages in the future, given that significant new resources are unlikely to be available in the short-term, reliance would be placed upon the consumer to save water voluntarily, or encourage water saving through metering and tariff setting. These measures alone are unlikely to realise the savings that are required to avoid further restrictions on use in the future. This proposal deals with the amendment of Regulations to include water conservation measures in new dwellings; the Regulation ensures that water conservation is designed and built into the fabric of the building and takes the onus away from voluntary action to constrain demand.

For new dwellings, the Government is already committed to taking action to encourage the more efficient use of water in new dwellings under the Code for Sustainable Homes. A Ministerial statement followed the end of the consultation on the Code, on 9 March 2006, indicating that minimum regulatory standards would be introduced for water efficiency in new homes. On 23 July 2007 Communities and Local Government (CLG) published a joint policy statement with Defra on Water Efficiency in New Buildings to accompany the Housing Green Paper which detailed how CLG intended to bring forward regulations for setting minimum standards for water efficiency in new buildings. This followed on from the widespread support for proposals for a whole-of-house performance requirement based on the target water consumption of 125 litres per person per day in the consultation on Water Efficiency in New Buildings published in December 2006. A copy of the Mandating Water Efficiency consultation package can be found at http://www.communities.gov.uk/publications/planningandbuilding/mandatingw aterefficiency.

Consultation and stakeholder engagement

Two phases of consultation and stakeholder engagement have been undertaken. First, during the initial *Water Efficiency in New Buildings* consultation on the policy of introducing water efficiency measures. Secondly, during the consultation on the amendment of Part G and the Approved Document G, we consulted on the detail and implementation of the proposed water efficiency measures.

1. Within Government

For the initial consultation on water efficiency options, Defra and CLG jointly established a working group which included representatives from the Welsh

Assembly, the Department for Regional Development Northern Ireland and the Cabinet Office Better Regulation Unit who either attended, or were included, in the Group's written and electronic communications.

The proposal was also discussed with representatives of the Office of Water Services (Ofwat), the Environment Agency and the Consumer Council for Water (CCWater), which was closely involved in the development of policy proposals. These contacts were both formal (as part of the work undertaken by the Group described above) and informal day-to-day contacts at a working level.

Following the conclusion of the consultation on water efficiency options, and the joint CLG and Defra policy statement on *Water Efficiency in New Buildings* being issued, proposals to amend Part G of the Building Regulations and the Approved Document to include water efficiency were made.

The inclusion of these proposals into Part G and the Approved Document has been conducted by CLG in conjunction with the Building Regulations Advisory Committee (BRAC), whose members are appointed as independent statutory advisors to the Secretary of State. The Part G Technical Working Party steering the review includes manufacturers, developers, architects, installers and representatives of Government (including the Devolved Administrations and agencies). It also includes a number of seconded experts from Communities and Local Government, Defra and the Devolved Administrations.

2. Informal Consultation

For the initial consultation on water efficiency options, there was a programme of informal stakeholder and expert consultation to steer and contribute to policy development and act as a peer review group for research and data collection work. A group met twice, on 4 May and 15 June 2006, and comprised representatives from:

- Building Regulations Advisory Committee
- Building Research Establishment
- Cabinet Office Better Regulation Executive
- Communities and Local Government
- Consumer Council for Water
- Department for Environment Food and Rural Affairs
- Department for Regional Development Northern Ireland
- Environment Agency
- Essex and Suffolk Water
- Local Authority Building Control (LABC)
- Office of Water Services (Ofwat)
- Three Valleys Water plc

- Water UK (representing the regulated water businesses in the UK)
- Waterwise
- Welsh Assembly Government
- Water Regulations Advisory Service
- Water Research Centre plc

A workshop was held with 37 stakeholders to give informal views, in order to help frame the water efficiency public consultation document.

3. Formal public consultation

A formal public consultation document on options to improve water efficiency in new buildings was issued in December 2006, after which the decision was taken to incorporate a whole building water efficiency requirement to the Building Regulations set at a level of 125 litres per person per day. This consultation was published on 13th December 2006 and closed on 8th March 2007. A summary of the responses to the public consultation can be found on the Communities and Local Government website at http://www.communities.gov.uk/documents/corporate/pdf/consultation-response.

The responses were summarised and the outputs incorporated into the joint CLG and Defra policy statement on Water Efficiency in New Buildings to accompany the Housing Green Paper which detailed how CLG intended to bring forward regulations for setting minimum standards for water efficiency in new buildings. The formal consultation response can be viewed at http://www.communities.gov.uk/documents/planningandbuilding/pdf/WaterEfficiencyNewBuildings.

Following inclusion of water efficiency in the proposal to amend Part G and the Approved Document, these proposals were also subject to a further 3-month public consultation. The documents were available electronically on the CLG website. One hundred and twenty-seven formal responses were received. All responses have been reviewed by Communities and Local Government in conjunction with the Part G Technical Working Party. A summary of the results of the public consultation exercise is available on the CLG website at

http://www.communities.gov.uk/publications/planningandbuilding/partgconsult summary.

This final Impact Assessment considers the two options for water efficiency put forward within the consultation document.

Options

The options considered are:

Option 1: Do Nothing

Option 1 is self explanatory. In the absence of any regulatory or fiscal incentive to control demand, it is anticipated that demand will continue to rise at an annual rate of 1-2%, reflecting historic trends. Demand in the South East is anticipated to be at least at the high end of this trend. To maintain an acceptable supply – demand balance, therefore, would require a major increase in supply through the development of new resources (surface, groundwater or saline). It is assumed that the industry has already exploited the most cost effective sources and thus additional sources will have at least the same financial impact as existing sources. However, there are a host of negative economic impacts associated with the development of a major new resource (this is discussed further in the detailed costs and benefits section).

Across much of England and Wales, the water already being abstracted accounts for all of the available water resources in summer months. In many places, groundwater resources are also being fully used. In some places, existing licences to take water granted in the past are already causing damage to the environment. In other areas licences to take water already contain conditions to protect other uses of water during periods of low flow, or to protect river levels. Because of this, the Environment Agency will find it difficult to permit any additional water to be taken from rivers or groundwater, as it would reduce the water available for existing uses and have adverse impacts on the environment. Where water companies are not permitted to abstract more water, they will have to implement demand management measures to save water, such as water metering and wastewater recycling.

Thus Option 1, 'do nothing', is not a simple static scenario against which other options can be measured. Option 1 will create additional costs to the water companies and to the public, and indeed is probably not viable due to restrictions that will need to be imposed on expanding existing water sources.

Option 2: Implement changes to Building Regulations and AD G

Option 2 requires that new dwellings be designed to meet an estimated minimum water efficiency standard of 125 litres per person per day. This option gives builders and designers flexibility on how they would meet the overall performance standard.

The water efficiency calculator requires the performance of all appliances to be installed to be listed so as to calculate whether the water efficiency standard of 125 litres per person per day has been met. Nominal values for white goods and outdoor usage are included in the calculator as these cannot be regulated via the Building Regulations.

Sectors and groups affected

Option 2 would impose a small burden across some sectors of the new house build industry. Overall though, the proposed changes are unlikely to have a significant adverse effect on the industry.

- There will be some burden on developers who need to design water efficiency at a suitable level into the dwelling design. Some designers already working to the Code for Sustainable Homes would already be familiar with the calculation methods and the products available to meet the Code levels. However, at present this will be a relatively low number of designers.
- The main implementation cost (one-off costs in year 1) would be the need for training and familiarisation with the new legislative requirement and the amended guidance.
- It is not anticipated that any additional financial burden would be incurred by builders, installers or house purchasers for fitting water efficient appliances as these are installed in the same manner to standard appliances. House builders will initially bear the cost of purchasing these devices.
- Manufacturers of water using devices are already producing water
 efficient products and this new provision would open up the market for
 highly efficient products which are currently considered to be niche
 products. Conversely there may be a reducing market for luxury, and
 possibly high water using, products. However, the whole building
 approach to setting water efficiency standards allows greater flexibility
 in relation to specifying individual fittings (as opposed to specifying
 minimum standards per fitting).

Detailed costs and benefits

This section estimates the costs and benefits (a reduction in water used in new dwellings) for the two options identified in this Impact Assessment. All costs (and benefits) are calculated using central estimates. A ten-year period of analysis has been chosen. In accordance with The Treasury's Green Book guidance, a discount rate of 3.5% has been applied to calculate present values. Costs and benefits are quoted below in present values.

Sensitivity analyses have been carried out on the economic benefit of saving water (discussed in detail below) and the number of newly built dwellings (range of 50,000 to 250,000 dwellings per year). The overall range of costs and benefits are shown on the summary sheet as the Net Benefit Range.

Benefits

Option 1

Option 1 would produce no additional benefits.

