

<b>Title:</b> <b>Flood and Water Management Act 2010:  Commencing Schedule 4 on reservoir safety</b>  <b>Lead department or agency:</b> Defra <b>Other departments or agencies:</b> Environment Agency	<b>Impact Assessment (IA)</b>
	<b>IA No:</b> 1162
	<b>Date:</b> 06/04/2011
	<b>Stage:</b> Final
	<b>Source of intervention:</b> Domestic
	<b>Type of measure:</b> Secondary legislation
<b>Contact for enquiries:</b> Paul Ditchfield 020 7238 6213	

## Summary: Intervention and Options

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

Legislation to enforce adequate safety provisions for reservoirs (Reservoirs Act 1975) was conceived in an era where little information on risk from individual reservoirs, such as inundation mapping, was available. Advances in mapping and data now allow the regulator (EA) to rank reservoirs by risk to people. In turn, this means the full suite of 1975 Act regulation is disproportionate for low risk Large Raised Reservoirs (LRRs). The Flood and Water Management Act 2010 is a public safety measure and introduced a risk-based approach into the regulation of reservoir safety in place of the prescriptive approach in the Reservoirs Act 1975, including its extension to some small raised reservoirs (SRRs) where risks to the public exist. This IA considers options for enacting this and the costs and benefits.

### What are the policy objectives and the intended effects?

The policy objective is to provide a high level of protection to the public from the continued operation of high risk Large Raised Reservoirs (LRRs); and to provide for deregulation of those where the public is not at significant risk. The likelihood of reservoir failure is very low, with no deaths since the 1920s, although there are incidents each year which, if not handled properly, could result in failure. On the other side of the risk equation, reservoir failure would result in catastrophic-type flooding according to embankment height, water volume and topography and present real risks to life where people live and work downstream; where there are no such populations, deregulation through designation of the reservoir as low risk is now possible.

### What policy options have been considered, including any alternatives to regulation? Please justify preferred option (further details in Evidence Base)

These are as follows:

Do nothing – do not enact the provisions of the FWMA 2010. This would not enable any deregulatory benefit from a more risk-based approach to reservoir safety to be enjoyed by operators.

Option 1 – Enact the provisions of the FWMA 2010 as far as Large Raised Reservoirs (LRRs) are concerned, ie those already subject to controls under the Reservoirs Act 1975. (It is not proposed to pursue new regulations extending controls to Small Raised Reservoirs (SRRs) at this stage, notably because of the need to avoid placing new burdens on micro and small businesses)

There are no other options which would enable a risk-based approach to be adopted, given the current legal framework.

**Will the policy be reviewed?** It will be reviewed. **If applicable, set review date:** 10/2015

**What is the basis for this review?** Duty to review. **If applicable, set sunset clause date:** Month/Year

<b>Are there arrangements in place that will allow a systematic collection of monitoring information for future policy review?</b>	Yes
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**SELECT SIGNATORY 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 SELECT SIGNATORY: \_\_\_\_\_ Date: \_\_\_\_\_

# Summary: Analysis and Evidence

# Policy Option 1

## Description:

Registration followed by deregulation for low-risk Large Raised Reservoirs (LRRs)

Price Base Year 2011	PV Base Year 2011	Time Period Years 50	Net Benefit (Present Value (PV)) (£m)		
			Low: 68.6	High: 134.8	Best Estimate: 101.7

COSTS (£m)	Total Transition (Constant Price) Years		Average Annual (excl. Transition) (Constant Price)	Total Cost (Present Value)
Low	0.1	1		0.1
High	0.1			0.1
Best Estimate	0.1			0.1

### Description and scale of key monetised costs by 'main affected groups'

One-off costs of registration - £60 per reservoir (all 1,824 Large Raised Reservoirs in England). This is a necessary pre-requisite before a proportion of these LRRs can then be deregulated as being "low risk".

