



The Scottish
Government

Reservoir Safety in Scotland: An Analysis of Consultation Responses

Environment



**RESERVOIR SAFETY IN SCOTLAND:
AN ANALYSIS OF CONSULTATION RESPONSES**

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1 EXECUTIVE SUMMARY

- 1.1 The Scottish Government plans to amend reservoir safety legislation, and this report sets out the views and opinions of parties who responded to the consultation document and its proposals for new Reservoir Safety Legislation.
- 1.2 The new legislation would contribute to the Scottish Government's Safer and Stronger strategic objective, one of five which seek to underpin the Scottish Government's purpose and describe the kind of Scotland we all want to live in. The new legislation would:
 - Introduce a more risk-based approach to the reservoir safety regime;
 - Include Regulations to take forward the implementation of Part 7 of the Flood Risk Management (Scotland) Act 2009, hereafter referred to as the 2009 Act; and
 - Provide greater security for people, property and critical infrastructure from the risk of flooding from reservoirs.
- 1.3 The consultation ran from 25 January to 18 April 2010. Sixty-seven written responses to the consultation were received, and in combination with data from four public workshops, this report considers the views of cross-sectoral representatives to produce an independent analysis of responses from the consultation process.

Headline Themes from the Consultation

- 1.4 Key messages emerge from the consultation analysis; these relate to both the headline themes outlined within the consultation report and to the foci of responses. Generally, respondents support the proposals, with suggestions made across the themes for possible refinements and implementation recommendations.
- 1.5 Regarding **proposals for flood plans**, most respondents agree that risk should be taken into account when determining the need to create a flood plan. The consultation responses represent an overwhelmingly positive response to proposals for flood plan preparation.
- 1.6 There is strong support for **financial assistance** to be provided to reservoir undertakers/ operators to enable compliance with the proposed regime. A number of respondents raise concerns as to the financial implications of the new regime for non-profit making reservoirs, and many propose a means tested approach to funding support in order that assistance is targeted towards those who need it most.
- 1.7 The most contentious element of responses to legislative proposals **for a risk based approach to reservoir safety** is the new minimum capacity figure of 10,000 cubic metres. Respondents present a very mixed response to this question, though many identify concerns with the additional resource demands implicit in the proposed regime. Others identify the safety benefits of considering the risk implications of lower volume reservoirs, and do not raise concerns as to resource demands. Around half of respondents disagree with

the proposed figure, for a number of reasons; the most prominent being that the capacity threshold appears too low. However, responses from Local Authorities generally accept the proposed figure as reasonable and appropriate. One key concern around this figure is a feeling that the consultation contained insufficient detail as to the figure's origins and so some respondents were not prepared to accept what they perceived as an arbitrarily derived figure.

- 1.8 Respondents generally agree with **the principles of a risk-based classification for reservoirs**. Emerging from the consultation analysis is a need to clarify the difference in relation to flooding between risk and consequence, and how these two concerns will interact to form the classification.
- 1.9 Despite concerns about the 10,000m³ figure, the vast **majority of respondents identified Option 2** – an updated, risk-based version of the current system - as the preferred implementation model. The key difference from the current regime would be that all reservoirs which have the capacity to hold 10,000 cubic metres or more would have to be registered. Option 2 would effectively align the Scottish system with English and Welsh processes, and would minimise the impact of the proposed changes through effectively retaining the operation of the current system, with improvements to safety detail. Some respondents selected Option 3 – retaining the current model in its entirety, feeling that the cost of implementing a new system outweighs the potential public safety benefit. Contrary to Option 2, Option 3 would not lower the minimum threshold for inclusion on the register. No respondents selected Options 1 or 4.
- 1.10 Regarding **proposals for a Scottish panel of engineers** to carry out technical functions under the new legislation for Scotland, there is overwhelming support from respondents, with some qualifications. Many responses highlight confusion around the restrictions this might place upon engineers operating across borders. Should restrictions apply, this might raise costs associated with a smaller labour pool within Scotland. Some respondents argued that this point will require clarification from the Scottish Government.
- 1.11 **In summary**, responses generally support proposals for reservoir flood plans, incident reporting and a risk-based approach to reservoir safety. There are, however, some concerns about some of the detail, which may benefit from clarification or adjustments. Generally, the safety benefits of the proposed changes are accepted to be worthwhile and of value to public safety.

2 BACKGROUND TO THE CONSULTATION ANALYSIS

- 2.1 The safety of reservoirs in Scotland is currently governed by the provisions in the [Reservoirs Act 1975](#)¹, which aims to reduce the risks posed to public safety from a reservoir or dam failure which may lead to severe flooding.
- 2.2 The 1975 Act currently only applies to Large Raised Reservoirs (LRR) which hold, or are capable of holding, more than 25,000 cubic metres of water above the natural level of any part of the land adjoining the reservoir. The current safety regime does not take into account the level of risk posed by the reservoir. Instead, it provides for all LRRs to be subject to the same level of statutory engineering supervision, even if failure would not pose a danger to human life.
- 2.3 There is also no provision for smaller reservoirs to be supervised through their construction or operational phases, even though the failure of some smaller reservoirs could have serious consequences if there are people living downstream.
- 2.4 Although the likelihood of water escaping from any reservoir is considered to be low, the Scottish Government's aim is to ensure that all reservoirs which have the potential to pose a risk to human life are subject to a proportionate level of control to reduce and manage these risks.
- 2.5 The consultation paper "[Reservoir Safety in Scotland – a Consultation Document](#)"² sets out proposals to introduce a more risk-based approach to the reservoir safety regime in the following ways:
- Place a requirement for all reservoirs above a minimum volume capacity (10,000 cubic metres) to be included on a Scottish Environment Protection Agency (SEPA) register;
 - Require SEPA to classify each reservoir according to whether it poses a threat to human life, property and critical infrastructure;
 - Require reservoir undertakers to comply with the proportionate regime for their reservoir which will vary dependant on the risk classification;
 - New duties for reservoir undertakers;
 - Amending the role of Panel Engineers.
- 2.6 The legislation will not cover the emergency response to a flooding event from a reservoir, as this comes under the auspices of the Civil Contingencies legislation. The legislation will also not cover wider health and safety aspects of reservoir management, as this comes under the auspices of the Health and Safety legislation.

¹ The Reservoirs Act 1975 (UK) was introduced to create legislative provision against escapes of water from large reservoirs or from lakes or lochs artificially created or enlarged. The Act deals with reservoir safety which is a devolved matter for Scottish Ministers.

² The Scottish Government (2010) *Reservoir Safety in Scotland – A Consultation Document*. Available online at www.scotland.gov.uk.

2.7 This report analyses responses to proposals to introduce a new regime for ensuring the risk from flooding from reservoirs in Scotland is appropriately managed. The analysis considers respondents' views on proposals for a proportionate system to protect the public from the risk of flooding from reservoirs. This considers views represented on the potential burdens to be placed on reservoir undertakers complying with the proposed regime.

2.8 The overall aims of this analysis are to:

- Conduct a transparent, rigorous and systematic analysis of the written responses to the consultation document (and views expressed at four public workshops held in February and March 2010); and to
- Produce a high quality, accessible report and summary of the findings.

2.9 Thirty-three questions were set out in the consultation document, in addition to four public workshop events which discussed the proposals. A list of these questions can be found at Annex A, with the data from the four workshop events at Annex C. The consultation was open to anyone in Scotland to respond to. In addition, the Scottish Government invited a number of practitioners, professionals and academics with a direct interest in Reservoir Safety for their views on the proposed changes. A list of these consultees is included at Annex D.

2.10 As detailed above, four public workshops were held during the consultation period in order to engage with the public and discuss the detail of the proposals in an open format. These were held in locations across Scotland: Edinburgh, Glasgow, New Galloway and Inverness. The workshops took the form of question and answer sessions. Various commonalities emerged from the questions posed; these are presented thematically within Annex C and the points raised feed into the overall consultation analysis.