Option 2

Option 2 would produce both economic and environmental benefits. Clear and consistent guidance would be provided, via Approved Document G, to all parties implementing this policy.

Monetised benefits

Water savings

Water savings have been estimated based on the assumption that per capita consumption will reduce from the current average of approximately 150 litres per person per day to approximately 125 litres per day when the water efficiency requirement is introduced¹³. Per capita savings are multiplied by average household occupancy and the number of days per year to estimate water savings per household per year.

The estimated water usage figure is principally based on the predicted water usage of individual fittings, such as showers, baths and taps, and is determined by the average duration and frequency of use of a particular fitting and the particular flow rate of the fitting that is installed.

It is important to note that this regulatory change does not ensure that every home that is built will subsequently operate at a water efficiency level of 125 litres per person per day once occupied. Some will use water at a higher rate and some at a lower rate because the changes do not regulate the behaviour of individuals.

However, a key assumption of this Impact Assessment is that the mix of fittings required to meet the water efficiency standard will deliver **average** usage at that level.

Post-consultation, further work has been done to review the water calculation methodology. Crucially for this Impact Assessment, a major consideration was whether the calculator actually did its job, that is, whether it accurately estimated actual average water usage. This work has led to a number of changes to elements within the calculator to ensure greater accuracy. We therefore believe that the calculation methodology will in practice ensure that average usage will be approximately 125 litres per person per day.

Economic benefits of producing less water

The economic benefit of saving water can be measured as the reduced cost of producing water supplies. For each unit of water that is saved, water companies will benefit from reduced operational expenditure and could also benefit from deferred capital expenditure (for example, for resource development). The value of this benefit will vary between companies, based both on the water savings that will occur and the cost of the water they would have to produce in the absence of water saving (efficiency) measures. Since

¹³ Water savings are modelled as the reduction from a baseline of 152.2 l/p/d to 124.2 l/p/d; per capita consumptions were estimated from use of standard and water efficient water using appliances.

water companies pass increased production costs onto their customers (through the water regulated billing system), water consumers (customers) will ultimately benefit from these cost savings.

Each water company is split into separate supply areas, called water resource zones. The cost of producing water will vary between companies, but also between resource zones within a company, since the water may come from different sources. The cost to the water company of producing water is estimated as the average incremental cost (AIC) of water; this is projected operational and capital expenditure over a defined time period based on demand projection.

To fully assess the benefit to each water company, the number of households projected to be built in each resource zone and the AIC of the source of water supply for these households would have to be known. The reduction in water would then be multiplied by the relevant AIC. It is proposed that such a detailed analysis is not appropriate for this Impact Assessment. Since there is so much variation in AIC values, even at a regional level, taking an average of the AICs for planned resource development across England and Wales would produce a meaningless value.

In resource zones where additional water is available, water may be produced relatively cheaply, for example, by installing a new water treatment works. For this analysis, TR61¹⁴ software was used to estimate the capital and operational costs of installing a new water treatment works to treat a flow of 10 mega litres per day. The cost of the scheme included the cost of abstracting, treating and distributing the water, and an uplift for design and oncosts. The AIC of this scheme was estimated as 48.2 pence per m³ of water produced. In the cost benefit analysis, this value was used as a lower bound for the cost of water to water companies (hence the benefit of producing less water). It is assumed that there is sufficient capacity in the distribution network for extra water. If this is not the case, there will be additional capital expenditure for modifying the network, for instance, for installing new trunk mains.

Where there is a shortage of water (a supply deficit) it will cost the water company more to produce and supply water. The South East of England is water scare and many water companies in this region will need to import water, build desalination plants (where possible) or use demand management measures to meet increased demand; these schemes are often very costly. In order to estimate the cost of producing water in a water scare area, a sample of desalination schemes and wastewater recycling schemes was taken from a range of water companies' draft water resources management plans¹⁵. The

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¹⁴ TR61 is an industry-recognised costing tool for capital, operating and whole life costs of water and sewage assets.

¹⁵ Water companies produce plans setting out how they intend to supply their customers with water over the next 25 years. These plans include lists of the resource options that the company could use to meet their supply demand balance over this period, and AIC values for the companies' preferred resource options.

median AIC of these schemes was 63.5 pence per m³ of water. This was used as an upper bound AIC in the cost benefit analysis.

For the central estimate, an average of these notional AIC values, 55.85 pence per m³, was used. The annual economic benefit of producing less water is calculated as:

Annual benefit = WS_h x H x C_w

Where:

WS_h = volume of water saved per household H = cumulative number of households C_w = cost of producing water, where AIC is used as a proxy

The annual water savings and modelled benefits to water companies, based on an indicative figure of 150,000 new homes being built per year (and using the central estimate for AIC), are shown in Table 1.

Table 2 Benefits from producing less water

Year	2009	2010	2011	2012	2013	2014	2015	2016	2017	2018	10 to
Water Saving (million m ³ / vear)	3.5	6.9	10.3	13.7	17.0	20.4	23.6	27.0	30.3	33.6	
Benefits to Water industry (£million/year)	1.9	3.8	5.7	7.6	9.5	11.4	13.2	15.1	16.9	18.8	

The economic benefit of Option 2 is therefore an average of £10.4 million per year.

Householder benefits

As all new dwellings will be metered, householders will benefit from lower water bills. This benefit has not been included in the social cost benefit analysis since it is a transfer rather than an economic cost: water companies will bear the cost of the householders' benefit through reduced revenues. It is likely that, in the long term, water companies will pass this cost onto its customers by increasing the unit cost of water through the regulatory pricing process.

Social and environmental benefits

Environmental benefits of Option 2 arise from carbon equivalent savings through reduced volumes of water being produced, treated and delivered to households.

The environmental benefit, in terms of the value of carbon, is calculated in the following manner:

- Energy savings come from the reduced treatment and pumping costs of supply water and from reduced heating of water in the home, where savings are made by appliances that use hot water.
- The energy used to supply 1 Mega litre of water is 559 kWh, taken from the Water UK Sustainability indicators 2006-07. This is multiplied by the volume of water saved to calculate the energy savings from reduced treatment and pumping.
- An example of the products that might be needed to meet the whole building performance of 125 litres per head per day is shown under the calculation of costs for Option 2. In this example, the shower, the basin and the kitchen taps will all use reduced volumes of hot water under the water efficient scenario. It can be assumed that all shower use, and 50% of all tap use, is for hot water and that the water is heated from 5°C to 41°C. Based on the example given above, this is equivalent to 13.86 litres per head per day of hot water saved, or an average of 13,740 Megalitres per year (over ten years). The energy required to heat 13.86 litres of water from 5°C to 41°C is 0.83 kWh, assuming 70% boiler efficiency. This is calculated as:

Energy saved (kWh) = ((volume water saved x increase in temperature (in °C) x specific heat capacity of water) / conversion from joules to kWh) / boiler efficiency (%)

Assumptions relating to boiler efficiency, water temperatures and usage assumptions are taken from MTP Report *Impact on carbon emissions of water efficient strategies* (2008).

- Carbon emissions¹⁶ are calculated by applying emission factors that convert the use of electricity or fuel to a mass of carbon dioxide.
 - The emission factor for natural gas is 0.206 kgCO₂/kWh
 - The emission factor for electricity from the grid is 0.43 kgCO₂/kWh
 - These emission factors are taken from DEFRA, Guidelines to Defra's GHG conversion factors for company reporting – Annexes updated June 2008¹⁷.
- It is assumed for the purposes of hot water heating in new homes that 70% of new boiler installations are gas and that electric heating accounts for the remaining 30% (Source: Hot Water Association). The carbon equivalent saving from reductions in water heating (tonnes CO₂e) is therefore calculated by multiplying 70% of the energy saved (kWh) by the emission factor for gas, and the remaining 30% by the emission factor for electricity and summing. To convert into tonnes the

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¹⁶ Note Carbon is used as shorthand for carbon dioxide equivalent.