### Other key non-monetised costs by 'main affected groups'

Designation of a reservoir as low risk theoretically increases likelihood of breach. Increase in likelihood of actual breach not possible to quantify against the base of very low likelihood for all reservoirs and risks are mitigated through use of emergency powers by emergency response authorities. Damages would be limited as low risk designation equates to possible breach not putting at risk lives in urban areas. Costs of damages to others' property would fall to the owner under common law.

BENEFITS (£m)	Total Transition (Constant Price) Years		Average Annual (excl. Transition) (Constant Price)	Total Benefit (Present Value)
Low	0		2.8	68.7
High	0		5.5	135.0
Best Estimate	0		4.2	101.8

### Description and scale of key monetised benefits by 'main affected groups'

Saving of costs to 1,008 "low risk" LRRs due to relaxation of engineering supervision, record keeping, inspection and ongoing remedial works. Baseline cost per reservoir reduced from £6,800 per annum to between £1,340 for the "high" saving case and £4,020 for the "low" saving case (best estimate cost £2,680 per annum). Present value costs estimated over a 50-year period to reflect the asset life of a typical reservoir.

### Other key non-monetised benefits by 'main affected groups'

NA

### Key assumptions/sensitivities/risks

See notes to Table 1 and Annex 2 for more detail.

Discount rate (%)

3.5

Direct impact on business (Equivalent Annual) £m):			In scope of OIOO?	Measure qualifies as
Costs: 0.005	Benefits: 4.34	Net: 4.34	Yes	OUT

## Enforcement, Implementation and Wider Impacts

What is the geographic coverage of the policy/option?		England and Wales			
From what date will the policy be implemented?		06/04/2012			
Which organisation(s) will enforce the policy?		EA			
What is the annual change in enforcement cost (£m)?		-£0.3m (inspection savings)			
Does enforcement comply with Hampton principles?		Yes			
Does implementation go beyond minimum EU requirements?		No			
What is the CO <sub>2</sub> equivalent change in greenhouse gas emissions? (Million tonnes CO <sub>2</sub> equivalent)		Traded: 0		Non-traded: 0	
Does the proposal have an impact on competition?		No			
What proportion (%) of Total PV costs/benefits is directly attributable to primary legislation, if applicable?		Costs: 0		Benefits: 0	
Distribution of annual cost (%) by organisation size (excl. Transition) (Constant Price)	Micro n/k	< 20 n/k	Small n/k	Medium n/k	Large n/k
Are any of these organisations exempt?	No	No	No	No	No

## Specific Impact Tests: Checklist

Set out in the table below where information on any SITs undertaken as part of the analysis of the policy options can be found in the evidence base. For guidance on how to complete each test, double-click on the link for the guidance provided by the relevant department.

Please note this checklist is not intended to list each and every statutory consideration that departments should take into account when deciding which policy option to follow. It is the responsibility of departments to make sure that their duties are complied with.

Does your policy option/proposal have an impact on...?	Impact	Page ref within IA
<b>Statutory equality duties<sup>1</sup></b> <a href="#">Statutory Equality Duties Impact Test guidance</a>	No	
<b>Economic impacts</b>		
Competition <a href="#">Competition Assessment Impact Test guidance</a>	No	
Small firms <a href="#">Small Firms Impact Test guidance</a>	Yes	6
<b>Environmental impacts</b>		
Greenhouse gas assessment <a href="#">Greenhouse Gas Assessment Impact Test guidance</a>	No	
Wider environmental issues <a href="#">Wider Environmental Issues Impact Test guidance</a>	No	
<b>Social impacts</b>		
Health and well-being <a href="#">Health and Well-being Impact Test guidance</a>	No	
Human rights <a href="#">Human Rights Impact Test guidance</a>	No	
Justice system <a href="#">Justice Impact Test guidance</a>	No	
Rural proofing <a href="#">Rural Proofing Impact Test guidance</a>	Yes	6
<b>Sustainable development</b> <a href="#">Sustainable Development Impact Test guidance</a>	No	

<sup>1</sup> Public bodies including Whitehall departments are required to consider the impact of their policies and measures on race, disability and gender. It is intended to extend this consideration requirement under the Equality Act 2010 to cover age, sexual orientation, religion or belief and gender reassignment from April 2011 (to Great Britain only). The Toolkit provides advice on statutory equality duties for public authorities with a remit in Northern Ireland.