2.11 The remainder of this report is structured as follows:

Chapter 3: Analysis methods

Chapter 4: Number and composition of consultation respondents

Chapter 5: Reservoir flood plans

- Preparation and adoption of flood plans
- Inundation mapping; preparation, review, testing and approval of flood plans
- Financial assistance and access to information
- Reservoir flood plans summary

Chapter 6: Incident reporting

- Incident reporting criteria
- Report content and incident reporting responsibility
- Summary of incident reporting

Chapter 7: A risk-based approach to reservoir safety

- Legislative proposals for a risk-based approach to reservoir safety
- Criteria for inclusion/ exclusion on the SEPA register
- Registration requirements and design

- Risk-based reservoir classification
- Financial responsibilities
- Implementation model
- Panel of engineers
- Maintenance and operational issues to be binding on the undertaker
- A risk-based approach to reservoir safety summary

2.12 Following the format of the consultation, this analysis comprises three distinct sections; Chapters 5 and 6 relate to different aspects of proposals to implement Part 7 of the 2009 Act³, with Chapter 7 dealing with legislative proposals for a risk-based approach to reservoir safety. Chapter 5 analyses responses to enforcement responsibility, flood plans and inundation maps. Following this, Chapter 6 covers analysis of responses to proposals relating to incident reporting. Considering the remaining questions, Chapter 7 analyses responses to proposals to make further improvements to reservoir safety legislation through the introduction of a new risk-based regime.

2.13 The actual questions from the consultation document are included at the start of each section for information.

³ The Flood Risk Management (Scotland) Act 2009 introduces a more sustainable and modern approach to flood risk management, suited to the needs of the 21st century and to the impact of climate change. Under the 2009 Act, the 1975 Act is amended to alter responsibilities and regulations around reservoir safety provision in Scotland.

3 ANALYSIS METHODS

- 3.1 Few questions posed in the consultation document lend themselves readily to statistical analysis, due to their open-ended nature and difficulties in apportioning weight to responses from particular parties. The value of such questions is the opportunity for respondents to focus on and discuss issues which matter to them, and to construct arguments which help to inform in-depth analysis. For this reason, the analysis is predominantly qualitative in nature, and relies on informed, subjective consideration of responses to each question.
- 3.2 In addition to the data collected through the four public workshops, the Scottish Government received written responses to the consultation in a variety of formats, both electronically and in hard copy. Some respondents answered every question directly, some responded only to particular areas of interest and others just provided general comments.
- 3.3 The analytical team carried out the initial logging and analysis of responses. This involved reviewing each response, assigning a sectoral category to each respondent, and marking up which sections each respondent had commented on, both in their direct answers and in general comments. Where responses were non-standard and fell outside of the questions, the analytical team reviewed these in depth and, where appropriate, aligned comments with correlating response areas.
- 3.4 The analysis is primarily qualitative in nature, exploring in detail the individual consultation responses and considering key comments and common views expressed by respondents within the sector groupings.

4 NUMBER AND COMPOSITION OF CONSULTATION RESPONDENTS

4.1 The consultation document was publicly available both in hard copy and electronically online. Hard copies were available at the public workshops, and it was directly forwarded to stakeholders where it was felt that the proposed changes were of particular relevance. Sixty-seven written responses were received, with responses covering all thirty-three questions. Not all respondents answered each question, and some responded with general comments as opposed to in the standard format. Table 1 indicates the breakdown of respondents by sector.

Table 1: Stakeholder Representation

Stakeholder Category	No
Local Authority	16
Public Bodies	11
Businesses	21
Professional/ Research Bodies	6
Individuals	11
Angling Clubs	2
TOTAL	67

4.2 Businesses form approximately one-third of the respondents, with Local Authorities and public bodies representing approximately one-quarter and one-sixth of respondents respectively. Professional/ research bodies form approximately one-tenth of the respondents. The remaining sixth of respondents comprises individuals and angling clubs. For a more detailed breakdown of respondents by sectors to each of the three key sections of the document, please see Annex E.

4.3 The general pattern of sectoral representation indicated in Table 1 is reflected throughout individual questions. Local Authorities and businesses therefore comprise the bulk of respondents to all questions across the three sections; reservoir flood plans, incident reporting and a risk-based approach to reservoir safety. Public bodies, professional/ research bodies and individuals also present a significant proportion of respondents. A minority of respondents are angling clubs; represented minimally in most questions and not represented at all in some.

5 RESERVOIR FLOOD PLANS

- 5.1 The Flood Risk Management (Scotland) 2009 Act inserted provisions into the Reservoirs Act 1975 which allow the Scottish Government to make regulations which require undertakers to produce on-site flood plans. These plans will set out the on-site steps which an operator will take in the event of a potential or imminent uncontrolled release of water from a reservoir. These are different from the off-site plans produced by local resilience groups under civil contingencies legislation. Off-site emergency plans detail how emergency responders will respond to a potential or real reservoir failure.
- 5.2 It is proposed that the regulations will define the categories of low, medium and high risk reservoirs. These categories take into account the categories determined under the 2009 Act and the proposed new reservoir safety legislation which will change the current reservoir safety regime to a risk-based approach.
- 5.3 The categories should be based on the impact that escapes of water would have on downstream populations, property and critical infrastructure, and the likelihood of an uncontrolled release of water, taking into account other factors such as volume, type of dam structure, incident reports and advice from engineers. The proposed categories are set out below:
- A minor risk of damage to property downstream – Low Risk
 - A moderate risk of damage to property and infrastructure downstream – Moderate Risk
 - A risk to life and/or significant risk to property and critical infrastructure downstream – High Risk

Preparation and adoption of flood plans

Q1. What should be the criteria for determining whether a reservoir requires preparation of a flood plan?

Q2. Should there be different levels of flood plans for high, medium and low risk reservoirs? If not, what alternative system should be adopted?

Q3. If 3 different categories are used, what information should be included in a flood plan for each of them?

Q4. Should all flood plans include an inundation map?

Q5. Should SEPA prepare basic inundation maps for all reservoirs over 10,000 cubic metres?

- 5.4 More than half of respondents to the consultation are in agreement that risk should be taken into account when determining the need to prepare a flood plan. Respondents from all sectors agree that risk should be taken into account; this view was also reflected through the public workshops. Some

respondents identify various other factors that might impact upon the requirement to produce a flood plan, such as the proximity of the reservoir to a large population and the integrity of the reservoir infrastructure and structural stability. Yet around one-quarter of respondents feel that all sites require flood plans, which would render the determining criteria redundant.

- 5.5 The majority of respondents agree that high, medium and low risk reservoirs require different levels of flood plans, though a minority identify that emphasis should shift from risk to consequence when considering the requirements of flood plans. There is no correlation between sectors in terms of how they responded to the question of different levels of flood plans for different risk category reservoirs; each sector has responded in a variety of ways to approaches to preparing and adopting flood plans. A small number of respondents feel that there should be fewer risk categories than the three proposed; high, medium and low, or that flood plans should only be required for the high and medium risk categories. The Institute for Civil Engineers (ICE) suggest that there is no need for a low risk category; it would not be practicable to extend the requirement for flood plans to low risk reservoirs as no-one, other than the undertaker, would have responsibility to check that the flood plan remained appropriate.
- 5.6 There is a lack of consensus amongst respondents from all sectors as to whether there should be different requirements for flood plans for each risk category. Whilst some respondents identify a need for more detailed plans as risk increases, others feel that all flood plans should contain the same level of data. Scottish Water propose that there should be no difference in level (amount and type of information required) for low, medium and high risk reservoirs. However, Scottish Water also state that they only support flow plan regulation for medium and high risk reservoirs in order to ensure proportionate enforcement and costs. The general feeling throughout the responses is that the flood plans should be comprehensive, containing as much detail as would be necessary in the event of an incident occurring. In addition, respondents identify that there is scope for the involvement of supervising engineers in the preparation of plans, and the importance of an approach which incorporates consideration of activity and impact off-site. A minor proportion of respondents believe that all risk categories demand the same level of flood plan.