¹⁷ Available at http://www.defra.gov.uk/environment/business/envrp/pdf/ghg-cf-guidelines-annexes2008.pdf

total is then divided by 1000. Carbon savings from heating less water are calculated as follows:

Carbon savings water heating (tCO₂) = ((70% x total energy saved water heating (kWh) x Emission Factor_{natural gas} (kgCO₂/kWh)) + (30% x total energy saved water heating (kWh) x Emission factor_{electricity} (kgCO₂/kWh))) / 10000 (conversion from kg to tonnes)

 The carbon savings from treating and pumping less water is calculated by multiplying the energy saved by the emission factor for electricity. To convert into tonnes, the total is then divided by 1000. Thus the calculation is:

Carbon savings $_{water\ savings}$ (tCO₂) = (energy saved $_{treatment\ and\ pumping}$ (kWh) x emission factor $_{electricity}$ (kgCO₂/kWh)) / 1000 (conversion from kg to tonnes)

- The shadow price of carbon is taken from Defra's document How to use the shadow price of carbon in policy appraisal for each of the years 0 to 9. This value (£ per tonne) is multiplied by the CO₂ equivalent calculated to determine the value of the environmental benefit of water efficiency.
- Therefore, total social benefit from carbon savings as a result of the water efficiency Requirement is calculated as follows:

Social benefit from carbon savings (\mathfrak{L}) = (carbon savings water heating + carbon savings water savings) x Shadow Price of Carbon

There is also a social benefit associated with each unit of electricity and each unit of gas that is saved by reduced treatment and pumping, and by reduced heating of water in the home. This value ranges from 5.95 p/kWh (in 2011 and 2012) to 6.54 p/kWh in 2009 for electricity. The social benefit for gas is valued as 1.61 p/kWh of gas saved in 2009, rising to 1.71 p/kWh in 2018¹⁸.

The annual social and environmental benefit (in constant prices) is shown in Table, 3.

http://www.defra.gov.uk/environment/climatechange/uk/ukccp/pdf/greengas-policyevaluation.pdf

¹⁸Department of Energy and Climate Change (2008): GHG Policy Evaluation and Appraisal in Government Departments; available at:

Social and Environmental benefits

Table 3

	0	6	_		4	_	-	7	0
10 year total	1,768,619	3,883,809	1,560,571		108,004	NS1 39		46,552	219,690
6	319,298	701,164	281,738		19,796	11 990		£8,903	40,689
8	287,368	631,047	253,564		17,731	10 728	2	£7,860	36,319
7	256,599	563,481	226,415		15,730	0 523	2100	£6,883	32,135
9	224,524	493,045	198,113		13,606	2808	9	£5,904	27,793
2	193,320	424,523	170,579		11,638	7 090		£4,981	23,708
4	161,826	355,362	142,790		9,677	5 863	5	£4,098	19,639
ဂ	130,041	285,565	114,744		7,737	7 683	6	£3,224	15,645
2	97,531	214,174	86,058		5,803	3 401	5	£2,375	11,669
~	65,311	143,420	57,628		4,141	2 323	2,0	£1,556	8,020
0	32,801	72,029	28,942		2,145	1 160	2	£767	4,072
Year	Electricity savings (MWh)	Gas savings (MWh)	Carbon savings (tCO ₂ e)	Social benefit from	electricity saved (£000)	Social benefit from gas	Social benefit from carbon	saved (£000) Total social	and environmental benefit (£000)

The social and environmental benefit value of Option 2 is therefore an average of £22.0 million per year.

Non- monetised benefits

By reducing the demand for water, this new requirement may prevent or delay the need for development of new resources to maintain the supply-demand balance. The following negative social and environmental impacts associated with increased abstraction, pumping, storage, treatment and transmission of new resources will be prevented, thus benefitting water companies and society at large:

- Negative impact on habitat and biodiversity;
- Increase in embedded and operational energy use, hence increase in carbon emissions;
- Increasing difficulty in achieving the requirements of the Water Framework Directive;
- Land loss;
- Visual impacts on landscape;
- Loss of future resource availability;
- Potential loss of housing where a new resource is to be constructed (e.g. reservoir).

Using water more efficiently will mean that water companies are more likely to be able to keep pace with the growth in demand. This will be particularly beneficial in areas of water stress, such as the South East. Furthermore, managing demand will have a positive effect on water availability, which will also assist during periods of drought.

Costs

Option 1

Option 1 imposes no direct costs, although the benefits realised under Option 2 would be missed. In addition, taking no action would eventually result in the cost to water companies of developing new resources earlier than required under Option 2.

Option 2

All of the costs of this option are economic, i.e. there are no environmental or social costs associated with the introduction of this provision in the Building Regulations.

Monetised costs

One-off monetised costs associated with changes to Part G

Although there will be a small cost of publishing the new edition of Approved Document G, the main implementation cost (one-off costs in year 1) would be the need for training and familiarisation with the new legislative requirement and the amended guidance. An industry sector that would require particular training is the Building Control Bodies (BCBs) who are responsible for

enforcing compliance. These can be either local authority building control departments or Approved Inspectors (Als).

There will be training and familiarisation costs to BCBs and for all parts of the construction industry including builders, developers, consultants, installers etc.

An estimated 4000 people are employed by BCBs in England and Wales (based on a recently published CLG survey of building control bodies (http://www.communities.gov.uk/documents/planningandbuilding/pdf/surveybuildcontrol1).

Training costs will vary according to the size of the organization, with economies of scale allowing cost per person to fall in larger organisations. BCBs employ about 4000 staff. A value of £100 – £300 per person has been proposed by BRAC Working Party members for training costs. £140 per person used in the assessment of impacts for the update to Approved Document B has been adopted, giving a total cost of £560,000.

There will also be training and familiarisation costs for all parts of the construction industry including builders, developers, consultants, installers etc. Most installers will be executing work that complies with the Water Supply (Water Fittings) Regulations 1999 and the guidance set out in the Water Regulations Guide. Many of the changes to Part G are already covered in this guide. This should ease the learning and training burden.

Giving consideration to previous exercise the cost of training and familiarisation related to the changes in Part G are estimated at £1.5 million, including the £560,00 costs to Building Control Bodies. The introduction of a Requirement for water efficiency would be part of an overall package of changes to Part G. Therefore, these costs, which would be a one-off expense in the first year, have been apportioned equally between the three impact assessments: general changes to Part G, water efficiency and hot water safety.

Costs to house builders

The costs of implementation are associated with the additional cost of water efficient appliances over standard appliances which would otherwise be installed. Although these costs will be initially borne by the developer/builder, it is possible that they may be passed on to prospective homeowners via the purchase price of the house. There is also a cost involved in the time required for using the water calculator. It is assumed that information regarding product performance is available from the manufacturer.

There are costs involved in amending the Building Regulations and training and familiarisation with the new whole building requirement of 125 litres per head per day and the amended guidance. As the water efficiency measures would be introduced at the same time as updates to Part G and the Approved Document G, these costs have been included in the assessment of benefits and costs for the update of Part G and have not been duplicated here.

The cost to each house builder is estimated by calculating the difference between the price of a set of water efficient appliances and a set of standard appliances.

- Standard appliances installed, which result in a water use per person of approximately 150 litres per head per day would cost £896.62. These include a standard 230 litre bath (£174.00), two 6/4 litre dual flush WCs (£124.97 each), a standard mixer shower (£184.00), a 6 litre per minute bath/shower mixer (£80.73), two basin mixer taps (£42.00 each), one fitted with a 2.5 litre per minute flow restrictor (£4.95), a basic kitchen/utility mixer tap (£42.00) and a kitchen/utility click tap (£77.00).¹⁹
- Water efficient appliances installed, which result in a water use per person of approximately 125 litres per head per day would cost £927.61. These include a standard 230 litre bath (£174.00), two 6/3 litre dual flush WCs (£129.99 each), a shower with a flow rate of 8 litres per minute (£199.00), a 6 litre per minute bath/shower mixer (£80.73), a basin mixer tap with a 2.5 litre per minute flow restrictor (£46.95), one set of basin taps with an inbuilt 1.7 litre per minute spray fitting, a kitchen/utility tap with a 2.5 litre per minute flow restrictor (£46.95) and one set of kitchen/utility taps with an inbuilt 6 litre per minute aerator fitting (£60.00).20

Therefore, the additional cost of meeting the 125 litres per head per day Requirement by installing water efficient devices is estimated as £30.99 per household. It has been assumed that the cost of water efficient appliances is constant over the 10 years from 2009 and that costs only occur in the year the dwelling is built i.e. there are no associated maintenance costs with the implementation of the amendment to the Building Regulations. Dwellings that meet the minimum water efficiency standards set in the Code for Sustainable Homes will have met the minimum water efficiency standard. In order to receive public funding, social housing must meet Level 3 of the Code. Therefore, although it is not mandatory for social housing to this level, in practice the majority will. Therefore, it has been assumed that the introduction of this Regulation will not impose a cost on builders of social housing (both local authority and registered social landlords).

The additional cost of water efficient devices (cost to housebuilders) in each year of the analysis is shown in constant prices in Table 3.