## Evidence Base (for summary sheets) – Notes

Use this space to set out the relevant references, evidence, analysis and detailed narrative from which you have generated your policy options or proposal. Please fill in **References** section.

### References

Include the links to relevant legislation and publications, such as public impact assessments of earlier stages (e.g. Consultation, Final, Enactment) and those of the matching IN or OUTs measures.

No.	Legislation or publication
1	<u>Flood and Water Management Bill Impact Assessment - Reservoir Safety</u>
2	
3	
4	

+ Add another row

### Evidence Base

Ensure that the information in this section provides clear evidence of the information provided in the summary pages of this form (recommended maximum of 30 pages). Complete the **Annual profile of monetised costs and benefits** (transition and recurring) below over the life of the preferred policy (use the spreadsheet attached if the period is longer than 10 years).

The spreadsheet also contains an emission changes table that you will need to fill in if your measure has an impact on greenhouse gas emissions.

#### Annual profile of monetised costs and benefits\* - (£m) constant prices

	Y <sub>0</sub>	Y <sub>1</sub>	Y <sub>2</sub>	Y <sub>3</sub>	Y <sub>4</sub>	Y <sub>5</sub>	Y <sub>6</sub>	Y <sub>7</sub>	Y <sub>8</sub>	Y <sub>9</sub>
<b>Transition costs</b>										
<b>Annual recurring cost</b>										
<b>Total annual costs</b>	See	Excel	Sheet							
<b>Transition benefits</b>										
<b>Annual recurring benefits</b>										
<b>Total annual benefits</b>										

\* For non-monetised benefits please see summary pages and main evidence base section



Microsoft Office  
Excel Worksheet

# Evidence Base (for summary sheets)

## 0.1 Scope of this Impact Assessment

This impact assessment considers the costs and benefits of making changes to the current reservoir regulatory regime, i.e. as it applies to large raised reservoirs (LRRs) over 25,000 m<sup>3</sup> capacity, to allow their designation into *high risk* or not high-risk (*low risk*). For LRRs designated as low risk, there will be relaxation of the routine aspects of regulation; whilst development of the risk-based approach may lead to a future degree of deregulation of LRRs designated as high risk. In the meantime high-risk LRRs will continue to be subject to the same levels of regulation as now and this Impact Assessment does not assume any future deregulation of them (see 4.1.2 below).

The Flood and Water Management Act 2010 also allows extension of the regulatory regime to smaller raised reservoirs i.e. in the 10-25,000 m<sup>3</sup> band (SRRs). Current Government policy is for a moratorium on new regulation on micro businesses. Although there is no hard evidence on SRRs, studies by engineering consultants together with the knowledge of dam engineers indicates that many of the SRRs will be owned by farmers and growers, other landowners and recreational users such as fishing and golf clubs etc. Extension of controls would in any case depend on development of the fuller risk-based approach. Extension of regulation to SRRs is accordingly not proposed and is not addressed in this IA.

## 1.1 Problem under consideration

The amendments to the Reservoirs Act 1975 made by the Flood and Water Management Act 2010 allow a risk-based approach to be introduced to the regulation of reservoir safety in place of the current prescriptive one. The present proposals address the problem of how that approach can be introduced so as to secure the deregulatory benefits that are possible now. They are the first part of the risk-based approach and are for the measures needed to enable the EA to designate LRRs as either high or low risk. A low risk designation allows deregulation. Once made it would be reviewed only for “life changing” reasons such as major alteration or downstream development.