Inundation mapping; preparation, review, testing and approval of flood plans

Q6. How often should plans be reviewed and updated?

Q7. How often should plans be tested?

Q8. Should Panel engineers have a role in the preparation, testing and approval of flood plans? If so, what should their role be?

- 5.7 In England and Wales, the Environment Agency has produced simple inundation maps for every reservoir currently regulated under the 1975 Act. The consultation sought views on whether a similar exercise would be welcomed in Scotland. These simple inundation maps would not replace the more detailed maps required to support the high risk plans, but would provide

sufficient information in a standardised form which would aid the classification of high, medium and low risk reservoirs following registration. Most respondents agree that all flood plans should include a basic inundation map, though a significant proportion raise concerns that this should be required only on a risk basis to prevent unnecessary work. There is a particularly strong positive response from Local Authorities regarding the need to include basic inundation maps within all flood plans, though the response from businesses is more mixed.

- 5.8 In terms of producing the comprehensive inundation maps, most respondents from all sectors agree that Scottish Environment Protection Agency (SEPA) should produce the basic maps once a criteria threshold has been agreed. One key reason for SEPA to hold responsibility for this is to ensure comparability in the standard of maps produced; where inundation maps already exist, these could be reviewed/ amended by SEPA in order to reduce the risk of work duplication and to improve efficiency. The Chartered Institute of Water Management (CIWEM) consider that SEPA should produce these maps to allow an initial consequence-based classification. Some local authority respondents propose that if SEPA undertake this work, the cost should be met publicly and not by individual reservoir undertakers. Conversely, respondents from businesses and local authorities suggest that costs should be reclaimed by SEPA from reservoir owners. In a similarly cost-minded vein, one respondent suggested an initial pilot study to confirm the cost to SEPA of undertaking these maps before legislation is approved. Inundation maps will be used as a starting point for, and a first indication of, potential reservoir classification.
- 5.9 The consultation document proposed a review period of six years for flood plans, and to test plans. Respondents were asked at what interval they felt it appropriate to review and test plans. Reservoir inspections currently take place every ten years, and so many respondents proposed that both flood plans and testing occurred at ten year intervals to align with existing procedures. Many respondents agreed with the proposed six year timescale, including the response from Atkins, though some suggested a shorter rotation of five years, and others suggested plans should be reviewed and tested yearly. There is no apparent correlation between particular sectors and responses relating to proposed review periods. Reflecting the ongoing nature of development work, some respondents suggested that plans are considered as 'live' documents, which are updated incrementally through a linked relationship with development control. In this way, any costs relating to changes in reservoir safety conditions, caused by development activity, could be recouped through the planning system and not borne by reservoir undertakers. This could be implemented through planning charges (such as through Section 75) to cover the costs of reservoir safety implications. Respondents across all sectors propose that plan review and testing should be timed to correspond for simplicity and practicality, and should consider the risk categorisation. Reflecting feedback from the workshop, it is important to note that anything relating to public safety should be covered by Civil Contingencies Legislation.

5.10 The vast majority of respondents across all sectors agree that Panel Engineers⁴ should have a role in the preparation, testing and approval of flood plans, with qualifications. However, respondents note that such requirements would place additional time and skills demands on the profession, which may in some cases not be appropriate. Feedback from the workshops suggests engineer staffing levels are not a concern and that the proposals would not place excessive demands on the existing professional network. Some respondents feel that the involvement of these engineers should be at the discretion of reservoir undertakers rather than a statutory requirement; the responsibility of ensuring the quality of plans should hence lie with SEPA rather than reservoir undertakers or Panel Engineers. Reflecting the nature of earlier comments, some respondents (representing individuals and professional bodies) feel that the necessity to involve Panel Engineers in flood plan preparation should be related to risk categorisation, with low risk reservoirs not demanding an engineer's attention. This is the view represented by responses from ICE and SEPA.

Financial assistance and access to information

Q9. Should the Scottish Government provide financial assistance towards the preparation of reservoir flood plans in order to assist smaller private businesses and individuals to comply with new legislation?

Q10. Who should have access to flood plans?

Q11. Who should have access to inundation maps?

5.11 The vast majority of respondents from all sectors believe that financial assistance should be provided by the Scottish Government to assist the preparation of reservoir flood plans. The cost of a basic map was estimated within one of the workshops as being £1500. The original question posed relates to financial assistance specifically for smaller private businesses and individuals; a number of respondents, including Scottish Water, The Scottish Rural Property and Business Association (SRPBA) and SEPA, take this suggestion further to propose that financial assistance should in fact not be restricted to these groups; rather, financial assistance should be extended to include other groups through a form of means testing. Relating to the risk-based proposals, some respondents identify that costs incurred through flood plan preparation could be scaled against the risk associated with a particular reservoir; financial assistance could perhaps then also follow a scale taking into account financial need and risk categorisation. This would ensure that all reservoir owners are treated equally. This view is represented across all sectors, and through the workshops. One respondent notes that should SEPA take responsibility for flood map preparation, no financial burden would be placed on reservoir undertakers, and as such no financial assistance measures would need to be put in place. Of those respondents who do not accept that

⁴ Panel Engineers are qualified to design and supervise the construction and alteration of, to inspect and report upon, to act as Supervising Engineers, to act as referees under Section 19 of the 1975 Act and to act for the purposes of Section 16 of the 1975 Act for all reservoirs to which the 1975 Act applies.

financial assistance should be granted in any case, two reasons are proffered; the belief that costs incurred will be minimal and hence affordable to all, and that the position of the 'polluter pays' land remediation principle should be taken with regards costs of reservoir undertaking.

- 5.12 The key to distinguishing between levels of access to site flood plans and inundation maps, as identified by respondents, is the security level of information included within these two documents. Site flood plans are generally considered to have a higher security risk, and thus a greater need for restricted access, than inundation maps. For this reason, many respondents propose that access is restricted to engineers, reservoir undertakers and necessary public service providers (such as the police and Local Authorities). Different views are presented relating to access arrangements in terms of viewing flood plans; some respondents suggest that information should be available online for ease of access, whereas one respondent suggests that access should be only available by supervised appointment at a SEPA office. It is generally accepted that inundation maps should be freely available to any interested parties, particularly because inundation maps may influence ongoing planning and development. However, ConFor suggest that neither flood plans nor inundation maps should be made available online. ICE identify that this information should be provided to those with responsibility for reservoir safety, with appropriate elements of the flood plans communicated to those in properties potentially affected by an uncontrolled release of water. Outline inundation maps may be made available online in England and Wales at some point in the future, but as yet are not publicly available. It is unlikely that inundation depth or velocity details would be made publicly available due to security restrictions; this would likely also be the case in Scotland.

Summary of responses to proposals for reservoir flood plans

- 5.13 Regarding the preparation and adoption of flood plans, most respondents agree that risk should be taken into account when determining the need to create a flood plan, although around a quarter of respondents feel that **all** sites require flood plans. The consultation responses represent an overwhelmingly positive response to proposals for flood plan preparation. However, there is no one view agreed by respondents as to whether there should be different requirements made of flood plans for reservoirs in different flood categories.
- 5.14 There is strong support for financial assistance to be provided to reservoir undertakers/ operators to enable compliance with the proposed regime. A number of respondents raise concerns as to the financial implications of the new regime for non-profit making reservoirs, and many propose a means tested approach to allocating funding in order that assistance is targeted towards those who need it most. Many respondents feel that access to flood plans should be restricted to professional users due to possible security concerns should information be freely available.

