



Department
for Environment
Food & Rural Affairs

www.gov.uk/defra

Reservoir Safety in England and Wales

Summary of Responses to the Consultation on the Implementation of Amendments to the Reservoirs Act 1975

17 July 2013

© Crown copyright 2013

You may re-use this information (not including logos) free of charge in any format or medium, under the terms of the Open Government Licence. To view this licence, visit www.nationalarchives.gov.uk/doc/open-government-licence/ or write to the Information Policy Team, The National Archives, Kew, London TW9 4DU, or e-mail: psi@nationalarchives.gsi.gov.uk

This document/publication is also available on our website at:

Defra: www.gov.uk/defra

Welsh Government:

wales.gov.uk/consultations/environmentandcountryside/reservoirsafety/?lang=en

Any enquiries regarding this document/publication should be sent to us at:

Reservoir Safety Policy Team
Defra
Nobel House
17 Smith Square
London
SW1P 3JR

ReservoirFM@defra.gsi.gov.uk

Or

Flood & Coastal Erosion Risk Management
Energy, Water and Flood Division
Welsh Government
Cathays Park
Cardiff
CF10 3NQ

floodcoastalrisk@wales.gsi.gov.uk

Contents

Section 1 - Introduction	1
Section 2 - Consultation process	3
2.1 Response to Consultation.....	3
Section 3 - Summary of Responses and Commentary	4
3.1 Large Raised Reservoirs: Capacity, Exemption & Registration	4
3.1.1 Definition of a Large Raised Reservoir (LRR)	4
Question 1 - Do you agree that road and rail embankments should be excluded from the Act, unless they are deliberately used for storing water?	4
Question 2 - Do you agree that the definition of “capable of storing” should not include the blocked spillway scenario?	4
3.1.2 Calculation of Capacity	5
Question 3 - Do you agree with the proposed approach to the calculation of capacity? If not, how would you calculate capacity?	5
3.1.3 Reservoirs in Cascade	6
Question 4 - Do you agree with the proposed approach to reservoirs in cascade? ..	6
Question 5 - Do you have any additional recommendations for deciding whether reservoirs should be considered to be in a cascade?	7
Question 6 - Do you agree with the proposal that all undertakers of reservoirs in cascade should be required to register their reservoirs based on a reduced threshold capacity? If so, how would you assess the reduction?	8
3.1.4 Exemptions	9
Question 7 - Do you agree with the proposed exemptions?.....	9
Question 8 - Are there any other structures or areas that you would consider exempting and why would you consider doing so?	9
3.1.5 Registration	10
Question 9 - Do you agree with the proposed approach to registration?	10
Question 10 - Do you agree with the proposed approach to the provision of information or a change of information with regards to the registration of a large raised reservoir?	12

Question 11 - Do you agree with the list of information to be provided?	12
3.2 Monitoring, Supervision & Inspections.....	13
3.2.1 High Risk Reservoirs: monitoring and supervision	13
Question 12 - Do you believe that guidance on supervision of high risk reservoirs and the performance of supervising engineers is required?.....	13
3.2.2 High Risk Reservoirs: Inspections.....	14
Question 13 - Do you agree with the proposed approach to statutorily required inspections?	14
3.2.3 Frequency of inspection period	15
Question 14 - Do you support longer inspection periods in certain exceptional circumstances?	15
3.3 Construction, Alteration, Abandonment & Discontinuance	17
3.3.1 Abandonment & Discontinuance	17
Question 15 - Do you agree with the proposals for abandonment and bringing back into use?	17
3.4 Panels of Engineers and Engineer Reports.....	18
3.4.1 Information and Reports.....	18
Question 16 - Do you agree with the proposal to require a specified person to report to the Environment Agency on any incident of a specified kind which affected or could have affected the safety of a large raised reservoir?	18
3.5 Appeals.....	20
3.5.1 Tribunals	20
Question 17 - Do you agree that it is appropriate to vest the power to hear all appeals under the 1975 Act in the First Tier Tribunal?.....	20
Question 18 - Do you consider that the General Regulatory Chamber Rules will suit the handling of the appeals set out above? If not, why not?	21
Question 19 - Do you agree that the current rules relating to Referees are fit for purpose? If not, why not?.....	21
3.6 Criminal Sanctions.....	22
3.6.1 New criminal liabilities and civil sanctions	22

Question 20 - Do you agree that the creation of the new criminal liabilities set out in the amendments to the 1975 Act are necessary? If not, which would you retain, and which would you reject, giving your reasons?	22
Question 21 - Do you agree that civil sanctions (as discussed above) are preferable, if available?	23
3.7 Expenses & Charging	25
3.7.1 Expenses	25
Question 22 - Should commencement of the provisions on expenses be undertaken in Phase 1 (from Autumn 2012) or in Phase 2 or following Phase 2?	25
3.7.2 Arrangement for Civil Protection	27
Question 23 - Do you agree that undertakers for high risk reservoirs should not be required to fund the emergency planning and warning and informing functions? If not why not?	27
3.8 Other matters	28
3.8.1 Further Amendments	28
Question 24 - Do you believe any further changes to the Reservoirs Act 1975 are required, and why?	28
3.8.2 Regulatory Impact Assessment	31
Question 25 - Do you agree that the proposed review should only be initiated once full implementation of the specified amendments has been made and the Environment Agency has completed the high risk designation process? If not, why not?	31
3.8.3 Cross Border England-Scotland Reservoirs	32
Question 26 - Do you agree that this measure should be commenced in Phase 1? If not, why not?	32
Annex A - List of Respondents	33

Section 1 - Introduction

Large raised reservoirs in England and Wales are currently regulated by the Reservoirs Act 1975¹ (the 1975 Act). The 1975 Act seeks to ensure public safety through imposing a statutory obligation on the undertakers² of reservoirs above a certain volume to take and act upon independent professional advice on the integrity of the reservoir to manage and respond to all of the forces and conditions imposed on it. The purpose of this obligation is to reduce the risk of uncontrolled releases of water, which may lead to loss of life.

In England, responsibility for the enforcement of reservoir safety rests with the Environment Agency. In Wales, enforcement is by Natural Resources Wales. In both cases, enforcement is of the legislation rather than the provision of engineering judgement or technical advice to reservoir undertakers. This is the responsibility of the qualified civil engineers employed by the undertakers. Qualified civil engineers are those engineers appointed to Panels of Engineers by the Defra Secretary of State and the Welsh Ministers.

The essential features of the 1975 Act have not changed much from the Reservoirs (Safety Provisions) Act 1930 (the 1930 Act), which was introduced following the failure of certain reservoirs in the 1920's. There has been no loss of life through reservoir failure since the legislation was first introduced, however, in recent years there have been a number of near-miss incidents where lives could have been lost if the reservoir had failed. Sir Michael Pitt's report on the 2007 floods made 92 recommendations including updating reservoir safety legislation.

Schedule 4 to the Flood and Water Management Act 2010³ (the 2010 Act) includes a number of provisions amending the 1975 Act. The primary reason for amending the 1975 Act is to ensure that appropriate safeguards are in place to protect the public that are based on an assessment of risk. The risks from reservoir breaches are classed as low likelihood/high consequence.

To ensure that reservoir safety in England and Wales is based on a proportionate risk management basis, several amendments to the 1975 Act were included in the 2010 Act. Chief amongst these were the reduction of the threshold for large raised reservoirs from 25,000 cubic metres to 10,000 cubic metres capacity and the introduction of the 'high risk' designation for those large raised reservoirs thought to pose a risk to life. In England, the Government is currently reviewing the evidence for the reduction of capacity and will make an announcement in due course.

¹ The reservoirs Act 1975 – www.legislation.gov.uk/ukpga/1975/23

² For anyone other than the Environment Agency or a water undertaker, this is the person(s) carrying out the undertaking(s) for which the reservoir is used, and where there is no such undertaking, it is the owners or lessees of the reservoir.

³ The Flood and Water Management Act 2010 - www.legislation.gov.uk/ukpga/2010/29

A Commencement Order which included several of the provisions within Schedule 4 to the 2010 Act was passed in October 2011. Defra and the Welsh Government intend to split the implementation of the changes into two phases. In England, phase 1 involves the commencement of the majority of the changes to the 1975 Act for those large raised reservoirs with a capacity of 25,000 cubic metres already covered by the 1975 Act. On completion of phase 1, phase 2 may involve the reduction in capacity threshold to 10,000 cubic metres.