## 2.1 Status of Evidence

The evidence against which this Impact Assessment judges the case has improved since the IA for the Flood and Water Management Bill was published. This is because mapping of the area likely to be flooded in the event of a reservoir breach for all LRRs has been completed. This gives better information on those cases in which there would be risk to life in neighbouring areas in the event of an uncontrolled release of water. In cases where the risk to life is assessed as negligible, a reservoir could be designated as low risk.

## 3.1 Rationale for intervention

The proposals on LRRs which would be introduced with effect from April 2012 address the first of the 1975 safety regime’s weaknesses identified in Sir Michael Pitt’s report on the summer 2007 floods: they assume that controls should apply to all LRRs, regardless of whether or not there are risks to neighbouring populations from uncontrolled releases of water;

Therefore the rationale for the risk-based policy is largely to correct a regulatory failure: current regulation does not properly account for the risk associated with different reservoirs and as a result forces an over-allocation of resources devoted to safety of LRRs.

Stakeholders broadly welcomed the move to a more risk-based approach when consulted on the proposals now enacted in the Flood and Water Management Act 2010. The main concerns expressed were over its extension to SRRs owned by farmers and growers, who face growing demand for winter abstraction of water from watercourses and groundwater for irrigation use in the summer. Nevertheless, the NFU accepted that the risk-based approach is likely to benefit LRRs of this type.

## 4.1 Policy objective

The main aim is to put in place the legal requirements to enable implementation of the first phase of the risk-based approach ie for deregulation of low risk LRRs to take place.

### 4.1.1 LRRs - secondary legislation

#### Registration, risk assessment and designation

The 2010 Act enabled Ministers to make regulations requiring reservoir undertakers to register their LRRs with the EA. This is a new requirement. High/low risk designation can be made only once a reservoir has been registered. Whilst Regulations about registration will have to be made, as a practical matter undertakers are unlikely to have to do more than confirm details already held by the EA. The EA also already have the primary information needed for risk assessment, since it has completed flood mapping for all LRRs based on a presumption of failure, however unlikely.

A designation of low risk would mean that the routine supervision and inspection requirements would cease to apply. Requirements dealing with “life changing” matters to do with eg major alteration or discontinuance would remain. There will also need to be a mechanism in place to force a review for example where the area at risk changes in character significantly as a result of new development. The impact on small firms will be deregulatory.

#### Small businesses and rural proofing

Some LRRs will be owned by businesses which employ no or fewer than 10 people and, although some of the LRRs will be high risk, there is no additional burden beyond the very small costs of registration. The impact of the policy on rural communities is expected to be on business and is most likely to affect farmers. The current policy requires regulation of reservoirs above 25,000 cu metres regardless of risks to people. As part of deregulation, we expect a large proportion of these to be “irrigation” reservoirs and to be classed as low risk.

#### High/low risk designation. Appeals

Following registration, the EA would make provisional designations according to whether it thinks that an uncontrolled release of water could threaten human life. After a period (to be set) for representations to be made, the EA would confirm or otherwise its designation. There must also be a procedure, set out in Regulations, for appeals to be made against the confirmed designation (and against enforcement decisions by the EA, including any civil sanctions introduced).

The approach is for reservoirs to be designated:

- “High risk reservoirs” – any reservoir subject to the revised Act, which if it failed, could result in the loss of life in downstream populations; or
- Other (“Low risk”) reservoirs” – any reservoir subject to the revised Act, which if it failed, is not expected to result in the loss of life because of the absence of downstream populations.

Provisional designations would be determined primarily by reference to the flood map for each reservoir.

For comparison with the situation that has applied, the 1975 Act treated all reservoirs as if they were high risk regardless.

### 4.1.2 Further development of risk-based approach

Any further deregulation (i.e. beyond that considered in this Impact Assessment) will depend on progress on development work on a risk-based approach. In this connection, the 2010 Act can allow secondary legislation to specify exemptions, dependent on any characteristics which mean that in practice certain classes of reservoir pose negligible risks to the public. For example, it has been proposed that certain concrete service reservoirs fall into this category. This is, of course, only one description of type: other descriptions might involve embankment height, for example, and might involve partial exemption (i.e. a lower level of regulation).