6 INCIDENT REPORTING

6.1 Section 11 of the Flood Risk Management (Scotland) Act 2009 requires reservoir undertakers to keep a record of information on changes in water levels, overflow levels, leakages, settlement of walls, repairs carried out and such other matters as may be prescribed. The 2009 Act extended this section by inserting provisions which enable the Scottish Government to make regulations to introduce a system of post-incident reporting that includes such information as deemed appropriate following an understanding and knowledge of any incidents that may occur. It is proposed that the regulations will set out the criteria which should determine whether an incident should be reported, and the penalties for failing to report an incident. It is proposed that an incident should be reported if it meets any of the following three security levels:

- One – Failure (uncontrolled sudden large release of retained water);
- Two – Serious incident involving any of the following; emergency drawdown, emergency works or serious operational failure in an emergency;
- Three – Any incident leading to:
 - An unscheduled visit by an Inspecting Engineer;
 - A precautionary drawdown;
 - Unplanned physical works; and/or
 - Human error leading to a major (adverse) change in operating procedures.

Incident reporting criteria

Q12. Do you agree that the criteria proposed are the correct criteria for determining whether an incident should be reported? If not, please suggest the criteria which should be used and why.

6.2 An overwhelming majority of respondents agree with the proposed criteria, including Scottish Water, British Waterways, the Forestry Commission, CIWEM, ICE and SEPA. A minority of respondents present concerns. A significant number of local authorities find the criteria, in particular the term 'unplanned physical works', too vague, indicating there may be a need to clarify the criteria. One respondent disagrees with the principle that there is a cost benefit to incident reporting, due to potential difficulties in enforcing incident reporting. A point is made that in terms of operation and function, it would be worthwhile to create a database linking Scottish reservoir incident data to UK wide incident data. This would serve to better inform the wider reservoir safety and engineering profession for assistance in early identification of hazards. A number of suggestions are made for amending the detail of the criteria set out in section 6.1, reflecting the respondents' experience of reservoir incidents, including:

- Revising level three to state 'An unscheduled visit by an Inspecting Engineer *resulting in the Engineer's recommending any action*';

- Inclusion of '*Planned works that increase the risk of flooding during execution of works*' within the criteria; and
- Consideration of emergency drawdown within the criteria.

Report content and incident reporting responsibility

Q13. What information should be provided in the report?

Q14. Who should be made responsible for reporting the incident?

6.3 The Scottish Government is proposing to introduce a new registration process for reservoirs under proposed new legislation. This will result in detailed records being held by Scottish Environment Protection Agency (SEPA) on each reservoir. To avoid duplication of effort, it is proposed that incident reports should include the following information:

- Name and category of reservoir;
- Date of incident;
- The severity of the incident;
- Details of any external threat;
- Details of any internal threat;
- Details of the mechanism of deterioration;
- Details of the consequences of the incident; and
- Lessons learnt.

6.4 The vast majority of respondents agree with the proposed report content, including CIWEM, ConFor and ICE. Only a small number of amendments were suggested. One respondent suggests that timescales should be added to the proposed data, to indicate how quickly incidents unfolded and how long it took to deal with arising concerns. This would provide useful information for future risk management preparation. Beyond the proposed details, a number of respondents highlight a need for incident reporting and flood plans to be linked through consideration of necessary changes to the flood plan following incident, should systems be modified or physical reservoir works take place. Atkins suggest the value of considering 'softer issues', taken to mean general public and press reactions to incidents; though this would be highly subjective and closely related to specific local conditions, it may provide value in learning from others' experience of the impact of reservoir incidents.

6.5 The vast majority of respondents agree that the undertaker should be ultimately responsible for reporting any incident, including West Lothian Council, The Highland Council, South Ayrshire Council and Falkirk Council. Many also suggest that the Supervising Engineer⁵ should play an advisory role in this process, with only a minority feeling that the Supervising Engineer should take final responsibility; one respondent points out that this is not their role and even

⁵ Members of the Supervising Engineers Panel are qualified to supervise all reservoirs within the 1975 Act. The purpose is to ensure that, at all times when no construction engineer is employed, there is professional supervision of the reservoir by a qualified civil engineer who is required to advise the Undertakers of any behaviour of the reservoir between inspections which may affect safety.

to advise on such matters may be outside of their remit. Legally, advice must be given by a Qualified Civil Engineer, though a Supervising Engineer may support their role. Underlining these comments is a general acceptance that a reservoir undertaker⁶ must take full and final responsibility for all incident reporting and related arrangements.

Summary of responses to proposals for incident reporting

6.6 Proposals for incident reporting criteria, report content and incident reporting responsibility prove largely uncontroversial, with the majority of respondents in support of the proposals. Respondents suggest minor changes to incident reporting criteria, the detail of which can be found in section 6.3. None of these suggestions recommend significant alterations to the proposals. The vast majority of respondents agree with the proposed report content detail. A number of respondents highlight a need for incident reporting and flood plans to be linked through consideration of necessary changes to the flood plan following incidents, should systems be modified or physical reservoir works take place. Most respondents feel that overall responsibility for reservoir safety should remain with reservoir undertakers, though with this responsibility undertakers will require the expertise of appropriate professional support.

⁶ The terminology reservoir “undertakers” refers to-

(a) in the case of a reservoir that is or, when constructed, is to be managed and operated by (Scottish Water, that body); and

(b) in any other case—

(i) if the reservoir is used or intended to be used for the purposes of any undertaking, the persons for the time being carrying on that undertaking; or

(ii) if the reservoir is not so used or intended to be used, the owners or lessees of the reservoir.

7 A RISK-BASED APPROACH TO RESERVOIR SAFETY

- 7.1 Reservoirs which have a capacity of less than 25,000 cubic metres can pose similar dangers to people living immediately downstream as those posed by large raised reservoirs. The Scottish Government propose to include all reservoirs above a new minimum capacity of 10,000 cubic metres, which pose a danger to downstream populations, within a new regime.
- 7.2 It is also proposed in the consultation document that there should be scope for Scottish Environment Protection Agency (SEPA), as the enforcement authority, to include reservoirs below the new minimum capacity should significant risks become apparent, or for Ministers to raise or lower the minimum volume if in future it appears incorrect. The proposals also include scope in the legislation to include a series of smaller reservoirs in a cascade if they are collectively deemed to pose a risk.

Legislative proposals for a risk based approach to reservoir safety

Q15. Do you agree that the minimum volume figure should be 10,000 cubic metres, or another figure? If you are proposing a different figure, please explain why.

- 7.3 Proposals to include all reservoirs above a new minimum capacity of 10,000 cubic metres appear to be the most contentious area of consultation. Following an initial scoping survey, the Scottish Government believes that these changes would likely affect more than 250 reservoirs previously below the capacity threshold; however, some respondents feel that this is an underestimate. Inclusion of these reservoirs would create additional responsibilities for some reservoir undertakers who would otherwise not have been affected by proposed changes. Logically, then, a number of respondents raise concerns with this proposal, particularly regarding additional operational demands which could be placed upon reservoir undertakers. Around half of the respondents disagreed with the new figure; the majority of those arguing that the proposed capacity threshold is too low. Most local authorities agree with the proposed figure, as do a majority of businesses. Objections to the proposed figure have come from a variety of sectors; individuals, representatives from business and public bodies. The financial capacity of smaller reservoir undertakers in taking on additional administrative tasks, in particular employing additional engineers' services, appears to form the predominant barrier to agreeing with this proposal. There is a clear link between this proposal and proposals to offer financial support for newly registered reservoirs (see sections 7.14 – 7.18). Whilst concerns are raised about the risk of undertakers drawing down reservoirs in response should these proposals be taken forward, this will be appropriately managed through the provisions of the Controlled Activities Regulations (CAR) licensing system. It is also important to stress, as emerged from the workshops, that this proposed regime is entirely separate from the CAR licensing system, and as such will be implemented and financed separately.
- 7.4 It should, however, be pointed out that around half of respondents agreed with the proposed capacity threshold. For a number of those disagreeing, this is