Running for 12 weeks, the consultation sought views on the UK and Welsh Governments proposals to commence the provisions within schedule for 4 of the Flood and Water Management Act in two phases and to seek views on the content of the supporting secondary legislation.

This document provides a summary of the consultation process, the responses received and sets out our revised policy. These will be used to inform the detailed implementation of amendments to the Reservoir Act 1975

Section 2 - Consultation process

The consultation was a joint Defra and Welsh Government consultation covering England and Wales only. The consultation paper detailed the policies of Defra and the Welsh Government in respect of the secondary legislation that will be made to support the move to a risk based reservoir safety regime. Comments on the policies were invited during a 12 week period from 23 February to 17 May 2012.

A copy of the consultation paper was placed on the Defra and Welsh Government websites. A copy of the consultation document and the associated impact assessment can be viewed on the links below.

Visit: www.gov.uk/government/consultations/reservoir-safety-in-england-and-wales-implementation-of-amendments-to-the-reservoirs-act-1975

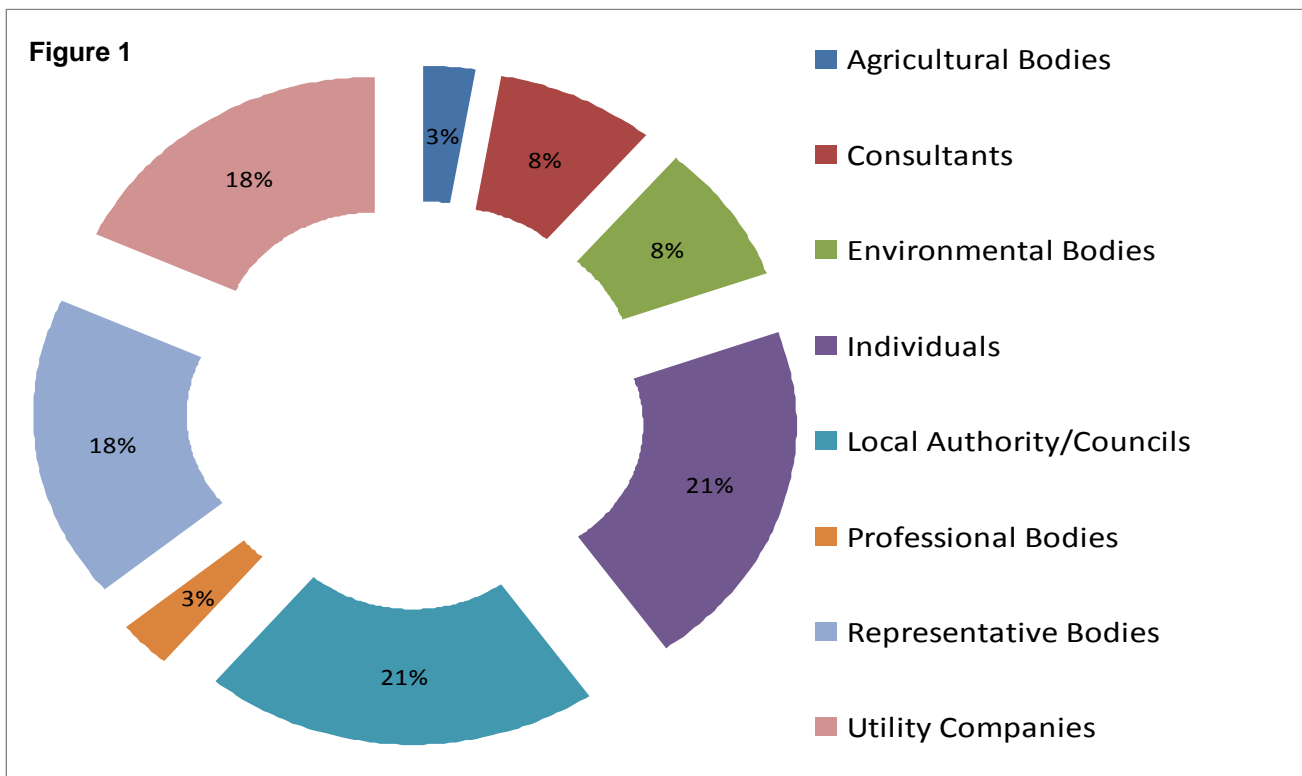
Or

Visit: wales.gov.uk/consultations/environmentandcountryside/reservoirsafety/?lang=en

2.1 Response to Consultation

The consultation closed on 17 May 2012. A total of 72 responses were received. 68 were received in advance of closure and 4 were received after the consultation period had ended. The decision was taken to accept the late responses and they have been taken into account.

The split of respondents is set out in figure 1 below and a list of respondents is at Annex A.



Section 3 - Summary of Responses and Commentary

The consultation paper set out details of the policies of Defra and the Welsh Government in respect of the secondary legislation that will be made to support the move to a risk based reservoir safety regime. A number of questions were included to which this section provides a summary of responses to each question.

3.1 Large Raised Reservoirs: Capacity, Exemption & Registration

3.1.1 Definition of a Large Raised Reservoir (LRR)

Question 1 - Do you agree that road and rail embankments should be excluded from the Act, unless they are deliberately used for storing water?

61 respondents provided an answer to this question. Of those 51 agreed that road and rail embankments should be excluded from the Act, unless deliberately used for storing water. 10 respondents disagreed and felt that anywhere capable of storing a volume of water that is greater than or equal to 25000 cubic metres should be covered by the legislation. No additional comments were provided, however, a concern was raised that if such structures are excluded, separate legislation would be required to define their status and the design, operation and maintenance standards needed if they can retain water on an extreme basis which potentially should be the same standards as for a conventional reservoir. There was the suggestion that if historic flood outlines indicate that such structures do retain water during a flood, the risk of failure should be recognised and managed accordingly. This could include enlarging water passages. The Environment Agency should consider managing it as a flood defence through appropriate powers if historically it has provided flood risk management benefit.

Question 2 - Do you agree that the definition of “capable of storing” should not include the blocked spillway scenario?

61 respondents provided an answer to this question. 53 of those who responded, agreed that the definition of “capable of storing” should not include the blocked spillway scenario. Some of those who agreed felt that a risk assessment should be carried out. Supporting comments from respondents in agreement included:

- Satisfactory maintenance of the reservoir required by the legislation should reduce the risk of blockage and minimise any impacts on reservoir safety.
- Interpretation needs to be straight forward with simple rules to apply.

- The definition of ‘capable of storing’ should be measured to the lowest point of any spillway crest and not include any scenario which raises the water level above this height.
- Flood water which would take the reservoir above the weir level has never been including in the definition of ‘capable of storing’ and we should not change it now.
- Spillway blockages are very unlikely events. Reservoir capacity should be based on the spillway level which is the most realistic level and the design level of the reservoir.
- Most spillways on high risk reservoirs are open channels, which should self-clear in a major flood.
- Including the blocked spillway scenario would extend the scope of the legislation and create unnecessary regulatory complexity.
- This will be particularly important should the threshold for LRR be reduced to 10,000m³ as a number of informal structures with ill-defined spillways may be captured.
- Blocked spillways do not need considering in assessing whether a reservoir is high risk.
- The use of the lowest overflow spillway sill level or the highest level of any moveable gate in defining “top water level” has not presented many difficulties under the present legislation.

There were 8 responders who felt that the definition of ‘capable of storing’ should include the blocked spillway scenario. Comments made to support the response were mirrored; the blocked spillway scenario is credible and therefore should be included in the definition of "capable of storing".

3.1.2 Calculation of Capacity

Question 3 - Do you agree with the proposed approach to the calculation of capacity? If not, how would you calculate capacity?

Of those who provided an agree/disagree response to this question, 47 respondents agreed and 8 respondents disagreed with the proposed approach to the calculation of capacity. Although those who disagreed provided brief reasoning for this, only one comment was provided on how the capacity could be calculated:

- An Inspecting Engineer should make a formal determination as to the capacity of the reservoir above the lowest level to which water could drain and whether the silt or other material is to be included.