## 5.1 Alternative policy options

None. Deregulation is possible only if legal measures are taken to require registration as a necessary precursor to designation into high risk and low risk.

## 6.1. Costs and Benefits

The costs and benefits discussion below takes no account of the benefits to undertakers of LRRs or society of the further development of a risk-based approach (paragraph 4.1.2 above). Ultimately this could further reduce the residual regulatory burden for LRRs.

It is not so clearly in the interests of owners of LRRs to maintain assets which underpin their businesses that they can with confidence of public safety be left without regulation. Some will behave responsibly, but many, lacking the knowledge or incentive to do so, will be complacent. In the event of breach, the common law liability is the owner's and regulation is concerned only with risk to life, so a responsible undertaker is likely to meet any standards set by regulation anyway. This IA acknowledges that some owners will retain an element of self-regulation voluntarily against the risks arising from the common law liability.

Bearing the above in mind, Table 1 sets out best estimates of costs and savings (benefits) under the following options:

- Do nothing (existing situation continues). This represents a base or reference case.
- Preferred Option. As in paragraph 4.1.1 above.

### 6.1.1 Best estimates - commentary (see Table 1)

#### *Do nothing/reference case*

Under the do nothing/reference case it is considered that it costs the same amount to regulate a low risk as a high risk LRR (around £6,800 per annum). Some of these costs are considered to be voluntarily incurred; others are the result of the regulations themselves. Thus monitoring of reservoir condition is not a requirement of reservoirs legislation, but it is expected that some owners (e.g. water companies) would do it anyway as their business relies on operational reservoirs.

#### *Preferred de-regulatory option*

Annual costs for low risk LRRs fall substantially from £6,800 to £2,680 (a deregulation saving of around £4,120 per reservoir, which amounts to a Present Value of over £100k per reservoir over a typical 50 year asset life). Essentially the large low risk reservoirs are assumed to move to a regime more similar to small reservoirs at present. Hence less would be spent on monitoring, inspection and supervision (or fewer would continue to do this when not legally required) and the reservoirs would be maintained to a lower standard, more proportionate to the risk they pose to the undertaker. There is a small increase in costs to LRRs to cover the one-off re-registration under the new system (£60 per reservoir). Under the preferred option the costs of enforcement would be reduced as a result of the de-regulation.

Overall, some 1,008 out of 1,824 LRRs in England are expected to move into the "low risk" category, and at the national level, the overall annual cost is expected to fall from £12.4m under the "do nothing" case, to £8.25m. The implied annual saving of £4.15m is slightly offset by the one-off registration fees, amounting to just over £109,000 under the preferred option. Overall, the net national saving over a 50-year appraisal period amounts to some £101.7m (present value).

The equivalent annual saving to LRR undertaker businesses for One In, One Out purposes is estimated at £4.34m. This estimate is derived using the recommended Equivalent Annual Net Impact formula in the "One In One Out" guidance<sup>1</sup>. For the one-off cost, the equivalent annual figure in £m is calculated as  $0.109 / [(1/0.035) \times (1 - (1/(1+0.035)^{50}))]$ , which equals £0.005m. The equivalent annual benefit figure is estimated similarly, but with 0.109 replaced with 101.836. This equals £4.34m. The Equivalent Annual Net Impact is therefore  $£(4.34 - 0.005)m = £4.34m$

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<sup>1</sup> HM Government, *One In, One Out (OIOO) Methodology, Version 1.0, 31 January 2011*