20 Deci

¹⁹ Prices for standard appliances were obtained via a web search of bathroom and kitchen retailers in February 2008. The following websites were consulted: www.banyo.co.uk, www.heatandplumb.com, www.banyo.co.uk, www.heatandplumb.com, www.heatandplumb.com, www.banyo.co.uk, www.heatandplumb.com, <a href="www.heatandplumb.c

²⁰ Prices for water efficient appliances were obtained via a web search of bathroom and kitchen retailers in February 2008. Product prices from the following websites: www.banyo.co.uk, www.banyo.co.uk</

Table 4 Additional cost of water efficient devices

	0.4 4.1	4.6 46.5	5.1 50.6
	4.0	4.6	5.1
2016	4.0	4.6	5.1
2015	4.0	4.6	5.1
2014	9.0	4.6	5.1
2013	4.0	4.6	5.1
2012	0.4	4.6	5.1
2011	0.4	4.6	5.1
2010	4.0	4.6	5.1
2009	4.0	4.6	5.1
Year	Administrative costs (£million/ year)	Extra cost of water efficient appliances (£million/ year)	Total cost (£million/ year)

Administrative burden

There is also an administrative cost associated with calculating the water consumption in new dwellings. It has been assumed that it will take 30 minutes to use the water calculator to select a range of appliances that does not exceed the 125 litres per head per day limit. Assuming an hourly rate of £70, this equates to an additional cost of £35 per dwelling. However, a development of many identical dwellings would only require one water calculation; hence, the following assumptions have been used in the estimation of this additional cost:

- 80% of new dwellings will be built by volume builders; one plan used for 300 new dwellings (unit cost £0.12).
- 13.75% of new dwellings will be built by smaller developers; one plan used for 10 new dwellings (unit cost £3.50).
- 6.25% of new dwellings be individually designed; one plan per dwelling (unit cost £35).

Therefore, based on an indicative figure of 150,000 new homes being built per year, the additional administrative burden will be approximately £414,000 per year.

The cost of Option 2 to house builders (including the administrative burden) is therefore an average of £5.1 million per year

Costs to water companies

All other things being equal, water companies will generate less revenue in the short term since they will provide less water to their customers. This cost is equal to the economic benefit that householders will receive (see Benefits section).

Specific Impact Tests: Checklist

Specific impact tests have been carried out where relevant.

Type of testing undertaken	Results in Evidence Base?	Results annexed?
Competition Assessment	Yes (see below)	No
Small Firms Impact Test	Yes (see below)	No
Legal Aid	Yes (see below)	No
Sustainable Development	Yes (see below)	No
Carbon Assessment	Yes	No
Other Environment	No	No
Health Impact Assessment	Yes (see below)	No
Race Equality	Yes (see below)	No
Disability Equality	Yes (see below)	No
Gender Equality	Yes (see below)	No
Human Rights	Yes (see below)	No
Rural Proofing	Yes (see below)	No

Competition Assessment

It is expected there would be minimal impact on UK competitiveness or on competition within the UK markets. Competition within the building trade and between developers would not be affected by this proposal.

In the manufacture of fittings, the market comprises of a large number of both UK firms and importers. The market is not dominated by any one manufacturer. There are no additional set-up costs that emerge from the introduction of the proposed Requirement and many of the manufacturers already include water efficient devices in their ranges. The pace of change in the industry is not great and the introduction of a new Requirement is likely to encourage and lead to further innovation and a faster phasing out of the least efficient lines. This would not restrict the ability of firms to choose the price, quality, range or location of their products.

Overall, the proposed changes are unlikely to have a significant adverse effect on the industry.

Small Firm's Impact Test

- 1. Firms spend a significant amount of time keeping up to date with revised and new regulations. The cost of this is likely to be proportionately higher for small firms than large ones. The proposals for the revision of Part G apply to small businesses and accordingly, a small firms' impact test was undertaken. In addition to small firms responding to the public consultation, 13 SMEs or associations representing SMEs were directly contacted to explore whether the financial and other impacts of the proposed changes to Part G (Sanitation) are more burdensome for small businesses i.e. bring about disproportionate costs or bring more benefits to small businesses.
- 2. Those contacted were specifically asked:

"As a small business, you are asked to tell us whether the proposed new Requirements would mean that you would be required to:

- undertake additional training to ensure that your work complies with those requirements (or do these match what you are already doing?);
- carry out more work than previously (for example, add additional safety devices or build in more sanitary appliances to a dwelling);
- carry out additional administration work in relation to the notification to Building Control.

Would any of these mean additional costs to your company? Are you able to give us a feel for those costs?"

- 3. Eight of those contacted responded. The firms were:
 - House builder: 2- 5 house developments.
 - Federation of Master Builders
 - Designer and producer of environmentally-sustainable bespoke buildings
 - Property development and management
 - Association representing plumbers/installers
 - Manufacturer of bespoke kitchen furniture
 - Kitchen installation company
 - Inventor
- 4. From the focused consultation with small firms the points raised were
 - Training costs for designers and installers to understand new provisions of Part G
 - Training to use new water efficiency calculator (new houses) if company not working to Code for Sustainable Homes.
 - Concerns over costs of administration for the notification procedure.
 - Benefits to manufacturers of specialist products through promotion of new technologies.

The issues raised were a mixture of benefits and burdens to small businesses. None of companies contacted said that they would have to carry out more work than previously. There were concerns about the administrative burden and training needs. It was felt that some proposals might impact on the market for certain products. Each of the issues has been addressed below.

- 5. From the public consultation a number of the points were raised relating to possible cost or benefit to SMEs–
 - A single point of advice and clarification of requirements are welcomed.

- Concerns were expressed over:
 - the impact of the proposed water efficiency measures on market for luxury plumbing fittings in particular SMEs which also underpins sale of lower cost products;
 - the cost and time associated with training of Approved Inspectors in additional areas;
- The cost of submitting and administering building control notices is estimated as £5 per application.
- Respondents would expect there to be additional costs associated with change of guidance.

6. Response to issues

Benefits

Single point of advice, clarification of requirements – less questions/dispute on site about means of complying with Regulations, less time in seeking information in other reference sources.

Impact of water efficiency measures on market for high water using ("luxury") plumbing fittings —by choosing an approach based on whole building water efficiency standards greater flexibility is provided for how developers meet the overall water efficiency standard.

Burdens

Costs of submitting and administering building control notices (new build) - estimated as £5 additional per application. This will be included in the cost benefit analysis. There will be no change in the number of notices required from the current edition of Part G.

Costs of submitting and administering building control notices (extensions, change of use etc.) – it is expected that costs of notification of building work for extensions to buildings and change of use might fall disproportionately on small businesses. There will be no change in the number of notices required from the current edition of Part G.

Additional costs associated with change of guidance – each of the changes has been assessed for impact on practical work and any costs included in the cost benefit analysis.

Training to understand new minimum water efficiency standards – Large organisations may have a range of skilled staff which would permit an individual to attend an external training course and pass knowledge on to others. For smaller businesses, the cost of an external training course (one-off) as a proportion of employees would therefore be greater and the opportunity for in-house training less.

Training of approved inspectors – the training and familiarisation impacts as discussed with all of the small firms and any costs included in the cost benefit analysis.

Health impact assessment

It is important that any provision for the conservation of water should not promote efficiency to the point where health and sanitation are compromised. The proposed provisions aim to reduce consumption of water by fittings rather than to change users' habits. The benefits of this approach will be in having fittings that continue to function satisfactorily but use less water. In assessing fittings for minimum standards, they must also continue to maintain their fitness for purpose.

There is likely to be a need to make provisions for exemptions in cases where individuals have chronic health problems or disabilities which will require modifications to their facilities to address a specific need.

Race equality assessment

The options proposed do not require any change in users' habits and therefore will not impact unfairly on any particular groups. Some faiths require the use of, for example, running water for hand washing, however, the requirement would not limit the quantity of water that can be used by any individual.

Regional differences

Although there are regional differences in the supply demand balance, allowing for these regional differences would be difficult and counterproductive in the legislation for the following reasons:

- The bathroom manufacturers do not design or supply bathroom fittings on a regional basis; their market is national, European or even international in nature.
- Water is heavy and both its treatment and transport result in significant carbon emissions which contribute to climate change. This means we should reduce our use of water in all parts of the country.
- It is important for future sustainability that all members of the public and society in general value water as a precious resource to be used wisely, not just a commodity. Regional standards would not help to promote this message to the wider community.
- A sufficient degree of market transformation needs to be achieved if standards of water efficiency are to be raised and maintained for the future.

Legal Aid

It is envisaged that the proposal will have no impact on legal aid.

Sustainable Development

The proposed provisions will assist with sustainable development particularly through the provisions for the installation of more water efficient appliances.

Disability Equality

Please refer to comment under Health Impact Assessment.

Gender Equality

It is envisaged that the proposal will have no impact on gender equality.

Human Rights

It is envisaged that the proposal will have no impact on human rights.

Rural Proofing

It is envisaged that the proposal will have no impact on rural communities.

Enforcement and Sanctions

Local authority building control departments and private approved inspectors will enforce the proposals through the existing mechanisms and sanctions provided through the Building Act.