There were a number of responses that made detailed suggestions, most of which were too complex to set out in legislation. These included the suggestions to treat impounding and non-impounding reservoirs separately, and to recognise the different characteristics of many smaller reservoirs that will fall under the Act if the reference capacity is lowered. Concern was expressed over the proposed approach to dealing with silt, especially for older reservoirs where silt was thought to be well-consolidated and unlikely to flow in the event of an uncontrolled release of water from the reservoir.

Comments on managing the silt included:

- The capacity should be calculated as the water volume plus escapable silt as estimated by a qualified civil engineer.
- Possible confusion between silt that is mobile, in other words which would flow of its own accord, and silt that would only be moved if it is eroded by flowing water.
- The volume of silt or any other material that accumulates by whatever means on the bed of a reservoir after initial construction can only be taken into account to reduce the capacity of a reservoir if the qualified Civil Engineer responsible for the works or the inspection is satisfied that this material will not be released in the event of a breach.
- Soft silt should be included in the reservoir volume. It can flow like water. However there should be a mechanism for reviewing the position with respect to reservoirs which have become filled with stable matter.

3.1.3 Reservoirs in Cascade

Question 4 - Do you agree with the proposed approach to reservoirs in cascade?

62 respondents provided an answer to this question. Respondents who provided an agree/disagree response, 46 agreed and 11 disagreed with the proposed approach to reservoirs in cascade.

A number of comments were made around the need for a risk assessment, how this should be achieved, suggested exemptions and distance between reservoirs. Concerns were raised also about the extent of knowledge about smaller reservoirs in a cascade and how this would be collected to enable a realistic assessment of risk to be made. Specific comments include:

- The detailed content of the proposals needs review.
- Where there are different sized lagoons and reservoirs upstream in a cascade relationship, discussion on the limit of designation (just those reservoirs over a set size or the set in the cascade, regardless of size), should be considered through a risk based approach.

- Where lily ponds form part of a cascade it seems unreasonable for these to be treated as Large Raised Reservoirs, especially if other reservoirs in the cascade are large raised reservoirs of significantly greater capacity.
- Need to clarify that a service reservoir within the catchment of an impounding reservoir is not a cascade situation.
- The consultation on the categorisation of high risk reservoirs highlighted that these assumptions can be overly conservative and not sufficiently flexible to deal with site specific situations so using the assumptions in the Environment Agency's reservoir inundation mapping exercise to determine whether an upstream reservoir could cause the failure of a downstream reservoir may not be appropriate.
- The principle should not be applied universally but the powers should remain to include a group of reservoirs in cascade if there are concerns over their condition and there is a risk to persons downstream.
- Where cascading reservoirs have multiple undertakers procedures for this should be specified, stating how the undertakers and supervising engineers should work jointly so that the cascade can be considered in its entirety.
- The planning system need to be aware of and consider the risks to the public of granting permission for reservoirs that may well be in cascade.
- A de minimis depth of flooding could be set that would see structures whose failure would only create very shallow low energy flooding exempted from the definition of "in cascade" capacity.
- Owners of small reservoirs still have a common law duty of care to those downstream and this should be a sufficient safeguard.

Question 5 - Do you have any additional recommendations for deciding whether reservoirs should be considered to be in a cascade?

27 respondents put forward additional recommendations for deciding whether reservoirs should be considered to be in a cascade. Most comments made reflected those made in question 4, some specific comments included:

- An Inspecting Engineer is in the best position to determine as to whether an upstream reservoir is considered to be in cascade and will fall within the ambit of the new legislation.
- The risk should be assessed on whether the last in line structure is capable of holding the capacity of those upstream. If there is a risk identified between two water bodies than they should be classified as LRR in their own right.

- All significant bodies of water, regardless of size (e.g. flood regulation ponds etc) should be included in the cascade if they can affect the designated reservoir or if the reservoir could affect them.
- The simplistic view that all reservoirs in a cascade should be treated as large raised reservoirs, if they can cumulatively hold more than the minimum threshold, will lead to undertakers of reservoirs with small capacities – such as on-farm storage – being unfairly burdened with increased costs and bureaucracy.
- A clear work process needs to be in place so it is clear both to undertakers and local authorities who is assessing whether or not certain reservoirs will be considered to be in a cascade. Lead Local Flood Authorities, in discussion with District Councils, could help determining the (priority) need for such an assessment.
- Dambreak modelling and flood routing could assist in determining whether dams should be considered in cascade.
- The treatment of reservoirs in the cascade previously not falling within the Act seems unreasonable and perhaps too risk adverse. It is suggested that reservoirs >10,000m³ but not classed as high risk should be checked to see whether they are in a cascade with other reservoirs >10,000m³ and would cause a risk of loss of life in the event of failure.

Question 6 - Do you agree with the proposal that all undertakers of reservoirs in cascade should be required to register their reservoirs based on a reduced threshold capacity? If so, how would you assess the reduction?

There were 61 responses to this question, of those who provided an agree/disagree response 32 agreed and 23 disagreed.

Of those who agreed, suggestions for assessing the reduction include:

- The reduction should be based on the combined capacity of the cascade. However there is no consideration given to the fact that smaller reservoirs in such a cascade may have different owners who are unaware of their responsibilities.
- 10,000m³ would be a suitable reduced threshold capacity for registering reservoirs in cascade in Phase 1, but this capacity may need to be lowered in Phase 2.

3.1.4 Exemptions

Question 7 - Do you agree with the proposed exemptions?

63 provided a response to this question, 56 respondents answered agree/disagree. Of those 42 respondents agree with the proposed exemptions and 14 disagreed.

Comments made include:

- Once a mine or quarry lagoon is no longer monitored by the HSE under the Mines and Quarries (Tips) Act, they should be transferred automatically to the Reservoirs Act.
- Ponds within extractive waste sites or waste facilities should not be exempted unless the pond is covered by the Mines and Quarries (Tips) Act 1929.
- Structures or areas of water designed to protect land from the sea pose similar risks to reservoirs, they are storing vast quantities of water which can be suddenly released to fill the area supposedly to be protected.
- Canals and embanked watercourses could release water in excess of the stated capacity.
- Sewage sludge lagoons should not be exempted, especially if they are cleaned out and can then become large water retaining structures.
- Slurry lagoons should not be exempt.
- Storage reservoirs which have been installed for use on agricultural premises should be added to the list of exemptions.
- Exemptions should be reviewed and extended to include potable and wastewater and storm water storage tanks.
- Agree in principle, with the proviso that the proposed exemptions are already covered, or are to be covered by other legislation which would require equal safety measures to be in place.

Question 8 - Are there any other structures or areas that you would consider exempting and why would you consider doing so?

58 respondents provided a response to this question. 30 respondents felt there were no other structures or areas to consider exempting. Although comments on why structures/areas should be exempt were limited, suggestions from the 28 respondents who did feel other structures or areas could be exempt include:

- Estuary barrages.

- Reinforced concrete potable water storage reservoirs/tanks that are controlled by filling via pumps.
- Concrete waste treatment process structures such as activated sludge and settlement tanks.
- Raw Water Aqueducts.
- Sewage treatment or wastewater tanks.
- Storm tanks and flood defence structures.
- Service reservoirs.
- Reservoirs which have been installed for use on agricultural premises.
- Settlement lagoons from certain agricultural processes, e.g. beet washing.
- Small service reservoirs, tanks and similar structures, especially those of modern reinforced concrete design.
- Lades, leats and dams associated with historic sites and industrial monuments.
- Structures designed to create shallow flooding for nature conservation reasons.
- Other embankments across watercourses such as landfill sites or waste disposal sites from historic engineering works which should be treated as railway embankments.
- No structure should be excluded unless covered by other legislation.

3.1.5 Registration

Question 9 - Do you agree with the proposed approach to registration?

Of the 56 who provided a response to this question, 53 respondents provided an agree/disagree response. 43 agreed and 10 disagreed with the proposed registration approach.

Comments include:

- 28 days for registration seems unrealistic.
- How will undertakers covered by the new threshold know that they are required to register?
- Existing statutory reservoirs designated High Risk should be registered automatically.