**Table 1****Estimated costs and savings from the “do nothing” and preferred options (best estimates, £)**

Per reservoir costs	Do-nothing		Deregulatory option (best estimate)				
	All	NA	low risk		high risk	Total	
<b>One off costs per reservoir - registration</b>			60	o	60	o	
<b>Annual costs per reservoir (including annualised capital costs)</b>							
Supervising engineer and record keeping	1,500	h	150	i	1,500	h	
Inspection by an inspecting engineer	300	j	30	k	300	j	
Cost of remedial works	5,000	l	2,500	m	5,000	l	
<b>Total costs per reservoir</b>							
Total one-off costs	-		60		60		
Total annual costs (excluding one off)	6,800		2,680		6,800		
<b>Number of reservoirs (England)</b>	1,824	p	1,008	p	816	p	
<b>Total costs for England</b>							
One-off	-		60,480		48,960		109,440
Annual	12,403,200		2,701,440		5,548,800		8,250,240
<b>50-year present value total costs</b>	<b>304,143,430</b>		<b>66,303,480</b>		<b>136,113,130</b>		<b>202,416,610</b>
<b>Net saving of deregulatory option</b>							
One-off							- 109,440
Annual							4,152,960
<b>50-year present value net saving</b>							<b>101,726,820</b>

**Notes to table**

- h Supervising engineer and record keeping, approx £1,500 a year
- i as h but no formal requirement, say 10% at £1,500 a year
- j Inspection by an inspecting engineer, approx £300 a year
- k as j but no formal requirement, say 10% at £300 a year
- l Cost of remedial works to correct safety deficiencies, including capital, directed by dam engineers; highly variable but assume on average £5,000 a year per reservoir, based on a £250,000 decommissioning cost as a minimum remedial response, spread over the typical asset life (50 years)
- m as l but no regulatory requirement. Some remedial works undertaken anyway (to lower standard). Not possible to assess what owners' reaction will be to a low risk designation and thus removal of the requirements imposed by Inspecting Engineers. However, some will voluntarily undertake safety remedial works eg to lower their common law liability for any damages and to maintain the reservoir in a good operational condition for business reasons. Assumption that on average half of "l" cost applies.
- o Registration costs, nominal update/extension cost of £60 per reservoir as already registered, one off cost. It is assumed that on average this would impose a time burden on the owner of around 1 hour, to confirm the details. It is assumed that this hour has an opportunity cost similar to that of a supervising engineer (see below). Therefore based on an 8 hour day and a per day cost of £480, this would mean a cost of £60 to submit these details.
- p Breakdown derived from Government reservoir flood mapping project.

**6.1.2 Certainty of best estimates and alternative scenarios**

The economic calculations for the preferred option are based on:

- The results of reservoir mapping, which have generated numbers of low and high-risk LRRs. These are regarded as robust.
- An estimate of annual supervising engineer and record keeping costs, based on sampled actual costs (see Annex 2)
- a number of assumptions about the effects of deregulation, in particular the likely post-deregulation engineering and record keeping costs (assumptions “i” and “k” - best estimate 10% of those under regulation), and works costs (assumption “m” - best estimate 50%). These proportions remain greater than zero because it is assumed that at least some undertakers will



voluntarily continue with at least some of the elements of “self-regulation” for their own business reasons.

The latter estimates of post-deregulation costs are ultimately uncertain. To explore the implications of different assumptions, “low savings” and “high savings” scenarios have been developed, which are designed to reflect a plausible range of actual savings. These are characterised in Table 2 below (more information on the nature of the costs and derivation is provided in Annex 2):

**Table 2**  
**Post-deregulation cost assumptions**

	Post-deregulation supervisory and inspection engineer and record-keeping costs (% of those under regulation)	Post-deregulation remedial works costs (% of those under regulation)
“Low” savings scenario	15	75
Best estimate	10	50
“High” savings scenario	5	25

The overall cost and savings estimates under the “low” and “high” savings scenarios are set out in Tables 3 and 4 below. Under the “low” saving case, total residual costs to “low risk” LRRs are estimated at £4,020 per reservoir (on average). Under the “high” saving case, the equivalent figure is £1,340. These estimates translate into a range of aggregate 50-year Present Value savings from deregulation (net of registration costs) of between £68.6m and £134.8m (the best estimate presented earlier is £101.7m).