Implementation and Delivery Plan

The revised Part G and Approved Document was published on 13 May 2009 and comes into force on 1 October 2009. A Circular explaining the changes made to the existing regime and explaining clearly the transitional provisions was also published at the same time. Following publication of the package we will carry out further dissemination through a series of events across the country for industry and building control bodies.

Post-Implementation Monitoring and Review

It is the department's general practice to monitor how new policy is working within a reasonable timeframe (usually about 3 years after implementation). However, in the light of some previous concern about the unstructured nature of how the building control system is reviewed and changed, the department has signalled that it will move to a system whereby Parts would generally only be changed every six years. It is not envisaged, therefore, that Part G would be amended again before 2016 meaning that a formal review would not start before 2013. However, the department has an ongoing dialogue with users of the building control system and will monitor informally how the changes are working in practice. In addition, some of the further work in relation to the water calculator (see page 11) highlighted the desirability of developing further certain aspects of the evidence base supporting the methodology. This is an area of work we will investigate further.

Summary and conclusions

This Impact Assessment considers the inclusion of a new Requirement to Part G of the Building Regulations (England and Wales) and the guidance in AD G which will concern water efficiency. The amendments will impact upon new dwellings only.

Two options have been considered: (i) do nothing and (ii) amend the Building Regulations to include a whole building water efficiency requirement at a level of 125 litres per person per day to be met by the method described in a revised Approved Document G.

A summary of costs and benefits for the two options is given below.

Option	Costs	Benefits
Option 1	No direct costs but would forego benefits of option 2	None
Option 2	Annual average cost to house builders/developers	Annual average benefit to water industry = £10.4 million
	(including administrative burden)= £5.1 million	Annual average benefit to environment (carbon savings) = £4.7 million
		Annual average social benefit (from energy savings) = £17.3 million

Summary: Intervention & Options					
Department/ Agency: Communities and Local Government	Title: Impact Assessment of a revision to Approved Document G to the Building Regulations 2000 (England and Wales)				
Stage: FINAL	tage: FINAL Version: 2.0 Date: May 2009				
Related Publications: Approved Efficiency	Document G: Sanitation, Hot	Water Safety and Water			
Available to view or download at:					
http://www.communities.gov.uk					
Contact for enquiries:	Shayne Coulson Telephone: 020 7944 5711				

What is the problem under consideration? Why is government intervention necessary?

The current Part G of the Building Regulations and the associated guidance was produced in 1992, many references have been superseded and the guidance does not reflect current practice in a number of areas.

In particular, a number of recent scalding incidents resulting from the failure of aspects of hot water systems have highlighted the need to ensure that established good practice in relation to the safety of these systems is reflected in Regulations.

What are the policy objectives and the intended effects?

The policy objectives is to ensure that better support is provided to the industry in their efforts to comply with the Building Regulations and as a result ensure better water hygiene and safety for building occupants.

What policy options have been considered? Please justify any preferred option?

The principal option considered has been to update Part G of the Building Regulations and guidance in Approved Document G. A 'do nothing' option has also been considered.

When will the policy be reviewed to establish the actual costs and benefits and the achievement of the desired effects?

A formal review will not be undertaken before 2013.

Ministerial Sign-off For consultation stage Impact Assessments:				
I have read the Impact Assessment and I am satisfied that, given the available evidence, it represents a reasonable view of the likely costs, benefits and impact of the leading options.				
Signed by the responsible Minister:				
lain Wright				

Summary: Analysis & Evidence									
Polic	Policy Option: 2 Description: Update of Part G and the associated guidance, and implement water efficiency policy								
ANNUAL COSTS Description and scale of key monetised cos groups'				sed costs by 'm	nain affected				
COSTS	One-o	ff (transition)	Yrs	Building Control Bodies (BCBs) and industry will require familiarisation training for the new technical guidance. This will impose a one-off cost. Stakeholders have advised that there should					
ö	(excludin	ge Annual Co	ost		going costs ass a) as a result of		working practices proposed.	e (design &	
	£0					I Cost (PV)	£ 0.5million		
	Other I	key non-mon	etised cost		affected groups				
	Α	NNUAL BENE	EFITS	affected g	roups'	-	sed benefits by		
	One-o	ff (transition)	Yrs				associated guida		
	£0			financial savings could be seen through removal of the need to hold Registered Operatives Identity Card. However these cards					
Average Annual Benefit (excluding one-off) Average Annual Benefit (excluding one-off) are issued as part of a training course (BPEC) and as the need for training would continue, real savings are unlikely to be realised. Total Benefit (PV) £ 0									
Z W	£0				Total E	Benefit (PV)	£0		
	buildin regulat regulat can als	g situations. B tions and stan tions and avoi so help minimi	by ensuring dards, we set misinterpresset the poss	that it is up eek to assis etation. Wit ibility of futu	to date and ref st designers an h guidance on	lects current of builders to good praction ore and ensu	g Regulations in t practice and relocomply with the ce on hot water sure that where sy	lated e building systems we	
	assumpt	ions/Sensitivit	ies/Risks		<u> </u>				
					cost per empl				
Year Year		Time Period Years 10	£	efit Range	(NPV)	- £ 0.5 mill	EFIT (NPV Best estimate) Iion		
What	is the g	eographic cov	erage of the	e policy/opti	on?		England and W	/ales	
On w	hat date	will the policy	be implem	ented?			April 2009		
Which organisation(s) will enforce the policy?						Building Contro	ol Bodies		
What is the total annual cost of enforcement for these organisations? £ 0									
Does enforcement comply with Hampton principles? Yes									
Will in	Will implementation go beyond minimum EU requirements? No								
What is the value of the proposed offsetting measure per year? £ N/A									
What is the value of changes in greenhouse gas emissions? £ 0									
Will t	he propo	sal have a siç	gnificant imp	act on com	petition?		No		
	al cost (auding one-	£-£) per orgar	nisation		Micro	Small	Medium	Large	

Are any of these organisations exempt?			No	No	N/A	N/A
Impact on Admin Burdens Baseline (2005 prices) (increase – dec					(increase – decrease)	
Increase of £0 Decrease of £			Net Impact	E 0		
Key: Annual costs and benefits: Constant Prices			(Net) Presei	nt Value		

Evidence Base (for summary sheets)

Purpose and intended effect

To update Part G and the associated guidance in Approved Document G with:

- cross-references to other relevant legislation to improve awareness;
- references to current standards and published technical guidance;
- current practice in relation to the particular requirements of the Regulations which this document addresses.

It is intended that the changes will provide users of the Approved Document (AD) with a single source of guidance in relation to the requirements for the situations which this AD addresses, and so will help to assist compliance and consistency of practice across England and Wales.

The policy objectives are:

- to ensure that better support is provided to the industry in its effort to comply with the Building Regulations and as a result ensure better water hygiene and safety for building occupants;
- to ensure that established good practice is supported by the Regulations and that as a result the possibility of future hot water system failures is minimised;

The changes will affect all those dealing with relevant building work in England and Wales (separate legislation applies in Scotland and Northern Ireland). This may include architects, developers, builders, Building Control Bodies, manufacturers, property owners/occupiers etc.

Background

The current edition of Approved Document G was produced in 1992 with non-technical amendments issued in 2000. References to other legislation, standards and technical guidance documents have been superseded and the AD directs users to out-dated guidance.

In addition, the AD does not reflect current building and plumbing practice. For example, the provision of sinks with hot and cold water supply in food preparation areas and the ability of cold water cisterns to resist the effects of hot water in the event of discharge by vent pipes.

Rationale for Government intervention

If the current edition were to remain, implementation of the Building Regulations by developers and installers and the enforcement of the Building Regulations by Building Control Bodies (BCBs) would become increasingly difficult.

Practice across England and Wales would also diverge between local authority areas as local methods of working developed to deal with new issues and developments in technology.

Consultation

Within Government

The review of Part G and the Approved Document has been conducted by Communities and Local Government in conjunction with the members of the Building Regulations Advisory Committee (BRAC) who are appointed as independent statutory advisors to the Secretary of State. The Part G Technical Working Party steering the review includes manufacturers, developers, architects, installers and representatives of Government including the Devolved Administrations and agencies. It also includes a number of seconded experts from Communities and Local Government, Defra and the Devolved Administrations.

A sub-group of specialists in the field of hot water heating systems reviewed the technical detail in Section G3.

Public consultation

The changes discussed in this impact assessment were originally developed from a series of stakeholder engagement workshops with a broad cross-

section of the industry. The proposals were then assessed by the Part G Technical Working Party.

These proposals were subject to a 3-month public consultation. The documents were available electronically on the CLG website. 127 formal responses were received.

In broad terms, the vast majority of the proposed amendments were welcomed by respondents with a large number receiving very high levels of agreement. There were a few exceptions though where a mixed response was received. These were: the proposal to remove the provision relating to the installation of unvented hot water storage systems by a person competent to do so; the introduction of a provision for slip resistance of sanitary appliances; the extension of the provision for cleanability of sanitary appliances; and the use of plastic discharge pipes and discharge into soil stacks.