- It is not necessary to provide a summary of the contents of certificates and reports under the 1975 Act. This is information that the enforcement authority already holds in its database.
- The one-off re-registration cost £60 per reservoir seems unreasonable where undertakers are unlikely to have to do more than confirm the details already held by the Environment Agency.
- Registration should not apply to non-impounding reservoirs which hold between 10,000m³ and 25,000m³ above natural adjoin ground level as there is no evidence that these pose a risk.
- There will need to be clarification as to whether it is necessary to re-register a reservoir on each occasion one of the listed triggers occurs. It is likely to be sufficient to advise on any registered information which has changed.
- There should be no requirement to register if proposing or intending to do any changes or build a reservoir. The Act sets out the requirements on an Undertaker to safeguard the public and so registering a mere proposal/intent should not be required. Only material alterations should be a trigger and, therefore, further clarity on this should be provided.
- As described, it would appear that multiple registrations would be required for each reservoir i.e. one at each stage of the project beginning with the intent, then at the proposal stage, then at the issue of a construction certificate etc. This would impose an unreasonable administrative burden; result in confusion; and create a financial burden if charging for registering is introduced at a later date.
- It would seem more appropriate, and indeed proportionate, for the registration details to be updated by the Authority upon receipt of that information without requiring a complete re-registration.
- It is not necessary for an Undertaker to tell the Enforcement Authority who the Enforcement Authority is.
- The list of reasons to register a reservoir should only fall into a number of simple and limited categories which should include:
 - the coming into force of the amended Regulations for existing reservoirs;
 - construction of a new reservoir (above minimum threshold);
 - alteration of a reservoir (above minimum threshold);
 - abandonment / discontinue; and
 - change of owner/undertaker.

The other categories proposed or proposed reasons for failure to register appear to over-complicate the registration process and could confuse undertakers. Doubtless there will be some existing reservoirs that should have been already registered (under current requirements). Consideration as to whether an amnesty for current unregistered undertakers may be required.

- The system outlined may be entirely appropriate for LRRs that have a significant element of risk attached. However for landowners seeking to create or maintain shallow flooding for nature conservation the requirements would be overly onerous. It is for this reason a specific exemption for structures designed for this purpose should be considered.

Question 10 - Do you agree with the proposed approach to the provision of information or a change of information with regards to the registration of a large raised reservoir?

57 respondents provided a response to this question. Of those, 43 agree, 7 disagree and 7 neither agree nor disagree. Majority of those who agreed did not provide any comments, however, although in agreement, there were concerns about the timescale for registration being too short and that there should be enhanced powers for the Environment Agency to chase up where no Schedule 3 information (under the 1975 Act) has been provided and construction has commenced.

Those who disagreed also felt that the timescale for registration was too short and that whilst the approach may be suitable for LRR with a significant element of risk attached, the requirements for landowners seeking to create or maintain shallow flooding for nature conservation would be overly onerous. Much of the information would come from an inspection, but reservoirs not already covered by the legislation would not have been inspected and would not have to be until designated as 'high risk'.

Question 11 - Do you agree with the list of information to be provided?

53 respondents provided an agree/disagree response to this question. Of those, 46 agreed and 7 disagreed. Majority of those who agreed did not provide any additional comments. Comments from those who disagreed with the list or who agreed but provided further comments include:

- The Information generally is required for the Prescribed Form of Records but not all information is available.
- Information such as construction in earth fill or rock fill may not be known and is not necessary for Enforcement of the Act.

- Most reservoirs of 10,000 m³ capacity are likely to be in private or small company ownership and to make it a Criminal Act for these owners not to provide such detail is unwarranted.
- The list for a new registration should be much briefer and relate to the physical characteristics of the reservoir. References to certificates, inspections and supervising engineer (which may not be necessary if the reservoir is not high risk) should be omitted.
- Guidance should be provided on simple methodologies for calculating the height and capacity of reservoirs.
- Instead of requiring a 'summary of all reports and statements....' a list of reports and statements would be sufficient and that these are only needed for the 1975 Act now and not the 1930 Act as well.

Suggested additions to the list of information include:

- Whether an inundation plan or a flood map is available.
- Emergency contact details of the undertaker, Supervising and Construction Engineers.
- Date construction of a new reservoir is due to commence and finish.
- Emergency draw down facilities and information on all the users and operators associated with the reservoir should the Environment Agency need to take enforcement action.
- Crest level above ordnance datum and top water level above ordnance datum should be provided as this information is needed to produce reservoir flood maps according to the reservoir inundation mapping specification.
- Date for completion of works in the interests of safety.

3.2 Monitoring, Supervision & Inspections

3.2.1 High Risk Reservoirs: monitoring and supervision

Question 12 - Do you believe that guidance on supervision of high risk reservoirs and the performance of supervising engineers is required?

There were 61 responses provided to this question. 32 respondents felt that guidance on supervision of high risk reservoirs and performance of supervising engineers was required and 25 respondents felt this wasn't necessary, 4 respondents provided a neutral response. Some respondents who felt guidance was necessary commented that the guidance should relate specifically to the responsibilities of the supervising engineer under the new

legislation and that there was no need for further general technical advice about supervising engineer's duties. Supporting comments for majority of those who felt that guidance wasn't necessary were that guidance currently available is sufficient enough.

3.2.2 High Risk Reservoirs: Inspections

Question 13 - Do you agree with the proposed approach to statutorily required inspections?

57 respondents provided a response to this question, with 54 providing an agree/disagree response. Of those, 50 agreed and 4 disagreed. Comments provided from those who agree with proposed approach include:

- The Environment Agency as the Enforcement Authority should also be empowered to require an inspection at the cost of the undertaker where they have reason to believe that the circumstances have changed at a non-High Risk reservoir, and there are grounds for changing its designation.
- With a "Medium Risk" category, it could be left to the Supervising Engineer to decide if an inspection is required in the future.
- Should only be required for high risk reservoirs.
- Issue certificates confirming that the works has been undertaken to a satisfactory standard. This can be used to formally notify the Enforcement Authority that no inspection is required. This situation is not covered by the current Act.
- Any inspection recommended by a supervising engineer be undertaken within any timescale specified.
- An inspection regime which is independent of the undertaker should be retained for all large raised reservoirs on at least the frequency of every 10 years.
- The first inspection for reservoirs that become registered as high risk in phase 2 should be no more than 3 years from the date of final designation as high risk after appeal.
- Evidence that an inspection is required must be provided by a supervising engineer. A quantified risk assessment would be a satisfactory method of submitting evidence.
- If the alterations are significant 6 months may be too long before an inspection. If an Undertaker does not arrange an inspection but a Supervising Engineer considers it urgent then they can call for one.

Comments from those who disagree include:

- Even those reservoirs not at 'High Risk' should have annual assessments by a qualified Supervising Engineer.
- The current proposal in the Reservoirs (Scotland) Act where there is a three tiered approach to inspection provides a better means for safeguarding the public.
- Even low risk reservoirs should be visited periodically by a Supervising Engineer with the power to call for an inspection if he thinks it necessary; medium risk should be inspected periodically even if at longer intervals than at present.
- The annual costs of the inspections to members would be excessive, with the cost of inspection for a 10,000 m³ reservoir being the same as a much larger one.
- The liability of the structure would lie with the inspector who would need to maintain necessary professional liability insurance to cover the costs of failure after inspection, rather than the owner.

3.2.3 Frequency of inspection period

Question 14 - Do you support longer inspection periods in certain exceptional circumstances?

59 respondents provided a support/do not support response to this question. Of those, 37 do not support longer inspection periods in certain exceptional circumstances.

Supportive of longer inspection periods:

- The Inspecting Engineer should be able to put a reservoir into a "Medium Risk" Category with no further inspections necessary until the Supervising Engineer calls for one. The Supervising Engineer can then monitor any changes in the status.
- Inspection every 25 years would be reasonable for reservoirs that are classified as "high risk" but the standard of construction makes failure a very low probability.
- Where the overall risk is low and the structure has a long history of stability.
- The period should be subject to review when research, new information on construction, or failure, is available on generic reservoirs.
- For certain defined circumstances – but not necessarily 'exceptional' and certainly for all non-impounding reservoir holding between 10,000m³ and 25,000m³ above ground level. Such reservoirs should be prior-exempt.
- There will be situations where reservoirs are perfectly safe to be inspected at longer intervals and it is important that the legislation is flexible enough to allow this to happen.
- Specific "inspection derogation" criteria should be developed to facilitate this.