Table 3

Estimated costs and savings from the “do nothing” and preferred options (LOW case, £)

Per reservoir costs	Do-nothing		Deregulatory option ("low" saving case)				
	All	NA	low risk		high risk		Total
<b>One off costs per reservoir - registration</b>		NA	60	o	60	o	
<b>Annual costs per reservoir (including annualised capital costs)</b>							
Supervising engineer and record keeping	1,500	h	225	i	1,500	h	
Inspection by an inspecting engineer	300	j	45	k	300	j	
Cost of remedial works	5,000	l	3,750	m	5,000	l	
<b>Total costs per reservoir</b>							
Total one-off costs	-		60		60		
Total annual costs (excluding one off)	6,800		4,020		6,800		
<b>Number of reservoirs (England)</b>	1,824	p	1,008	p	816	p	
<b>Total costs for England</b>							
One-off	-		60,480		48,960		109,440
Annual	12,403,200		4,052,160		5,548,800		9,600,960
<b>50-year present value total costs</b>	<b>304,143,430</b>		<b>99,424,990</b>		<b>136,113,130</b>		<b>235,538,110</b>
<b>Net saving of deregulatory option</b>							
One-off							- 109,440
Annual							2,802,240
<b>50-year present value net saving</b>							<b>68,605,320</b>

Table 4

Estimated costs and savings from the “do nothing” and preferred options (HIGH case, £)

Per reservoir costs	Do-nothing		Deregulatory option ("high" saving case)				
	All	NA	low risk		high risk		Total
<b>One off costs per reservoir - registration</b>		NA	60	o	60	o	
<b>Annual costs per reservoir (including annualised capital costs)</b>							
Supervising engineer and record keeping	1,500	h	75	i	1,500	h	
Inspection by an inspecting engineer	300	j	15	k	300	j	
Cost of remedial works	5,000	l	1,250	m	5,000	l	
<b>Total costs per reservoir</b>							
Total one-off costs	-		60		60		
Total annual costs (excluding one off)	6,800		1,340		6,800		
<b>Number of reservoirs (England)</b>	1,824	p	1,008	p	816	p	
<b>Total costs for England</b>							
One-off	-		60,480		48,960		109,440
Annual	12,403,200		1,350,720		5,548,800		6,899,520
<b>50-year present value total costs</b>	<b>304,143,430</b>		<b>33,181,980</b>		<b>136,113,130</b>		<b>169,295,110</b>
<b>Net saving of deregulatory option</b>							
One-off							- 109,440
Annual							5,503,680
<b>50-year present value net saving</b>							<b>134,848,320</b>

## Annexes

Annex 1 should be used to set out the Post Implementation Review Plan as detailed below. Further annexes may be added where the Specific Impact Tests yield information relevant to an overall understanding of policy options.

### Annex 1: Post Implementation Review (PIR) Plan

A PIR should be undertaken, usually three to five years after implementation of the policy, but exceptionally a longer period may be more appropriate. If the policy is subject to a sunset clause, the review should be carried out sufficiently early that any renewal or amendment to legislation can be enacted before the expiry date. A PIR should examine the extent to which the implemented regulations have achieved their objectives, assess their costs and benefits and identify whether they are having any unintended consequences. Please set out the PIR Plan as detailed below. If there is no plan to do a PIR please provide reasons below.