related to what is felt to be a lack of sufficient information as to the origins of the 10,000 cubic metres figure. Whilst it was not clearly stated in the consultation document, this figure aligns with research across the wider UK, which currently identifies the most appropriate lower capacity figure to be 10,000 cubic metres. Please see Annex B for more detail as to the justification for using this figure. An important consideration is the operation of skilled workers across national boundaries. Support for this proposed figure was received from Atkins, AECOM, The Highland Council, Inverclyde Council, Argyll and Bute Council, South Ayrshire Council, CIWEM, ICE and British Waterways Scotland. A number of businesses stated that there is an argument for aligning Scottish policy with policy in England in Wales so as to maximise potential for engineers to operate across national borders. Should divergent systems emerge, this would likely reduce the labour pool available for employment in Scotland. The financial and operational restrictions that contrasting systems could impose might have negative impacts on the implementation of emerging policy, and hence reservoir safety, within Scotland. Respondents across all sectors feel that it is therefore desirable that Scottish legislation permits an appropriate degree of flexibility to minimise unnecessary cost implications.

- 7.5 It is reasonable to accept that these proposals lead to a consideration of risk where undertakers have previously assumed there is no or little safety risk from their structures to the general public. An example provided by one respondent is the existence of 'ponds' that have a higher capacity than the proposed minimum. Shifting boundaries to consider these structures may not appear reasonable if based solely on how one labels each structure; emphasis must however be placed on the actual risk posed by the stored body of water rather than how one chooses to label it. As highlighted above, the proposed boundary figure is derived from research (as detailed in Annex B); however one consequence of the use of boundaries may be the assigning of categories to bodies of water whose undertakers do not accept re-categorisation.
- 7.6 In contrast to the Scottish consultation, Defra sought views on whether the minimum volume figure should be 5,000 or 10,000m³, or another figure. Whereas the Scottish consultation received significant support from Local Authorities for the 10,000m³ figure, in the English and Welsh consultation support was split between 5,000 and 10,000m³. Similarly to the Scottish consultation, some respondents to Defra's consultation felt there might be a need to include reservoirs below any boundary figure, considering risk before volume as the most important criteria for registering reservoirs. In Defra's consultation, around half of reservoir owners, several water companies, drainage authorities and engineers thought the 10,000 cubic metres figure was adequate. In the Scottish consultation, the majority of those rejecting the 10,000m³ figure felt that this threshold would be too low; in the English and Welsh consultation those who felt the figure was too low felt that reservoirs in the 10,000-25,000 cubic metres band are unlikely to pose a risk to the public

Criteria for inclusion/exclusion on the SEPA register

Q16. Do you agree that the criteria for inclusion and/or exemption can be based on other objective criteria such as embankment height, elevation, type of construction etc?

7.7 The Reservoir Safety in Scotland Consultation Document 2010 proposes that the criteria for inclusion and/or exclusion can be based on other objective criteria such as embankment height, elevation, type of construction etc. Some respondents identify that little discussion is focused on these criteria in the consultation document. Perhaps for this reason, many respondents agree with the proposed criteria though suggest that more detailed measures be included to give weight to categorisation. Atkins, Mott MacDonald, Falkirk Council and British Waterways Scotland underline the importance of including more detailed measures to support the inclusion/ exclusion criteria. The majority of respondents agree with the criteria proposed, though some identify a need for exclusionary criteria to be as clearly stated as criteria for inclusion. Those who rejected the proposal had a number of concerns:

- How this criteria would align with the risk-based criteria, whether these would be complementary or contradictory sets of measures, how they might influence each other and how these measures might be incorporated into a registration system; and
- That these criteria would prove superfluous to the volume measure and would overcomplicate the initial registration stages, although should a failure leading to loss of life have previously occurred and the body of water not meet the minimum capacity threshold, this should also be included on the register.

7.8 In England and Wales, Defra sought views as to whether criteria for inclusion and/ or exemption could be based on objective criteria such as embankment height, elevation, type of construction etc. Responses to this varied widely. The type of construction was seen by some respondents as being important, whilst others felt that the only determining factors should be the escapable volume of water and the consequences of such escapes. In the Defra consultation, comments were received relating to the need for different regulatory requirements according to these objective criteria, reflecting concerns raised in the Scottish consultation regarding the alignment of registration criteria with the risk-based classification.

Registration requirements and design

Q17. What information should be requested at the point of registration to enable an effective risk-based approach thereafter?

Q18. How can we design the registration process to minimise the burdens imposed by registration?

7.9 The Scottish Government propose in the consultation document that the requirement to register would involve the provision of the following information:

- Details of how the reservoir undertaker monitors the safety of the reservoir, the frequency of this monitoring and details of the person responsible for carrying out the monitoring;
- Where the undertaker is not the owner, details of the owner including their name and address;
- The purpose of the impounded water;
- Limited key technical information (likely to include for example, grid reference, dam height, age volume, type of construction, etc.); and
- Inundation maps (where available).

7.10 Information will be used to assess the classification of each reservoir. It is essential that appropriate information is requested at the point of registration to facilitate appropriate classification. Respondents generally agreed that the proposed registration details were useful and appropriate, though a number raised queries as to whether this information is already held and readily available. Two key concerns with the proposed information demands relate to the policing of such a system and its reliability due to issues of self-reporting by reservoir undertakers. Information submitted may not be accurate and therefore inconsistencies may arise in the level and quality of data provided to the Scottish Government. Classification may then be problematic if based on inaccurate registration information. South Lanarkshire Council proposes that flood mapping should take place before registration. Other respondents proposed that the potential hazard or consequence of downstream breach should be included on the register. Reflecting the risk-based approach to reservoir safety proposed in this consultation, one respondent recommends a staged, risk-based approach to registration. This would involve an initial simple assessment reported by individual reservoir undertakers and only progressing to a further assessment, to be undertaken by SEPA, should the initial assessment suggest that the reservoir failure would pose a significant risk.

7.11 Section 3.12 of the consultation document identifies the potential requirement to include details of an undertaker's financial resources on the register. This point was picked up on by a small number of respondents as a point of concern. These respondents made a variety of points about whether or not this is possible or fair, asking how a satisfactory financial position would be determined and by whom. This point is picked up by Atkins, who point out the disparity in running costs between day-to-day maintenance and potential emergency work, which should be taken into account in considering an undertaker's financial position. Respondents also query what action would be taken should any authority determine that an undertaker's financial position is untenable.

7.12 In consulting on equivalent proposals in England and Wales, Defra asked what information should be requested at the point of registration. Overall, respondents wanted details strictly relevant to risk assessment to be included, using existing data held as the baseline. A number of respondents felt that an on-line system of registration could keep costs down for owners. Some respondents noted that a Panel Engineer's involvement would be required in some cases, e.g. where capacity was close to the minimum (when it was felt owners should not have to bear the cost). The results from Defra's consultation

therefore align with the responses to the Scottish Government's consultation, with general support for the proposed registration details and an emphasis on the need to best utilise existing data to maximise efficiency.

7.13 The administrative and financial burden imposed by this new system is a clear concern for many of the respondents, across all sectors. Significant emphasis is placed upon the role of SEPA in undertaking registration work to prevent the burden falling solely on reservoir undertakers. Though it should be regulated through the CAR licensing scheme, many respondents fear that the introduction of these regulations will cause a number of undertakers to draw down reservoirs in fear of unmanageable costs. As such, the general feeling of respondents is that the registration process should have minimal cost implications or that the costs should be covered by SEPA. Where CAR licensing information is available, SEPA could perhaps use this to meet the demands of certain criteria so that undertakers are not required to submit the same information more than once. Many respondents feel that there should be no charge imposed whatsoever on undertakers, as in the current regime. Certainly an initial period of free registration is supported by many of the respondents. Beyond restricting the financial implications of registration, many respondents feel that systems should function both online and in hard copy, so that undertakers can respond as best suits their business practice. A final point raised by a number of respondents is the importance of clarity in exactly what is demanded throughout the process and the level of information needed to be submitted for registration.