- In very exceptional circumstances, as advised by the Inspecting Engineer.

Not supportive of longer inspection periods:

- 10-year maximum is a good statutory safeguard which should not be lost. Many other countries use 5 years.
- It is potentially dangerous to use past performance as a guide to future performance. Understanding how dams perform and how they can fail improves with time and it is appropriate that all 'high risk' dams be inspected against current engineering knowledge and guidance informed by research at intervals not exceeding ten years.
- If they are uneventful, take them out of the Act otherwise follow the standards laid down.
- Methods, guidance, practice and condition change over time. Legislation has changed twice in 80 years. To establish that a reservoir is constructed in a generally safe manner must take at least three inspections over 20 years, and there is likely to be a change in the legislation at the end of the first longer inspection period.
- It is always good to have a fresh look at a reservoir by a Panel Engineer who does not visit the site as a matter of routine.
- It is not possible to predict deterioration. It will assist the supervising engineer to make regular inspections to prevent catastrophic failure and early diagnosis of problems, apart from being cost effective to repair, could reduce risk.
- Allowing a longer period between inspections could place an increase risk on the owner of the reservoir, particularly if an incident occurred in the intervening period of time.
- If an inspection misses a problem it could be 20 years before it is considered again, advances in understanding or analysis of dam safety issues could be 20 years before implementation (e.g. changes in flood study guidance, guidance on masonry spillways etc) and Undertakers may press the case that their reservoirs are "exceptional" which could lead to a general trend towards 20-yearly inspections.
- The supervising engineer can recommend an inspection at any time we see no need for additional provision for longer inspection periods.
- Ten years should be the absolute maximum for statutory inspections. If there are any concerns, the period should be reduced. Many changes can occur within this timeframe. Issues to consider include the continuity of knowledge and staff.

3.3 Construction, Alteration, Abandonment & Discontinuance

3.3.1 Abandonment & Discontinuance

Question 15 - Do you agree with the proposals for abandonment and bringing back into use?

57 responses were provided for this question, of those 50 agree, 6 disagree and 1 respondent neither agrees/disagrees with proposals for abandonment and bringing back into use. Comments to support responses include:

- There is no point in a civil engineer supervising and certifying the increase or decrease in capacity of a reservoir if it remains "low risk" following the works, if no supervising engineer is then going to monitor the reservoir.
- This would fit very nicely with having a "Medium Risk" Category to create a risk based approach. The supervising engineer could also pick up new development d/s of the reservoir that could change it from a "Low to Medium", "Medium to High" etc. This would save the Environment Agency quite a lot of money with no need for a review process.
- There will be no need to review whether a reservoir is "high risk", if that is based on downstream consequence. A reservoir that cannot fill above adjacent ground level or "is only capable of doing so to an extent that does not constitute a risk" can never be "high risk". An abandoned reservoir should automatically be considered to be not high risk.
- In majority of cases the potential risk posed by a reservoir (when full) will not be affected by the nature of the abandonment works.
- If the threshold is reduced to 10,000m³, there will be many structures that do not require a 'qualified civil engineer' i.e. a 'panel engineer' to design and supervise. Many such reservoirs have been adequately designed by other competent civil engineers or general engineers. Existing CDM and H&S legislation cover this already. There is no problem in this regard that requires fixing.
- There should also be a requirement for undertakers who are abandoning non-flood defence reservoirs to consider a use as flood defence, rather than total abandonment.
- If the undertaker proposes to reduce the reservoir capacity below 10,000 cubic metres then a qualified civil engineer should not be required to inspect and report on it before it is brought back into use.

- Consideration should be given as to whether abandonment should be included in the Act. A reservoir is either discontinued or subject to all the required regulation under the Act.
- It is important that the owner/undertaker appreciates any remaining risks of an abandoned reservoir (or a discontinued one). Therefore any such works should be carried out under the guidance/supervision of a qualified engineer.
- All risk designations should be reviewed at abandonment and bringing back into use, not just high risk designations.
- Once a reservoir has been abandoned, as such, it is un-reasonable to continue to regard it as a LRR subject to further inspections. The method of abandonment should be such that the possibility of filling “does not constitute a risk”.
- The whole issue of abandonment needs to be revisited.
One can clearly isolate a service reservoir by cutting off the inlet mains and for a non impounding reservoir even if the inlets are cut off they will still be subject to direct rain, but this probably would be to an extent that ‘does not constitute a risk’ say 290mm of rain.
However, impounding reservoirs have been certified as discontinued but it is considered that there will always be a risk of filling to an extent that does constitute a risk.
- Abandonment should not be allowed as an option, this should be removed from the Act altogether.

3.4 Panels of Engineers and Engineer Reports

3.4.1 Information and Reports

Question 16 - Do you agree with the proposal to require a specified person to report to the Environment Agency on any incident of a specified kind which affected or could have affected the safety of a large raised reservoir?

58 responses were provided for this question, of those 53 provided an agree/disagree response. 48 agreed and 5 disagreed with the proposal to require a specified person to report to the Environment Agency on any incident of a specified kind which affected or could have affected the safety of a large raised reservoir.

Comments suggested further definition/clarification needs providing on the following:

- What constitutes an incident.
- What would trigger a report.
- Specified person and “specified kind”.

- Responsibilities between undertakers and their engineer advisers.
- Timescale after which non-reporting of an incident becomes liable to criminal sanctions.
- If the reference to 'statements' are those issued by the Supervising Engineer.

Also comments suggest it would be helpful to issue clear guidance on:

- Communicating the information regarding High Risk reservoirs risk to emergency planning colleagues, so they are aware of the risks and can incorporate appropriate measures in local plans.
- The definition of an incident such that the requirements under this case can unambiguous.

Other supporting comments included:

- Owner/Undertaker should be responsible for reporting incidents.
- It is important that lessons learnt are regularly reported to the industry.
- Depending on the risk and the type of body and who are the reservoir owners, it may not always be necessary for a supervising engineer (as designated under the act) to be the specified person.
- Provision need to be made to ensure that undertakers/owners are not unfairly penalised under Section 22 (2) of the 1975 Act if an engineer or other person fails to make the report within the timescales set. The amended legislation will need to detail the specific circumstances under which a report need to be made.
- Reservoirs that aren't high risk could be exempt.
- Specifying the incident and interpreting the definition will be open to 'debate' that could clutter the proposed appeals process.
- Reports should be issued by Panel Engineers.
- Need to be aware of responsibilities of other authorities e.g. where the dam is a public highway.
- The penalty for non-compliance needs to be proportionate.
- Reporting should be to the Enforcement Authority not the Environment Agency.
- If the Environment Agency as enforcement authority require an undertaker to pay for someone to report on an incident, there is no reason for the Environment Agency to specify who that person should be, it should only be a requirement for the person to be on the appropriate panel. There is a danger, if the Environment

Agency decides who is to be appointed, that their choice of person will be influenced by Environment Agency procurement protocols or other factors that are not in the interests of reservoir safety.

3.5 Appeals

3.5.1 Tribunals

Question 17 - Do you agree that it is appropriate to vest the power to hear all appeals under the 1975 Act in the First Tier Tribunal?

51 respondents provided a response to this question with 38 of those providing an agree/disagree response. 35 respondents agree and 3 disagree that it is appropriate to vest the power to hear all appeals under the 1975 Act in the First Tier Tribunal. There were a few supporting comments from respondents as below. However, of those who did not agree/disagree, the majority noted that they were unfamiliar with the appeals process and therefore were unable to comment.