<p><b>Basis of the review:</b> [The basis of the review could be statutory (forming part of the legislation), i.e. a sunset clause or a duty to review, or there could be a political commitment to review (PIR)]; 2010 Act requires review 1 year after main Statutory Instruments on the risk-based approach come into force.</p>
<p><b>Review objective:</b> [Is it intended as a proportionate check that regulation is operating as expected to tackle the problem of concern?; or as a wider exploration of the policy approach taken?; or as a link from policy objective to outcome?] Benefits to undertakers in terms of cost reduction after deregulation effective.</p>
<p><b>Review approach and rationale:</b> [e.g. describe here the review approach (in-depth evaluation, scope review of monitoring data, scan of stakeholder views, etc.) and the rationale that made choosing such an approach] Sample of undertakers, results to be extrapolated.</p>
<p><b>Baseline:</b> [The current (baseline) position against which the change introduced by the legislation can be measured] As this Impact Assessment.</p>
<p><b>Success criteria:</b> [Criteria showing achievement of the policy objectives as set out in the final impact assessment; criteria for modifying or replacing the policy if it does not achieve its objectives] Numbers of reservoirs deregulated; cost savings achieved.</p>
<p><b>Monitoring information arrangements:</b> [Provide further details of the planned/existing arrangements in place that will allow a systematic collection of monitoring information for future policy review] Information already held by undertakers and enforcement body.</p>
<p><b>Reasons for not planning a review:</b> [If there is no plan to do a PIR please provide reasons here] NA</p>

## ANNEX 2 – COSTS AND BENEFITS: NOTES ON BEST ESTIMATES

**One off costs.** Costs that are not expected to continue have been classified as one off costs. These include registration of the reservoirs. One-off costs would recur only if a reservoir's characteristics change as a result of alterations to the structure or as a result of development, which would be considered as part of the planning process.

**Annual costs.** All other costs are assumed to recur annually (or because it is unknown when they would occur, they are allocated to the number of years of the asset's life). These include the monitoring of the reservoir condition and necessary work undertaken. Costs of remedial works to maintain the reservoirs to the required standard are annualised based on a 50 year asset life.

### Record keeping and supervision

H        Approx £1,500 a year. Cost estimate from an institutional owner for staff resources for record keeping and the costs of employing a Supervising Engineer as required by Reservoirs Act 1975. Applies to all currently regulated reservoirs; would apply to all high risk reservoirs.

I        As H but requirement would apply only to high risk reservoirs. Where no formal requirement, assumption that 10% of owners of LRRs and SRRs would continue to keep records and employ a supervising engineer at £1,500 a year.

### Inspection

J        Approx £300 a year. Cost estimate from an institutional owner for staff resources for the costs of employing an Inspecting Engineer as required by Reservoirs Act 1975. Assumption is that costs of £3,000 would be met once every 10 years (the current minimum period between inspections) and figure therefore annualised on that basis. Applies to all currently regulated reservoirs; would apply to all high risk reservoirs.

K        Costs as J but assumed to apply only to all high risk reservoirs. Where no formal requirement, assumption that 10% of owners of LRRs and SRRs would continue to keep records and employ an inspecting engineer at £300 a year.

L        Cost estimate of annual remedial works (including capital investment) to maintain the reservoir at the appropriate safety standard, as directed by inspecting engineers. This figure is based on the cost of decommissioning a typical reservoir (i.e. making it incapable of holding water). It is the amount that the owner must be willing to pay to meet the statutory requirements to keep it safe. (Cost to decommission from the Environment Agency (£250,000). This estimate is then divided equally over the typical 50-year asset life to derive an estimate of annual average remedial works costs of £5,000 a year.) This approach is taken because costs of remedial works can vary widely from nothing to several £millions at the extremes. Representing an average overall position is therefore not possible. A suitable conservative representation of the overall average position can be obtained by estimating the unavoidable costs that an owner would be willing to pay to maintain the reservoir so that it is safe and operational. Applies to all currently regulated reservoirs; would apply to all high risk reservoirs.

M        As L but assumption that such costs would be incurred in only 50% of cases as part of owners' asset management decisions. NOTE this figure is assumed to apply in a higher number of cases than K above to reflect owners' normal asset management and replacement decisions.

### Registration

Assumed nominal cost of registration (see 6.1.2 above).

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