All responses have been reviewed by Communities and Local Government in conjunction with the Part G Technical Working Party. A summary of the results of the public consultation exercise is available on the CLG website at http://www.communities.gov.uk/publications/planningandbuilding/partgconsult summary.

Options

The Options considered are:

Option 1:Do nothing

This option would keep the Approved Document G in its current state, as summarised above in the Background.

Option 2: Implement changes to Part G and the associated guidance

Option 2 would update Part G and the associated guidance in Approved Document G with:

- cross-references to other relevant legislation to improve awareness;
- references to current standards and published technical guidance;
- current practice in relation to the particular requirements of the Regulations which this document addresses.

It is intended that the changes would provide users of the AD with a single source of guidance in relation to the requirements for the situations which this AD addresses, and so will help to assist compliance and consistency of practice across England and Wales.

There were a number of proposed changes to Approved Document G; these are listed below. The Part G Technical Working Party agreed that these changes should not have any cost impacts as they are simply bringing Approved Document G into line with current practice. As part of the public consultation, we sought views on whether the proposed changes would lead to additional costs or benefits.

For each proposed amendment, we have assessed whether this would require a change in working practice (e.g. design, installation) or additional training in working practices. Furthermore, we identified where this would require a change in submission of building notices or full plans.

When considering the potential costs and benefits, it should be noted that the water efficiency measures will only apply to new dwellings. Transitional provisions have been made to assist with this and with the introduction of other changes

There will be some one-off training and familiarisation costs which have been included in Year 1 as transitional costs. Building Control Bodies (BCBs) would have to bear the cost of familiarisation with the proposed new guidance. The costs of this have been split equally between this impact assessment and the impact assessments for the introduction of a requirement on the control of water temperature from sanitary appliances and the introduction of water efficiency measures.

Option 2: Update the requirements – list of changes proposed					
Section	Change	Comment	Change since consultation		
Cold Water Services	Introduction of new section to specifically cover cold water services.	Part G previously required cold water to be supplied to WCs, urinals, washing facilities, baths and showers. Other legislation requires water supplied to be wholesome. So, the new Requirement G1(1) specifies those locations where this supply of water should be wholesome. This would not increase the regulatory burden.	No change		
	New G1(1) would amend Part G and Approved Document G by requiring wholesome water at sinks and drinking water stations.	Part G previously required cold water to be supplied to WCs, urinals, washbasins, baths and showers. This would extend the provision to sinks and drinking water fountains but would do no more than is currently required by Water Supply (Water Fittings) Regulations and current practice. This would not increase the regulatory burden, but would increase awareness.	No change		
	New G1(2) would amend Part G and Approved Document G by allowing for non- wholesome water to be used in buildings.	Use of non-wholesome water for flushing WCs and urinals is not mandatory, but will allow for those who wish to use other technology now and would 'future-proof' Part G with respect to the water efficiency requirements in the Code for Sustainable Homes. This would not increase the regulatory burden but simply provide for greater flexibility.	No change		

Llet	Now CO(4)	Approved Decomposit O	NIa abanga
Hot Water Services	New G3(1) would amend Part G and Approved Document G by requiring heated wholesome water at sinks. New G3(2) would amend Part G and	group on hot water systems advised that this is current	No change No change
	Approved Document G by requiring materials and systems for hot water heating to be robust.	practice in design and testing of products by manufacturers and the installation by plumbers. For example, cold water cisterns are now tested to 100°C for 500 hours. Installation best practice is covered by the Water Regulations Guide – no change.	
	G3(3) would amend Part G and Approved Document G by extending the safety precautions to vented systems (previously unvented only).	The BRAC Working Party subgroup on hot water systems advised that this is current practice in design and testing of products, specifically cylinders, by manufacturers and the installation of vented systems by plumbers. Installation best practice is covered by the Water Regulations Guide – no change.	No change and limits of application to be changed to apply to primary thermal stores.
	G3(4) – no change from 1992 edition. Consultation	None	Remove. Not in line with other parts of the Building Regulations and covered by Regulation 7.
WCs and associate d facilities	G4(4) is new and applies only to buildings other than dwellings.	Cleanability of walls and floors previously only applied to workplaces (see Approved Code of Practice). It is proposed to give the same level of protection to people in other non-domestic buildings. The BRAC Working Party G advised that this is current	This proposal has been rejected. Although some respondents welcomed the proposal, further consideration has confirmed that this is adequately covered by Regulation 7.

		practice and therefore it would	
		not increase the regulatory	
		burden, but would increase	
		awareness.	
Bathroom	G(5) –	_	The limit of application has been amended to include
S	requirement for a sink added		buildings with rooms for
	a sirik added		residential purposes.
Food	Introduction of	This introduces the need for a	No change
Preparati	new section to	sink for areas where food is	, a site in go
on areas	specifically	prepared but would do no	
	cover food	more than is already required	
	preparation	by Water Supply (Water	
	areas. New G6 would make	Fittings) Regulations and current practice. This would	
	provision for a	not increase the regulatory	
	kitchen sink.	burden, but would increase	
		awareness.	
Appliance	G7 allows for	Part G previously required	This proposal has been
S	the effective	design to allow effective	rejected.
	cleaning of appliances by	cleaning of WCs, urinals, and washing facilities. This is being	Although many respondents
	choice of profile	consulted upon.	welcomed the proposal, the
	and material.	consumed apoin	method of assessment and
			enforcement was questioned.
			Further consideration has
			confirmed that this is
			adequately covered by Regulation 7.
Option 2:	Update the guida	lnce - list of changes proposed	
Cold	New guidance	Guidance on wholesome and	Guidance on non-wholesome
Water	to accompany	non-wholesome water; cold	water systems to be reduced
Services	G1(1) and	water supply in dwellings and	and reference made to key
	G1(2).	in buildings other than	documents.
		dwellings.	
Hot Water	Accreditation	In the current edition of	
Services	(attestation) of unvented hot	Approved Document G, unvented systems up to 45kW	
CCIVICCS	water storage	power input should be	
	systems.	accredited to a relevant	
	-	performance standard.	
		Removal of this provision	
		would be deregulatory. In the	
		current edition of Approved Document G, there is no	
		similar provision for unvented	
		systems above 45kW power	
		input. We believe systems	

		above 45kW but less than 500 litres volume are also provided as packages and therefore it could be a lesser burden to ask for one-off accreditation of a package instead of checking the design of each installed package.	
WCs and associate d facilities	Scale of provision in buildings other than dwellings.	Guidance previously only covered the scale of provision in dwellings. This suggested guidance should state that provision is in accordance with BS 6465.	Following representations during consultation that the BS may lead to over-provision in certain circumstances, the revised AD will refer to guidance in the Health and Safety Executive's Approved Code of Practice on Workplace health, safety and welfare whilst referencing the BS as a further source of information when considering toilet provision.
	Clarification of guidance on separation between WCs and food preparation areas.	Guidance in BS 6464: 1984 has lead to confusion over the separation between WCs and food preparation areas to encourage handwashing prior to entering food preparation areas. The provision of diagrams seeks to address this.	Agreed, but text added in addition to diagrams.
Bathroom s	Limit of application.	It is proposed that the limit of application be extended to cover buildings with rooms for residential purposes. This now provides the same level of guidance for other buildings and follows BS 6465. This standard has been in place since 2006, so reference to this should not add new costs.	No change.
Food Preparati on areas	New guidance to accompany G6.		No change.
Appliance s	New guidance to accompany G7.		Deleted as proposal for requirement rejected.

Sectors and groups affected

Building Control Bodies as well as industry (designers, producers, and installers) would have to bear the cost of familiarisation with the new guidance proposed in Option 2. There will be a one-off cost of £1.5 million including £560,000 costs to BCBs arising from this familiarisation process. The costs of this have been split equally between this impact assessment and the impact assessments for the introduction of a requirement on the control of water temperature from sanitary appliances and the introduction of water efficiency measures.

Detailed costs and benefits

This section estimates the costs and benefits for the range of options identified in this Impact Assessment. All costs (and benefits) are calculated using central estimates. A ten-year period of analysis has been chosen. In accordance with The Treasury's Green Book guidance, a discount rate of 3.5% has been applied to calculate present values. Costs and benefits are quoted below in present values.

Benefits

Option 1

Option 1 would provide no additional benefits.

Option 2

Non-monetised benefits – Update to Part G and Approved Document

Approved Document G provides guidance on compliance with Building Regulations in typical building situations. By ensuring that it is up to date and reflects current practice, we can ensure that designers and builders are best placed to comply with the building regulations. By introducing current good practice standards in relation to the safety of hot water systems we can also minimise the possibility of future system failure and ensure that where systems are not safely installed effective action can be taken by BCBs.