Risk-based reservoir classification

Q19. Do you agree with the proposed risk based classification for reservoirs? If not, on what basis do you think risk should be defined on?

Q20. Do you consider that particular categories or types of reservoirs should be exempt from the proposed regulatory regime? If so, what are the categories or types and why?

7.14 The proposed regime is risk-based and focuses on minimising the likelihood of an uncontrolled release of water from a reservoir. This approach would also ensure that all enforcement action taken to mitigate an uncontrolled release of water is proportionate to the potential consequences of such an event. To support this risk-based approach, the Scottish Government proposed that reservoirs should be categorised into three risk classes; low, medium or high risk. Reservoirs in the highest risk category would be subject to a higher level of scrutiny and enforcement than reservoirs in lower risk classes. The Scottish Government is seeking to ensure that the reservoir classification scheme is developed in a manner that is consistent with assessments of risk undertaken for the purpose of implementing the Flood Risk Management (Scotland) Act 2009.

7.15 It was noted through the public workshops that the existing system is likely to have inaccuracies, based on the Environment Agency's experiences of instating their similar system. Through instating a new risk-based system, it is

anticipated by the Scottish Government that such inaccuracies will be considered and properly dealt with.

- 7.16 Respondents generally agreed with the principles of a risk-based classification for reservoirs, though a number voiced concerns over the difference between 'risk' and 'consequence', and the need for this to be clarified in order for any classification to be logical. Respondents from businesses pointed out that the probability of failure would be difficult to calculate, and so difficult to use meaningfully within any classification, hence the need to shift focus to consequence rather than risk. This perception was reiterated by angling clubs, which also noted that the 'medium' risk category might prove superfluous in practice. Reflecting this approach, a number of respondents also feel that there should be fewer risk categories, perhaps only 'high' and 'low' risk, or even 'no' risk. Certainly, an approach which considers both risk and consequence in a more holistic manner is supported by the vast majority of respondents; Atkins, East Ayrshire Council, Perth and Kinross Council, ICE, and Scottish Water all clearly state this in their responses.
- 7.17 Responses are very mixed about whether certain reservoirs should be made exempt from the classification.. A system with no exemptions would ensure consistency and clarity, though this could lead to unnecessary inclusion of reservoirs which pose no discernable risk. Some respondents point out the need to include all reservoirs in order that risk is properly assessed; the exclusion of some reservoirs might not serve to properly address safety considerations. There is no consensus amongst businesses as to whether certain reservoirs should be excluded, nor is there consensus amongst local authorities. Some respondents consider that other legislation – CAR licensing for example – might cover some reservoirs which could be then excluded from this registration. Yet other respondents consider that even where covered by other legislation, no reservoirs should be excluded from this registration. Whilst there is no agreement from respondents on whether reservoirs should or should not be subject to exemption criteria, most respondents do agree that determining any exclusion/ inclusion categories must not be at the expense of reservoir safety. Scottish Water propose a continuation of the exemptions in the current Reservoirs Act to be carried forward into the new legislation, which would include aqueducts, canals, and bodies of water covered by mines and quarries legislation.
- 7.18 In England and Wales, Defra consulted on proposals to introduce a risk-based classification system with just two categories of 'high' and 'low' risk, contrasting with Scottish proposals to include a 'medium' risk category. Respondents to Defra's proposals identified the potential for a 'negligible' risk category, although some consultees wished to retain elements of the existing system which takes account of potential property damage.
- 7.19 Defra also proposed that the Environment Agency should have responsibility for classifying reservoirs under this regime. Consultee support for the EA in this administrative role mirrors the positive response to proposals for SEPA to administer reservoir classification in Scotland.

Financial responsibilities

Q21. How can the financial burden on owners of reservoirs which are being brought into the regulatory regime for the first time be minimised?

Q22. Should there be a flat rate charge for registration, or should the charge be proportionate to the risk/consequence of an uncontrolled release of water from the reservoir?

Q23. Should registration be free for an initial period to encourage new sites to register?

Q24. Should existing reservoirs have to be re-registered?

Q25. Should SEPA's ongoing enforcement costs be recovered through subsistence fees and should they be on a sliding scale?

Q26. Should SEPA be able to reclaim costs of emergency works from the undertaker for measures taken in the interests of public safety?

7.20 The proposed changes to the reservoir safety regime will reduce the regulation for many reservoirs through categorising them based on risk, and subsequently relating administrative requirements to this classification. However, they will undoubtedly increase the regulation for smaller reservoirs outside the current regime which are deemed to pose a risk to the public should the lower capacity threshold of 10,000m³ be taken forwards. The Scottish Government plans to minimise the financial burden of any new regime, through establishing some system whereby costs are proportionate to risk. Respondents were invited to comment on how the financial burden on owners, which are being brought into the regulatory regime for the first time, can be minimised. The vast majority of respondents, including most local authorities, suggest an initial period of free registration for these owners. Some respondents suggest that later costs could be linked to emergent reservoir classification, though other respondents point out that this could be difficult to implement. One view from a number of businesses was that financial support should be offered to SEPA and not to individual reservoir undertakers, and for this SEPA should take responsibility for registration of reservoirs and all incumbent workload. The RSPB identify that reducing the burden involves more than financial considerations; the administrative and other burdens imposed by introduction of a new system would be difficult to ameliorate even were there no fee imposed.

7.21 Responses are mixed regarding whether a flat rate charge for registration or a proportionate charge related to risk/ consequence of an uncontrolled release of water from the reservoir is most appropriate. Some respondents do not feel that there should be any charge, others believe that a flat rate is most appropriate, and still others believe that charging should be proportionate to risk/ consequence. There is a relatively equal mix of responses with no one charging system gaining more approval than any other. Nor is there any consensus regarding responses from particular sectors. Regarding an initial period of free registration to encourage new sites to register, an overwhelming

majority of respondents are in favour of this proposal, including SEPA. This generally positive response is reflected throughout the different responding sectors. However, one local authority raises the question of affordability on the part of the public sector in not charging for registration in the current financial climate.

- 7.22 Whether or not existing reservoirs should have to re-register is another point where there was some disagreement amongst respondents. Around half of respondents support re-registering of new sites and around half reject this proposal. Where up-to-date information is already held, many respondents feel it is logical to transfer this information across to save on duplication of effort. A number of businesses are in favour of all sites having to re-register in order to ensure that information is standardised and reflects a consistent approach, however many more businesses point to efficiency concerns and the re-collection of information not making financial sense for any involved parties. Generally speaking, public bodies emphasise in their responses the need to best utilise existing reporting and information structures in order to work most effectively and efficiently. The re-registering of sites is logical only where existing available data is insufficient for the requirements of the new system; otherwise it would be illogical to repeat data collection for process' sake.
- 7.23 The consultation document sets out that SEPA will be required to maintain a register of sites, ensure undertakers comply with the legislation and, where necessary, carry out enforcement action. By undertaking these duties, SEPA will incur costs which must be recovered in some form. These on-going enforcement costs to SEPA could be recovered through subsistence fees, possibly on a sliding scale. Most responding businesses disagree with the proposals to recover enforcement costs through subsistence fees, feeling this places undue financial pressure on reservoir undertakers. Where business respondents accept this proposal they propose that a means-tested sliding scale would be the fairest way to implement charging. In contrast, those local authorities which respond in support of proposals suggest introduction of subsistence fees, on a sliding scale linked to cost, offence and reservoir risk categorisation. Scottish Water as a key consultee raise a number of concerns with this area of proposals; in principal, disagreeing that fees should be charged for enforcement. A number of respondents identify that the lack of detail provided through the consultation as to the potential scale of costs of enforcement is problematic. The risk of multiple charges being levied against reservoir owners is not desirable; the area of enforcement costs being opposed by Scottish Water in addition to The Chartered Institute of Water and Environmental Management (CIWEM), The Royal Institute of Chartered Surveyors (RICS) and The Scottish Rural Property and Business Association (SRPBA) raises significant concerns in this area. The Institution of Civil Engineers (ICE) propose that any such fees be incorporated into the CAR licensing fees as this funding remains with SEPA.
- 7.24 The consultation document states that SEPA, as the enforcement authority, may be required to undertake emergency works in the interest of safety where an undertaker is not in a position to do so. In the case where an undertaker can be identified and is able to pay, SEPA will have powers to reclaim the costs.