- It should be noted that many of the appeal procedures need to be in place in enactment of the new legislation. For example, it would be unfair to implement the new designation of risk categories for reservoirs without having the relevant appeals process in operation.
- "First Tier Tribunals" membership should include a technically qualified person e.g. An All Reservoirs Panel Engineer or some other person recommended by the President of the Institution of Civil Engineers.
- Appeals should be heard in the first instance by a referee appointed by the Reservoirs committee of the Institute of Civil Engineers (ICE) Under the 1975 Reservoirs Act. If heard later on subsequent appeal by a first tier tribunal Q.C.E's should comprise part of the Tribunal.
- It is unsatisfactory that the appeals procedure should be put in the hands of the 'Senior President of Tribunals' who 'may include non legal members with suitable expertise' or, of course, may not. It is essential that appeals are considered by a body with appropriate knowledge of reservoir safety.
- supporting guidance should be sought and considered from a body with appropriate knowledge of reservoir safety.
- consideration needs to be given to how appeals can or will be heard if restricted information that, for security reasons, is not in the public domain is used to make risk designations.

Question 18 - Do you consider that the General Regulatory Chamber Rules will suit the handling of the appeals set out above? If not, why not?

48 respondents provided a response to this question, of those, 25 agree, 3 disagree and 20 neither agree nor disagree that the General Regulatory Chamber Rules will suit the handling of the appeals set out in the consultation paper (Section 8.3). Majority of respondents who neither agree nor disagree noted that they have insufficient experience/knowledge of the appeals process to comment. Other comments from those who agree/disagree include:

- Consideration needs to be given to whether the rules allow appeals to be heard if restricted information that, for security reasons, is not in the public domain is used to make risk designations.
- The rules and approach appear generally good, but no appeals on environmental matters have been handled as yet, so although there is plenty of wider experience they have not been tested in this specialist area.
- Time limit for appeals is a concern, a maximum of 28 days. Although the Tribunal has a power to extend this in individual cases. Appeals take a lot of time for preparation and hope the Tribunal will give an extension is not ideal. If there is any indication that appeals will need more than 28 days to prepare, the rules should be altered so that there is a right to whatever is deemed a suitable period. A three month appeal window would be ideal.

Question 19 - Do you agree that the current rules relating to Referees are fit for purpose? If not, why not?

50 respondents provided a response to this question. Of those, 36 agree, 1 disagrees and 13 neither agree nor disagree that the current rules relating to Referees are fit for purpose. Many comments were provided from respondents who neither agreed nor disagreed that they were unable to comment due to lack of experience. Only a small number of respondents provided supporting comments:

- It can take some time for an undertaker to comprehend the full implications of a recommendation in the interests of safety. Allowing for time for the undertaker to consult his Supervising Engineer and then perhaps to discuss the point with the Inspecting Engineer, 40 days is not enough time in which to lodge an appeal. This should be increased to 90 days.
- The current rules for referees are appropriate however, the 40 day limit should potentially be reviewed and possibly extended to 60 days as the implications of inspection reports can take some time to become clear.

- There may be a perception that members of the small, closely knit All Reservoirs Panel are unlikely to question their peers and that asking for a referee may adversely affect professional relationships between reservoir owners and panel engineers. Providing draft inspection reports and engaging in discussion with the Inspecting Engineer at that stage should overcome this.

3.6 Criminal Sanctions

3.6.1 New criminal liabilities and civil sanctions

Question 20 - Do you agree that the creation of the new criminal liabilities set out in the amendments to the 1975 Act are necessary? If not, which would you retain, and which would you reject, giving your reasons?

49 respondents provided a response to this question. Of those, 38 agree, 5 disagree and 6 neither agree nor disagree that the creation of the new criminal liabilities set out in the amendments to the 1975 Act are necessary.

Suggested criminal liabilities which should be retained include:

- Retain Section 22 (1A).
- Statutory Provisions, Notices and Directions, Inspections and Supervision.

Suggested criminal liabilities which should be rejected include:

- Sections 22 (1AA) & (1AB) maintenance items.

General comments provided to support responses include:

- The criminal sanction/liability for the failure of an Undertaker to register a reservoir may need to be used with caution, particularly for reservoirs which have a capacity less than 25,000m³. Undertakers may be unaware of both the current legislation and the proposed new amendment. There may also be limited information available relating to these reservoirs. Therefore, sufficient opportunity needs to be given to enable the Undertakers to become aware of the requirements upon them and provide the required information.
- There does not appear to be a criminal sanction/liability for failure to provide information relating to an incident that affected, or could have affected, the safety of a reservoir despite item 145 in the consultation document referring to this.
- A sufficient timescale following an incident needs to be allowed for so that the relevant information can be collated and verified prior to submission.

- Creating a criminal offence is an unnecessary addition to our country's already sclerotic legal system and another opportunity for the legal profession to enhance their current bloated earning capacity.
- The scope of maintenance recommendations is very wide and that many of those made by Supervising Engineers are in the interest of good housekeeping rather than having any safety element, e.g. painting of non-essential equipment.
- Criminal sanctions should be applied only in the event of civil sanctions failing to expedite satisfactory measures to be carried out.
- The creation of the new criminal liabilities set out in the amendments to the 1975 Act are necessary. If the terrorist threat requires the penalty of imprisonment for the failure of an undertaker to comply with a notice issued under section 12B not to publish a flood plan in the interests of national security, then criminal sanctions are also required where public safety is jeopardised by non-compliance with the requirements of reservoir safety legislation.
- The new liabilities should be civil. The existing criminal liabilities relate to wilfully ignoring sections of the 1975 Act that are directly related to ensuring the safety of a reservoir. The new liabilities are of a 2nd order of seriousness relating to effective management.
- Civil sanctions are preferable to the existing enforcement options available to regulators, which are quite blunt and often the outcome is prosecution in the criminal courts for breach of the legislative provisions.
- Criminal sanctions are probably necessary to deal with those for whom all attempts at achieving compliance have failed, but a regime that starts with civil sanctions for most cases and only escalates to the criminal law where necessary seems appropriate.
- It would be advisable to make an exemption for a flood plan on re-designated reservoirs and those between 10,000m³ and 25,000m³. The provision of civil sanctions for reservoirs under 25,000m³ would be more appropriate than criminal liabilities.

Question 21 - Do you agree that civil sanctions (as discussed above) are preferable, if available?

53 respondents provided a response to this question. Of those, 38 agree, 4 disagree and 11 neither agree nor disagree that civil sanctions are preferable, if available. Comments provided to support responses include:

- Civil sanctions could be used and would move us to a more risk based approach to enforcement.
- More modern to achieving better compliance, including 'name & shame' & ultimately criminal liability for loss of life.
- Civil sanctions may be applicable where a deterrent is required but the matter does not immediately form a reservoir safety issue. The following matters provide examples of when civil sanctions may be more appropriate:
 - failure to provide a copy of the Inspection report, under Section 10 of the Reservoir Act 1975, to the Enforcement Authority (where this is a first offence);
 - failure to provide a copy of the Supervising Engineer's Statement, under Section 12 of the Reservoirs Act 1975, to the Enforcement Authority (where this is a first offence);
 - failure of Undertaker to comply with recommendations as to the maintenance of the reservoir (where there is no perceived safety implication);
 - failure of an undertaker to carry out a visual inspection or to notify the supervising Engineer of the results (where there is no perceived safety implication);
 - failure of an Undertaker to comply with Section 11 of the Act (where this is a first offence).

Failure to keep a record of the reservoir does not necessarily mean the reservoir is being operated unsafely. In addition, this point may be more applicable to Undertaker's of reservoirs with a capacity of less than 25,000m³. There may be no record for these reservoirs initially as there is currently no requirement on them to keep one. Therefore, it may be deemed reasonable to apply an incentive to progress the production of the record but considered unfair to initially apply the full force of the law.

- Criminal sanctions are likely to be more appropriate where a risk associated with reservoir safety, or the general safety of the public.
- If found by experience to be ineffectual, than revise to "criminal" sanctions.
- The sanctions should be proportionate to the risk and the impact in failing to provide or maintain information and or carry out works. Civil sanctions may be more appropriate.
- As a first step in the event of an Undertaker failing to carry out liabilities to fulfil the requirements of the Act or a Q.C.E.
- Civil Sanctions can provide regulators with a more proportionate means to deal with non-compliance. It also means that those who are regulate, may well be

sanctioned for non-compliance, but will not receive a criminal conviction for minor breaches of legislation.