Users of the Approved Document confirmed during the consultation that a single source of information would save them time and ensure all relevant

guidance was noted.

Non-monetised benefits arising from Optio	
Proposed amendment	Benefit
G1(1) and G1(2) Introduction of new section	Awareness of requirements for the provision
to specifically cover cold water services.	of cold water services in buildings and the
	provision of a single source of information.
	Deregulation by allowing the possibility of
	using non-wholesome water in some
	circumstances, offering greater flexibility in
	building design and efficiency in use of
	wholesome water.
G3(1) heated wholesome water at sinks.	Awareness of requirements for the provision
	of hot water services in buildings and the
	provision of a single source of information.
G3(2) robustness of materials and systems	Awareness of good practice and potential to
for hot water heating.	limit injuries from degradation of materials.
G3(3) extending the safety precautions to	Regulation of vented systems to the same
vented systems.	degree as unvented systems and potential to
	limit injuries from explosions.
Guidance on electric water heating	Offers greater flexibility in heat sources and
	inclusion of these products in the guidance.
Guidance on solar water heating	Offers greater flexibility in heat sources and
	inclusion of these products in the guidance.
Guidance on visibility at point of discharge	Offers flexibility in the method chosen for
	identifying activation of relief valves.
Guidance on prevention on excessive	Allows solar water heating to be included in
temperatures	Part G, whilst also avoiding the potential for
	injuries from hot water escape.
Guidance on commissioning of fixed building	Alignment with Part L.
services	
G5 provision for a bathroom sink and	Awareness of requirements for the provision
extension of limit of application	of sinks and for bathrooms in buildings with
	rooms for residential purposes.
G6 provision for a kitchen sink.	Awareness of requirements for the provision
	of a kitchen sink in buildings and the
	provision of a single source of information.
Guidance on scale of provision in buildings	Updated references to sources of
other than dwellings.	information on scale of provision of WCs in
	dwellings and buildings other than dwellings.
Clarification of guidance on separation	Less variation in interpretation on site and
between WCs and food preparation areas.	possible cost savings of reduced floor area
	and fixtures/fittings where lobbies have been
	unnecessarily installed.

In relation to G5 above, it is believed that due to lack of clear guidance at least 1000 ventilated lobbies are provided unnecessarily to toilets at a cost of about £600 each. If this assumption were correct the total saving would be £600,000 per year.

Information received on boiler explosions following changes to regulations that permit the installation of mains pressure hot water systems produced showed at least one press report per year of boiler explosions that involved structural damage and 10 that involved serious water damage. If these were extrapolated to allow for under reporting in the press of actual incidents the figures would probably be in the order of 1.2 and 100 respectively. Data from insurers indicates the cost of structural repairs to a typical home is £50k and water damage £20k. This could therefore produce annual costs in the region of £2.06 million.

However, due to the anecdotal origins of these incidents and assumptions that would have to be made around them to produce a monetised benefit, these costs have not been included as monetised benefits in this impact assessment.

Monetised benefits - Update to Part G and Approved Document

No specific monetised benefits were identified. However there could be additional sales for those manufacturers producing products and systems now specifically included in the guidance.

Monetised benefits arising from Option 2		
Proposed amendment	Benefit	
Removal of Requirement G3(4) and	Deregulation and cost saving by removing	
guidance	need for Registered Operatives Identity Card	
	specifically for unvented systems.	
	Note: The training courses are provided by	
	BPEC and run by a range of colleges. The	
	card is not issued without the training course	
	attendance, therefore removal of the card is	
	unlikely to realise any financial benefits.	

Costs

Option 1

Option 1 imposes no direct costs, although the benefits realised under Option 2 would be missed.

Option 2

One-off Costs associated with changes to Part G

The main implementation cost (one-off costs in year 1) would be the need for training and familiarisation with the new legislative requirement and the amended guidance. An industry sector that would require particular training is the Building Control Bodies (BCBs) who are responsible for enforcing compliance. These can be either local authority building control departments

or Approved Inspectors (Als).

There will be training and familiarisation costs to BCBs and for all parts of the construction industry including builders, developers, consultants, installers etc.

An estimated 4000 people are employed by BCBs in England and Wales (based on a recently published CLG survey of building control bodies (http://www.communities.gov.uk/documents/planningandbuilding/pdf/surveybuildcontrol1).

Training costs will vary according to the size of the organization, with economies of scale allowing cost per person to fall in larger organisations. BCBs employ about 4000 staff. A value of £100 – £300 per person has been proposed by BRAC Working Party members for training costs. £140 per person used in the assessment of impacts for the update to Approved Document B has been adopted, giving a total cost of £560,000.

There will also be training and familiarisation costs for all parts of the construction industry including builders, developers, consultants, installers etc. Most installers will be executing work that complies with the Water Supply (Water Fittings) Regulations 1999 and the guidance set out in the Water Regulations Guide. Many of the changes to Part G are already covered in this guide. This should ease the learning and training burden.

Giving consideration to previous exercise the cost of training and familiarisation related to the changes in Part G are estimated at £ 1.5 million, including the £560,00 costs to Building Control Bodies. These costs would occur in Year One and include both external training and in-house training often using materials from seminars and workshops supported by Government, professional bodies and trade associations. The costs of this have been split equally between this impact assessment and the impact assessments for the introduction of a requirement on the control of water temperature from sanitary appliances and the introduction of water efficiency measures.

This cost has been included in this Impact Assessment as a one-off expense in the first year, in practice it is considered to be a general business expense rather than a burden. Good employment practices recommend that at least 1% of the employer's wage bill should be spent on training. Professional institutions that include designers, building control surveyors and project managers in their membership require that at least 20 hours a year are spent on continuing professional development. This indicates that employers in the construction industry should spend at least £7.5m a year on training. Building

Regulations are a considered to be a core skill for all building designers and supervisors. It is also possible that some of the cost may be offset by the greater clarity and consistency the proposals would bring.

Costs – Update to Part G and Approved Document

Costs arising from Option 2	
Proposed amendment	Cost
G1(1) and G1(2) Introduction of new section to specifically cover cold water services.	There are no additional costs as wholesome water provision aligns with the Water Supply Regulations and the use on non-wholesome water sources is optional.
G3(1) heated wholesome water at sinks.	No change in working practice, therefore no additional costs.
G3(2) robustness of materials and systems for hot water heating.	No change in working practice, therefore no additional costs.
G3(3) extending the safety precautions to vented systems.	No change in working practice, therefore no additional costs.
Removal of Requirement G3(4).	Use is optional, no additional costs.
Guidance on electric water heating	Use is optional, no additional costs.
Guidance on solar water heating	Use is optional, no additional costs.
Guidance on visibility at point of discharge	None
Guidance on prevention on excessive temperatures	No change in working practice when Installing solar heating systems, therefore no additional costs.
Guidance on commissioning of fixed building services	Already required for Part L, no additional costs.
G5 provision for a bathroom sink and extension of limit of application	No change in working practice and therefore no additional costs.
G6 provision for a kitchen sink.	No change in working practice, therefore no additional costs. Scale of provision published in existing guidance documents (BS 6465: 2006 for dwellings, Food Hygiene Regulations for commercial kitchens).
Guidance on scale of provision in buildings other than dwellings.	No change in working practice. Scale of provision published in existing guidance documents. Therefore no additional costs.
Clarification of guidance on separation	None
between WCs and food preparation areas.	

Costs – Changes to notification and inspections costs

For replacement of sanitary ware where there would be no prejudice the health and safety of any person on completion of the work, it is proposed that sinks, hand washing facilities, and bidets are included in Regulation 12(5)(b) and Schedule 2B in addition to sanitary convenience, washbasin, bath, and

shower which are already listed. This would mean that replacement of these products would need to comply with Part G but would not need to be notified to Building Control.

In a small minority of cases the replacement of sanitary ware could involve work on the hot or cold water system or above ground drainage which might prejudice the health and safety of people on completion of work. In such cases the work would be notifiable unless carried out by a member of a competent person scheme. This is currently the position so the proposed Part G changes will not mean any extra notifications to Building Control.

It is also possible that the replacement of sanitary ware could involve work on underground drainage. Such work will always be notifiable to Building Control. However, there Is no change from the current requirements on this point and no extra notifications will need to be made to Building Control.

It is also proposed to add to Schedule 2B the replacement of parts of or additions to existing cold water supply systems. This work would need to comply with Part G but would not need to be notified to Building Control.

Replacements of parts or additions to hot water systems are generally not notifiable to Building Control under Schedule 2B. There are two significant exceptions:

- i. the replacement of a combustion appliance; and
- ii. where the replacements or additions are such that the hot water system needs to be recommissioned.