There will be situations where costs cannot be recovered from an undertaker, either because they are not able to pay (i.e. are insolvent), or an undertaker cannot be identified. In situations where they are able to recover costs from the undertaker, most respondents across all sectors agree that SEPA should take these steps, however respondents generally perceive the situation as more complicated than is presented in the consultation document. Responses indicate a concern with the processes by which SEPA would undertake emergency activity; reassurances are sought that this would be in discussion with the reservoir undertaker, where possible; that work undertaken would be strictly necessary and determined by appropriately skilled professional; and that undertakers are given the chance to step in themselves should they have the capacity. Furthermore, many respondents, again across all sectors, suggest that the reclamation of costs even in emergency situations must be means tested and of a level which is affordable to the undertaker, lest emergency works bankrupt those unable to afford the cost of SEPA stepping in. In contrast, a number of respondents point out that the affordability of emergency procedures should not be taken into account; the financing of emergency work should be provided for through adequate insurance procedures held by reservoir undertakers. There may be a requirement then for SEPA to set in place actions to ensure that each reservoir has an adequate insurance policy in place.

- 7.25 Whilst there was a significant emphasis through the Scottish consultation on the need to prevent additional costs being placed on reservoir owners and undertakers, in the English and Welsh consultation responses were more varied as to where the financial burden should be placed. Some suggested that costs of inspection should be settled by the owner and the Panel Engineer, not by Government. Some took the view that no costs should fall on owners of low risk reservoirs, other than the cost of providing information to the Environment Agency for registration. One suggestion for reducing the financial burden was that registration should be free to the owner (which would mean, in practice, that, the costs of employing a Panel Engineer to settle marginal cases would fall to the Environment Agency). The suggestion of free registration appears to have received greater support through the Scottish consultation than through its English and Welsh equivalent. Within both, suggestions were made that charging should reflect a sliding scale dependent on risk. In the Defra consultation others argued the reasoning for charges should be clearly stated; respondents feeling that there is an unclear basis for criteria-based charging. An argument with some support through Defra's consultation was that additional costs placed on owners may be a disincentive to register and could therefore prejudice safety. As found through the Scottish consultation, there are suggestions made for financial assistance to be available, particularly for smaller owners, though also as in the Scottish case, there was some resistance to revealing financial details at the time of registration.

Implementation model

Q27. Which is your preferred implementation model and why?

Q28. Are there any elements of the other models which could be usefully incorporated into your preferred model?

Q29. If you think another approach not outlined here would deliver reservoir safety more efficiently, please provide details of the approach and how it will deliver reservoir safety.

7.26 As part of the consultation, the Scottish Government sought views on possible delivery mechanisms for the new risk-based regime. The new regime will be required to deliver a proportionate system which protects the public from the risk of flooding from reservoirs without placing unnecessary burdens on reservoir undertakers. Further detail as to the different options proposed can be found in the consultation document. In brief, four options were proposed as follows:

- Option 1 – Reservoir Licensing System;
- Option 2 – An updated risk-based version of the current system;
- Option 3 – Retain current model; and
- Option 4 – Deregulation model.

7.27 The vast majority of respondents identify Option 2 as the preferred implementation model, including Atkins, Mott MacDonald, Aecom, CIWEM, ICE, the Royal Institute of Chartered Surveyors (RICS), SEPA, British Waterways, Scottish Water and most responding local authorities. This would be modelled on the current system, with Panel Engineers having a key role in ensuring public safety by undertaking inspections, completing reports and signing off certificates. There would be a number of amendments to improve the operation of this regime. A key difference to the current regime would be that all reservoirs that have the capacity to hold 10,000 cubic metres or more would have to be registered. Once registered, SEPA would determine which reservoirs would be 'High', 'Medium' or 'Low' risk. Those sites deemed to pose a 'High' risk would have a greater level of regulation and control than those deemed to be 'Medium' or 'Low' risk. In this way it would ensure reservoirs are regulated appropriately in relation to the risk they pose to human safety. Risk classification would be re-assessed on a regular basis, possibly every six years, to tie in with the Flood Risk Management (Scotland) Act to ensure the most up-to-date information is used in assigning risk classification. The reservoir safety regulation and enforcement role would be new to SEPA and would therefore require new systems and a new administrative team to enforce the regime. Where appropriate, SEPA would look to incorporate these new systems and processes into current business operations to provide an effective and efficient service.

7.28 Option 2 would effectively align Scottish policy with policy in England and Wales. Many respondents support Option 2 due to the practical implications of aligning policy across national boundaries. This would allow engineers to work

across boundaries and so would prevent policy restrictions disadvantaging Scotland; if two divergent systems came into practice, there would be a risk of engineers electing not to work within the Scottish system. This could present a situation whereby demand rises above supply and the cost of compliance with any new system increases disproportionately in Scotland. The inherent costs of training engineers in dual systems is also a deterrent from implementing divergent regimes; this cost would be likely to be borne through increased fees charged to Scottish undertakers. A shift to a combined risk and consequence approach is more sophisticated than a simple *de minimus* threshold, and many respondents identify that this reflects the need to consider the complex realities around reservoir undertaking. Generally, a risk-based approach is preferred, leading to the selection of Option 2, although some respondents in support of Option 2 still raise queries as to the origins and appropriateness of the 10,000 cubic metres figure.

- 7.29 Option 3 was a less popular option, representing the retention of the existing model. A small minority of respondents selected Option 3 as their preference; mainly businesses support Option 3 and also the Scottish Rural Property and Business Association. Some respondents point out that the current system has known deficiencies, but those who support the existing system believe that the costs of implementing a new system are disproportionate to any safety benefits. However, many point out that the best features of the existing regime are retained in Option 2, and Option 3 offers no scope for improvement.
- 7.30 It is important to note that no respondents chose Options 1 or 4, though a small number of respondents identified that they would prefer more options to select from than those presented, possibly incorporating aspects from each of Options 1 to 4. It should also be noted that many respondents stated their support for the ongoing work in general of Panel Engineers and think it appropriate that their role in ensuring public safety is maintained. One respondent also pointed out the potential of revising the regime to ensure a system which requires owners to have adequate public liability insurance.
- 7.31 Some respondents give suggestions to improve upon the Options proposed. Some common themes emerge from these suggestions, one key theme being the potential to rationalise the registration process. Incorporation of the CAR licensing scheme with the risk-based reservoir safety regime might improve efficiency, or perhaps there would be another way to create a single environmental permit to reduce the administrative burden. Another recurring theme is the value of a suggestion made in Option 1, that 'general binding' rules should apply to sites below the 10,000 cubic metre threshold. Many respondents feel that there would be real value in outlining what behaviour and compliance is expected from these undertakers. A final theme presented is the need to introduce compulsory compliance to, or real penalties against non-compliance when securing a licence and acting upon engineers' recommendations.
- 7.32 A minority of respondents proposed a merging of Options 2 and 3 – either the implementation of Option 2 whilst retaining the current 25,000 cubic metre threshold, or the implementation of Option 3 (retaining the current system) yet taking into account a risk-based approach. It is not clear how these amended

regimes would operate, though these suggestions may require consideration. Contrasting these suggestions to merge options, a number of respondents specifically stated that Option 2 is ideal in its current format and should not be compromised by diluting its proposals.