- The new liabilities should be civil. The existing criminal liabilities relate to wilfully ignoring sections of the 1975 Act that are directly related to ensuring the safety of a reservoir. The new liabilities are of a 2nd order of seriousness relating to effective management.
- Civil sanctions should be used alongside criminal sanctions rather than being an alternative. Civil sanctions should be targeted at securing compliance through the use of compliance notices and the availability of enforcement undertakings.
- Need to have confidence that the civil sanctioning regime is working effectively and proportionately before these powers are used too widely.
- Proper processes and procedures are in place and have been tested to ensure the use of sanctions is as effective, consistent and proportionate as possible.
- It would make more sense to have some experience of the use of the new civil sanction powers and for businesses to have had time to reflect on their use and impact rather than rush the introduction of a new set of civil sanctions at this early stage.
- The use of civil sanctions may have the effect of undermining the perceived seriousness of the breach.
- Administrative sanctions (e.g. fixed or variable monetary penalties) are preferable for some lesser offences (e.g. possibly, relating to information and record keeping). For those offences that need to retain a criminal sanction because of their potential seriousness, a range of administrative sanctions should still be available alongside criminal prosecution, so that the regulator can use these as a more proportionate alternative when appropriate. These could include enforcement undertakings and fixed and variable monetary penalties, based on the model in the Regulatory Enforcement and Sanctions Act.

3.7 Expenses & Charging

3.7.1 Expenses

Question 22 - Should commencement of the provisions on expenses be undertaken in Phase 1 (from Autumn 2012) or in Phase 2 or following Phase 2?

43 respondents provided a response to this question. Of those, 25 respondents say provisions on expenses be undertaken in phase 1, 8 say phase 2 and 10 say following phase 2.

Comments from those who opted for commencement in Phase 1 include:

- Only for expenses related to those incurred when acting in an enforcement role.
- There seems no logic in deferring the start date. However, what will constitute 'expenses reasonably incurred'? The regulator must carry out its duties efficiently.
- These provisions should only be used where there is an active enforcement process being undertaken and should be clearly linked to that process and not simply become a de facto administrative expense levied whenever the Environment Agency are in contact with an inspecting or supervising engineer.

Comments from those who opted for commencement in Phase 2 include:

- Better information will be available.
- Introducing more charges will distract from the main objectives of the changes to the Act – to increase safety and expenses etc should be left until later.

Comments from those who opted for commencement following Phase 2 include:

- There will be an increase in the number of reservoirs which will have to be registered, and the resulting increase in costs imposed on reservoir undertakers.
- The new legislation represents an improvement to existing legislation that was working rather than new legislation so the burden of the change should be borne in the first instance by those instigating the change (i.e. government).
- The upcoming changes due to Phase 1 and 2 may be busy times for some undertakers and delaying the commencement of expenses until after Phase 2 will ensure not all changes happen in a short period of time.
- For a fully compliant undertaker, the role of the enforcement authority is procedural, and therefore minimal. A fully compliant should not attract charges, thus rewarding and encouraging compliance.

Other supporting comments:

- Further information needed on EA and Category 21 'charging' schemes.
- Cost that will need to be recovered will need to be considered prior to work commencing as not all undertakers will be in a position to pay expenses.
- For the compliant undertaker, expense recovery should not be applied, with any monies saved best invested in the dam itself.
- We would like to see a table of activities and prices similar to that produced for the Waste Regulations.

- There is likely to be a rapid inflation in the costs of administration for this work. Parts of this new legislation might be seen to have costs disproportionate to the benefits.
- Detail on the potential level of charges that may be levied of undertakers are not clear at this time, however, any Environment Agency costs passed onto reservoir undertakers must be fully transparent.
- The recovery of costs should be kept to a minimum with a cap on the recovery costs. These costs should only be part of their regulatory duties.

3.7.2 Arrangement for Civil Protection

Question 23 - Do you agree that undertakers for high risk reservoirs should not be required to fund the emergency planning and warning and informing functions? If not why not?

60 respondents provided a response to this question. Of those, 50 agree, 8 disagree and 3 neither agree nor disagree that undertakers for high risk reservoirs should not be required to fund the emergency planning and warning and informing functions. Of those who agree, majority commented that emergency planning and warning and informing functions should be funded by central government, although undertakers should be expected to contribute to the emergency planning process where possible. Those who disagreed provided the following comments:

- Undertakers should at their own expense provide all essential information to the Emergency Planning authorities but they should not pay for the functioning of these authorities.
- The principle established by COMAH and the Pipeline Safety Regulation that the “owner” of the risk should fund civil protection measures e.g. “Off Site Plan” should also apply to reservoirs.
- The costs to local authorities of emergency planning, warning and informing have risen and are rising further as the range of possible threats is extended. While full funding from undertakers may not be appropriate there must be a requirement to not only provide information, but also to assist local authorities in emergency planning through the provision of staff time and technical assistance.

3.8 Other matters

3.8.1 Further Amendments

Question 24 - Do you believe any further changes to the Reservoirs Act 1975 are required, and why?

52 respondents provided a yes or no response to this question. 22 respondents said they believe further changes to the Reservoir Act 1975 were required and 30 respondents said no further changes were necessary. Those who felt further changes were necessary provided the following comments:

- A proper Risk based approach should be adopted, with High, Medium and Low Risk. This would save us money in the long term with no need to review reservoirs every few years. Supervising Engineers should be employed at "Medium Risk" reservoirs especially at reservoirs such as Ulley Dam that would fall into this category. Something should be put in place to stop undertakers withdrawing from maintenance leaving the Environment Agency and emergency services to deal with the reservoir when it becomes an incident.
- The inclusion and regulation of high risk SRRs as soon as practical.
- A proper appeal process for Appointment of Engineers to the panel. Furthermore the rules for the appointment of the Reservoir Committee should be reviewed. No member should be allowed to serve more than 10 years. For reappointment the Reservoir Committee should have an option to recommend reappointment with Conditions.
- Clause 10 (6) (of the 2010 Act) should replace the wording in the 1975 Act.
- The role of the Qualified Civil Engineer (QCE) should be stated more clearly, taking account of responsibilities under the Construction (Design and Management) Regulations 2007.
- Clarity of changes and efficient implementation would be better achieved if the changes were introduced in a more comprehensive and streamline way.
- A new obligation to carry out recommended maintenance in the interests of safety and creation of a criminal liability for those that fail to carry out these measures needs to be clarified. For example many maintenance items such as cutting the grass, keeping drains clear etc are ongoing activities and would be difficult and counterproductive to make them defined tasks with set timescales. They can also be managed adequately by including them in a list of items to be 'watched' by the Supervising Engineer. Further guidance should be provided.
- Clear process for identification of the high risk reservoirs which require offsite plans.

- Cost recovery regime.
- Three categorisations of risk are essential – high, medium and low as Scotland to allow judgement to be exercised and an inspection and supervision, supervision only, and no provisions to be set up.
- Multiple ownership must be dealt with clarity of how to deal with the issue and to make all involved with the safety of the structure to take on their responsibilities.
- The independence and judgement of the Panel Engineer system must be preserved and it would be good that is a Panel Engineer (or if absolutely necessary 2) can write a reservoir out of the Act.
- Section 27 (Large raised reservoirs not within previous Act) might need amending. It could be interpreted to mean that reservoirs that become registered as high risk in phase 2 should be inspected under section 8. Inspection within 3 years under section 10 would be preferable.
- Section 12 (Supervision of large raised reservoirs). There is no timescale for the appointment of a supervising engineer. It would be reasonable to require the owner of a high risk reservoir to have to appoint a Supervising Engineer within 28 days from the date of final designation as high risk after appeal.
- A formal mechanism should be included to allow the Inspecting Engineer to vary the due date for recommendations made "in the interests of safety" and he shall state his reasons for doing so to the Enforcement Authority who shall accept such a change.
- If the Act is being amended to better reflect a risk based approach, then it should require proper risk assessments to be carried out to determine probability of loss of life, rather than state that there will be likely loss of life on the assumption that the reservoirs will fail. This risk assessment should also take into account the ALARP principle, and particularly to ensure that there is an appropriate balance between an engineering solution for dam safety, and the impact on the natural environment and visual amenity.
- Most of the difficulties with the 1975 Act have been in respect of the definition of the reservoir (e.g. top water level, adjoining natural ground level, treatment of silt, etc) and this area needs very careful consideration. In monitoring the types of statutory recommendations made by inspecting engineers, it is currently possible to record what measures are proposed as the Section 10 report is sent to the Environment Agency. However it is not possible to track the outcome of any investigations or remedial measures as this information is not provided on a Section 10(6) certificate. It should be a requirement for the certifying engineer to provide a record of the outcome of any investigations or measures to accompany the certificate. This would improve the audit trail and informs dam-related research.