However, where this work Is carried out by a member of a competent person scheme, which will be the case in a significant majority of cases, there would be no need to notify Building Control.

The notification requirements for hot water systems are not being changed by the proposed changes to part G and no extra notifications will need to be made to Building Control.

Specific Impact Tests: Checklist

Ensure that the results of any tests that impact on the cost-benefit analysis are contained within the main evidence base; other results may be annexed.

Type of testing undertaken	Results in Evidence Base?	Results annexed?
Competition Assessment	Yes (see below)	No
Small Firms Impact Test	Yes (see below)	No
Legal Aid	Yes (see below)	No
Sustainable Development	Yes (see below)	No
Carbon Assessment	No	No
Other Environment	No	No
Health Impact Assessment	Yes (see below)	No
Race Equality	Yes (see below)	No
Disability Equality	Yes (see below)	No
Gender Equality	Yes (see below)	No
Human Rights	Yes (see below)	No
Rural Proofing	Yes (see below)	No

Specific impact tests

Competition Assessment

There is no proposed policy deemed likely to raise any competition concerns. Where possible additional options and products have been incorporated over and above the current Part G.

Small Firms Impact Test

1. Firms spend a significant amount of time keeping up to date with revised and new regulations. The cost of this is likely to be proportionately higher for small firms than large ones. The proposals for the revision of Part G apply to small businesses and accordingly, a small firms' impact test was undertaken. In addition to small firms responding to the public consultation, 13 SMEs or associations representing SMEs were directly contacted to explore whether the financial and other impacts of the proposed changes to Part G (Sanitation) are more burdensome for small businesses i.e. bring about disproportionate costs or bring more benefits to small businesses.

2. Those contacted were specifically asked:

"As a small business, you are asked to tell us whether the proposed new requirements would mean that you would be required to:

- undertake additional training to ensure that your work complies with those requirements (or do these match what you are already doing?);
- carry out more work than previously (for example, add additional safety devices or build in more sanitary appliances to a dwelling);
- carry out additional administration work in relation to the notification to Building Control.

Would any of these mean additional costs to your company? Are you able to give us a feel for those costs?"

- 3. Eight of those contacted responded. The firms were:
 - House builder: 2- 5 house developments.
 - Federation of Master Builders
 - Designer and producer of environmentally-sustainable bespoke buildings
 - Property development and management
 - Association representing plumbers/installers
 - Manufacturer of bespoke kitchen furniture
 - Kitchen installation company
 - Inventor
- 4. From the focused consultation with small firms the points raised were
 - Training costs for designers and installers to understand new provisions of Part G
 - Training to use new water efficiency calculator (new houses) if company not working to Code for Sustainable Homes.
 - Concerns over costs of administration for the notification procedure.

 Benefits to manufacturers of specialist products through promotion of new technologies.

The issues raised were a mixture of benefits and burdens to small businesses. None of companies contacted said that they would have to carry out more work than previously. There were concerns about the administrative burden and training needs.

It was felt that some proposals might impact on the market for certain products. Each of the issues has been addressed below.

- 5. From the public consultation a number of the points were raised relating to possible cost or benefit to SMEs—
 - A single point of advice and clarification of requirements are welcomed.
 - There is still confusion over the provision of lobbies between WCs and food preparation areas.
 - Concerns were expressed over:
 - the lack of guidance on non-wholesome water treatment;
 - the possible inclusion of a requirement for slip resistance of appliances;
 - the need for the requirement on cleanability of appliances;
 - the impact of the proposed water efficiency measures on market for luxury plumbing fittings in particular SMEs which also underpins sale of lower cost products;
 - the cost and time associated with training of Approved Inspectors in additional areas:
 - the cost and time associated with training to meet current 'good practice' if not currently followed.

The cost of submitting and administering building control notices is estimated as £5 per application.

Respondents would expect there to be additional costs associated with change of guidance.

6. Response to issues

Benefits

Single point of advice, clarification of requirements – less questions/dispute on site about means of complying with Regulations, less time in seeking information in other reference sources.

Provision of lobbies between WCs and food preparation areas – clarification of this guidance will lead to the correct use of separating doors and lobbies. It should mean that fewer lobbies are provided, thus reducing costs and/or increasing floor space for bathrooms and kitchens.

Non-wholesome treatment – the concerns over the guidance provided in this section were common to all organisations – the use of non-wholesome water sources is optional and offers flexibility to designers.

Impact of water efficiency measures on market for high water using ("luxury") plumbing fittings – by choosing an approach based on whole building water efficiency standards greater flexibility is provided for how developers meet the overall water efficiency standard.

Cleanability of appliances – this requirement will not be included.

Slip resistance requirement for appliances – this requirement will not be included.

Burdens

Costs of submitting and administering building control notices (new build) - estimated as £5 additional per application. This will be included in the cost benefit analysis. There will be no change in the number of notices required from the current edition of Part G.

Costs of submitting and administering building control notices (extensions, change of use etc.) – it is expected that costs of notification of building work for extensions to buildings and change of use might fall disproportionately on small businesses. There will be no change in the number of notices required from the current edition of Part G.

Additional costs associated with change of guidance – each of the changes has been assessed for impact on practical work and any costs included in the cost benefit analysis.

Training to meet current 'good practice' if not currently followed – it was established at the BRAC Working Party G meeting that it had to be presumed

in drafting AD G and the impact assessment that practitioners would be suitably trained and the training up to date. Whilst it is recognised that not all are, it is not for this impact assessment to tackle this issue.

Training to understand new provisions of Part G and the water efficiency calculator – Large organisations may have a range of skilled staff which would permit an individual to attend an external training course and pass knowledge on to others. For smaller businesses, the cost of an external training course (one-off) as a proportion of employees would therefore be greater and the opportunity for in-house training less.

Training of approved inspectors – the training and familiarisation impacts as discussed with all of the small firms and any costs included in the cost benefit analysis.

Legal Aid

It is envisaged that the proposal will have no impact on legal aid.

Sustainable Development

The proposed provisions will assist with sustainable development particularly through the provisions for the installation of more water efficient appliances, reducing water consumed and drainage loading. The change will also underpin the water efficiency initiative of the Code for Sustainable Homes.

Health Impact Assessment

The proposed revisions to Part G and the Approved Document make an allowance for the use of water from non-wholesome sources. The use of these sources of water within buildings is currently limited to WCs, urinals and washing machines to protect health. In addition, the building designer (or the manufacturer of a proprietary unit) is required to carry out a satisfactory impact assessment to ensure that there would be no adverse impact on the health of the building occupants.

There might need to be provisions for exemptions in cases where individuals have chronic health problems or disabilities which will require modifications to their facilities to address a specific need.

Race Equality

The proposed provisions due not require any changes to user's habits and so are not seen as having different impacts on any particular racial group.

Disability Equality

Please refer to comment under Health Impact Assessment. We welcome consultation comments on this and other specific impacts.

Gender Equality

It is envisaged that the proposal will have no gender specific impact.

Human Rights

It is envisaged that the proposal will have no impact on human rights.

Rural Proofing

We do not see that there is a particular difference in the way these proposals will work in rural situations. Whilst it is envisaged that the proposal will have no differential impact on rural communities, there may be costs and benefits that we have not identified and we would welcome thoughts on these.

Enforcement and Sanctions

Local authority building control departments and private approved inspectors will enforce the proposals through the existing mechanisms and sanctions provided through the Building Act.

Implementation and Delivery Plan

The revised Part G and Approved Document was published on 13 May 2009 and comes into force on 1 October 2009. A Circular explaining the changes made to the existing regime and explaining clearly the transitional provisions was also published at the same time. Following publication of the package we will carry out further dissemination through a series of events across the country for industry and building control bodies.

Post-Implementation Monitoring and Review

It is the department's general practice to monitor how new policy is working within a reasonable timeframe (usually about 3 years after implementation). However, in the light of some previous concern about the unstructured nature of how the building control system is reviewed and changed, the department has signalled that it will move to a system whereby Parts would generally only be changed every six years. It is not envisaged, therefore, that Part G would be amended again before 2016 meaning that a formal review would not start before 2013. However, the department has an ongoing dialogue with users of the building control system and will monitor informally how the changes are working in practice.

Summary and conclusions

This IA considers the costs and benefits of the revision of Part G of the Building Regulations (England and Wales) and the guidance in AD G.

Two options have been considered: (i) do nothing and (ii) update Part G to reflect current regulation requirements and standards.

We anticipate one-off costs for familiarisation and training in Year one, falling to industry. Stakeholders have suggested that there will be no other costs as the proposal reflects current practice.

A summary of financial costs and benefits for the two options is given below.

Option	Costs	Benefits
Option 1	No direct costs but would forego benefits of option 2	None
Option 2	One-off cost = £0.5 million	None