- There is no evidence that small non-impounding reservoirs pose any significant risk. The Reservoirs Act 1975 may be modified to account for the fact that in the last thirty-five years irrigation has become far more prevalent. In recent years the Environment Agency have rightly promoted sustainable abstraction for irrigation requirements by abstracting water within the Winter months for storage in non-impounding reservoirs. The Reservoirs Act 1975 was drafted based upon principles applicable to impounding reservoirs and does not reflect the role that non-impounding reservoirs play in the nation's water resource strategy. Similarly the Flood and Water Management Act 2010 was partially a response to events such as the Cumbrian flooding in 2009 and before, Boscastle in 2004, and the Ulley 'near-miss' of 2007. Reference to these events cannot be isolated from storm inflow caused by intense rainfall. Such events can have limited impact on non-impounding reservoirs and thus legislation should correct this. Non-impounding reservoirs holding less than 25,000m³ above natural adjoining ground level should be specifically exempted at Phase 2.
- The Panels of Reservoir Engineers should be (a) Supervising Engineers, (b) Inspecting Engineers and (c) Construction Engineers. The UK will struggle to find sufficient numbers of qualified All Panel Engineers and it is difficult to get the experience of design of new reservoirs or major works. Inspecting Engineers could quite adequately be trained and accredited without extensive construction experience and by having a separate category this wouldn't matter.
- Where the Environment Agency is involved with a reservoir they do not own clear definitions as to undertaker, asset owner and enforcer should be stated in the reservoir registration.
- A mechanism for a review by the qualified civil engineer of the date specified in an inspection report for carrying out a recommendation 'in the interests of safety' would be useful. It can transpire that the task is more complex and time consuming than envisaged on the date of the inspection. At March Haigh reservoir, for example, a year was allowed to put a hydraulically operated upstream valve back into good working order. This would have been ample time to service the hydraulics. It proved that the valve needed to be replaced and the reservoir had to be drained for this purpose. There is no vehicular access which presented further challenges. Under threat of enforcement action, the qualified civil engineer had to write to the enforcement authority explaining the position and pointing out that there was no risk to people living below the empty reservoir.
- Where reservoirs, and particularly the embankments, are on land in multiple ownership, **all** landowners should automatically become Undertakers and there should be a requirement for them to agree in advance responsibility for repairs and maintenance, failing which a tribunal should determine respective liabilities.
- Consideration should be given to combining the 3 pieces of legislation (Reservoirs Act, Water Act and the Flood and Water Management Act) into one document.

- Timeframes are required for completion of the recommendations in the interests of maintenance.
- An allowance should be included for variation of the deadlines for measures in the interests of safety by Inspecting Engineers.
- Remove the requirement to register and change the threshold back to 25,000 m³.
- The Inspecting Engineer should not be the current Supervising Engineer. Having a fresh set of eyes looking at the reservoir avoids the risk of familiarity breeding contempt. It ensures that there is no confusion between the powers and duties of the two appointments; there have been previous occurrences where this has caused difficulties for both the undertaker and the engineer.

3.8.2 Regulatory Impact Assessment

Question 25 - Do you agree that the proposed review should only be initiated once full implementation of the specified amendments has been made and the Environment Agency has completed the high risk designation process? If not, why not?

54 respondents provided a response to this question, with 50 providing an agree/disagree response. Of those, 47 agreed and 7 disagreed that the proposed review should only be initiated once full implementation of the specified amendments has been made and the Environment Agency has completed the high risk designation process. Comments provided from those who disagreed include:

- A preliminary Impact Assessment could be done before phase 2 to help inform the new group of undertakers.
- Review should be abandoned, additional administrative cost to Government of undertaking the review probably greater than costs of each undertaker.
- There should be a review in Phase 1 before implementation of Phase 2. This will identify any issues that need to be addressed or clarified before the commencement of Phase 2. There should then be a second review after Phase 2 has been implemented, the reservoir risk categorisations determined and the new regulatory system is fully operational.
- A timetable for the implementation of Phase 2 has yet to be agreed, the review should be initiated once Phase 1 has been implemented. The outcome of this review could then be used to inform the implementation of Phase 2.
- There are sufficient changes to the new Act that could potentially result in an increased regulatory burden on some owners. On this basis a review should be undertaken on the impact of phase 1 on owners. This review would then provide

useful information for the consultation and commencement periods of phase 2, and subsequent regulatory impact review.

- It seems entirely sensible that RIA is carried out ahead of implementation of Phase II. In particular we would want the RIA to address potential impact of new “in cascade” approach on wetland/upland conservation management structures and techniques.

3.8.3 Cross Border England-Scotland Reservoirs

Question 26 - Do you agree that this measure should be commenced in Phase 1? If not, why not?

48 respondents provided a response to this question, with 38 providing an agree/disagree response. Of those, 37 agreed and 1 disagreed that the measures to deal with cross-border England-Scotland reservoirs should be commenced in Phase 1. The respondent who disagreed felt there was little point in commencing this measure in Phase 1 if there are currently no England-Scotland cross-border reservoirs. It would be prudent to defer it to Phase 2, as it is likely to be needed only then if at all and this would allow more time to ensure full compatibility with the Scottish Act. Very few other comments were provided, however, some respondents felt that whilst they agree to include these in phase 1, the High Risk Designation process should be priority.

Annex A - List of Respondents

15 Individuals responded to this consultation.

56 Organisations responded as listed below:

Anglian Water	Utility Company
Angling Trust	Representative Bodies
Bolton Council	Local Authority/Councils
British Dam Society	Representative Bodies
British Waterways	Representative Bodies
Caerphilly CBC	Local Authority/Councils
CH Consultancy	Consultants
Chesterfield Canal Partnership	Representative Bodies
City of London Surveyors Dept	Local Authority/Councils
Country Land and Business Association	Representative Bodies
DCWW	Utility Company
Denbighshire CC	Local Authority/Councils
Derbyshire County Council	Local Authority/Councils
Environment Agency Wales	Environmental Bodies
EDF	Utility Company
Epping Forest District Council	Local Authority/Councils

Farmers' Union of Wales	Representative Bodies
Forestry Commission	Environmental Bodies
Golf England (Irriplan)	Representative Bodies
Halcrow Group Ltd	Consultants
Heath and Hampstead Society	Representative Bodies
Horticultural Trades Association	Representative Bodies
Institution of Civil Engineers	Professional Bodies
Jacobs (x2)	Consultants
JBA Consulting	Consultants
Knight Frank	Professional Bodies
Lancashire CC	Local Authority/Councils
Leeds CC	Local Authority/Councils
Mott McDonald	Consultants
National Trust	Environmental Bodies
NFU	Representative Bodies
North Somerset Council	Local Authority/Councils
North Worcester Water Management	Local Authority/Councils
NW (Northumbrian Water Ltd)	Utility Company
Rotherham Borough Council	Local Authority/Councils

RSPB	Representative Bodies
RSPB Cymru	Representative Bodies
Sembcorp Bournemouth Water	Utility Company
Severn Trent	Utility Company
Snowdonia National Park Authority	Environmental Bodies
Somerset Drainage Boards Consortium	Environmental Bodies
South East Water	Utility Company
South Somerset DC	Local Authority/Councils
South West Water	Utility Company
SSE	Utility Company
Suffolk Resilience Forum	Local Authority/Councils
Thames Water	Utility Company
Tuckmarsh Farm Ltd	Agricultural Bodies
United Utilities	Utility Company
Upper Witham IDB	Environmental Bodies
Water UK	Representative Bodies
Wessex Water	Utility Company
Witham Trading Co Ltd	Agricultural Bodies
Worfield and Rudge Parish Council	Local Authority/Councils

Wyre Forest District Council	Local Authority/Councils
Yorkshire Water	Utility Company