7.33 Respondents made a number of additional important points in support of delivering reservoir safety more efficiently:

- The value of emphasising consequence before risk in establishing the new regime;
- The potential application of maintenance regimes and monitoring through annual inspections linked to the new regime;
- The requirement to consider sliding scales in all areas related to this risk-based regime; plans, maps, inspections, and in relation to both risk and consequence;
- The possible realignment of responsibilities to bring Panel Engineers and Supervising Engineers under the direct control of SEPA; and
- The need to ensure an appeals process in relation to the classification of reservoirs both registering and re-registering.

7.34 The need to ensure an appeals process was also identified through the workshops, and reflects the responses received to Defra's consultation.

Panels of engineers

Q30. Do you agree with the proposed arrangements for creating panels of engineers?

Q31. What lessons can be learnt from the current appointment process of panel engineers?

7.35 The Westminster Flood and Water Management Act 2010 includes provision for the setting up of new panels of engineers for England and Wales only. The Scottish Government has proposed that an enabling power is included in the new legislation which will allow Scottish Ministers, after consultation with the Institution of Civil Engineers, to set up panels of engineers to carry out technical functions under the new legislation for Scotland. The panel structure would be determined by regulations, and engineers will be appointed to the panels by Scottish Ministers. The intention is for these appointments to be as coherent as possible with arrangements in England and Wales, and to be made in consultation with the Institution of Civil Engineers.

7.36 Respondents across all sectors overwhelmingly support this proposal, including Scottish Water, SRPBA, ICE and SEPA, however there are some concerns. Many respondents, including British Waterways, highlighted confusion about restrictions that this might place upon engineers operating across boundaries; it is not clear to many respondents how the proposals might affect engineers' ability to work across borders within England and Wales. Should restrictions apply, this might raise costs associated with a smaller labour pool. In essence, most respondents agree that the proposals are logical should they simplify

existing processes and not create additional, unnecessary work for engineers. Some respondents do take this point further, and suggest that rather than setting up a separate system as proposed, Scottish Ministers should seek to adjoin the Scottish system with that in England and Wales so that one system applies to all engineers within the UK.

Maintenance and operational issues to be binding on the Undertaker

Q32. *Do you agree with each of the proposed minor amendments?*

- *The proposed changes to reporting requirements; and*
- *The proposed requirement to erect notice boards.*

7.37 Currently, Inspecting Engineers are required to note in their report any recommendations they see fit relating to measures that should be taken in the interest of safety and return the report to the enforcement authority. The Scottish Government wants to ensure that this includes, where appropriate, details of what maintenance should be carried out, and by what date and how particular parts of the reservoir should be maintained. It is also proposed that the reports should be returned to the enforcement authority within a specified period to be determined by SEPA.

7.38 As maintenance would generally be an ongoing requirement, it will not normally be possible for the qualified civil engineer to certify that any measures of this kind have been put into effect. The Scottish Government proposes that Supervising Engineers should be required to include in their annual statements information of the action the owner or undertaker have or have not taken to deal with any maintenance issues, highlighted by the Inspecting Engineer, which require ongoing action, and the date by which the action should be completed.

7.39 It is proposed that undertakers for all reservoirs should have to erect an information board in a prominent location adjacent to the reservoir. The information board would show up-to-date details of the reservoir's registration number and the name and contact details of the reservoir undertaker, Supervising Engineer and owner.

7.40 Regarding the first proposal to make certain changes to reporting requirements, most respondents generally accept that the suggested details represent improvements to engineers' reports. Setting certain parameters which engineers' reports should fall within is felt to represent a positive move towards improved reservoir maintenance. However, the detail of these reports, in particular the setting of dates, is felt to be inappropriate; this is reiterated through ICE's comments that any dates stated would require a degree of flexibility to take into account situations where an undertaker has work ongoing. Some respondents feel that setting these dates would serve little purpose and would not be appropriate due to the issue of ongoing maintenance work. Also, respondents point out that there should be a mechanism for applying to extend these deadlines should they be set out through engineer's reports, and questions are raised as to which engineers are best placed to make such recommendations.

7.41 There is generally more opposition than support for the erection of notice boards and the proposed content of these boards. The posting of personal contact details, either of reservoir undertaker or associated engineers, is felt by a number of respondents to be unacceptable. Rather, should an emergency occur where someone must be contacted regarding a particular reservoir, respondents feel that an emergency number for SEPA would be of greater value than the contact details of the undertaker, owner or engineers; SEPA already have a 24 hour contact number, whereas others may not have the capacity to deal with calls out of hours. Engineers may change, and personal information may be private and vulnerable to abuse. Further to these concerns, some respondents query who would pay for these boards and their erection.

Minor changes and recommendations

Q33. Are there any other minor changes to the current regime you would recommend?

7.42 The final area of consultation was an opportunity for any points to be raised by respondents which may not have been covered in through the workshops or consultation document. The predominant emerging theme from these additional comments is the need to fully integrate this risk-based approach and review procedures with other existing structures, and most significantly the planning system; this was discussed by Howietown Fishery, Mott MacDonald, Rio Tinto, Alcan, AECOM, ICE, Scottish Water and a number of local authorities.

7.43 The cost implications of downstream development on reservoir undertakers raised concerns in the workshops; in England this is dealt with through the developer having to cover resultant costs. Planning and development have a influential relationship with reservoir safety; these systems should work symbiotically to take full notice of the ways in which one might impact upon the other. Reservoir risk assessment could be altered through downstream development, and this should be taken into account when constructing a risk based system. Based on risk assessment, development concerns may arise; this information should feed into development control systems so that the general approach to public safety is holistic and strategically considered. There may be other systems which the risk-based reservoir assessment should link with, and a number of respondents identify the importance of such consideration when establishing the new regime.

7.44 A number of other points were raised, summarised as follows:

- A basic version of the register and inundation maps could be made available to the general public online;
- There is a need to present a clear definition of the undertaker/ owner and whereupon safety responsibility lies;
- There is a potential query around the need for a prescribed length of time in which reports should be produced following inspection;
- There may be a need to reinforce enforcement powers to establish real consequences of non-action in terms of maintenance and safety;

- Implicit in the establishment of a new safety regime, skills training may be required by local authorities operating around the new system; and
- Following on from issues raised around signposting and public enquiry, one accountable body could be selected to record and handle public queries – this could be a role for SEPA.

Summary of responses to proposals for a risk-based approach to reservoir safety

- 7.45 The most contentious element of the legislative proposals for a risk based approach to reservoir safety is the new minimum capacity figure of 10,000 cubic metres. Respondents present a very mixed response to this question, though many identify concerns with the additional resource demands implicit in the new regime. Around half of respondents disagree with the new proposed figure, for a number of reasons; the most prominent being that the capacity threshold appears too low. One key concern around this figure is a feeling that the consultation contained insufficient detail as to the figure's origins and so respondents were not prepared to accept what may be perceived as an arbitrarily derived figure.
- 7.46 The majority of respondents agree with the proposed criteria for inclusion/exclusion on the SEPA register. Those who raise concerns query how the proposed criteria would align with the risk based criteria, and whether the combined risk-based criteria and inclusion/exclusion criteria might over-complicate the regime.
- 7.47 The consultation document sets out that information is to be requested at the point of registration in order that reservoirs can be appropriately classified. Respondents generally agree with the proposed registration details, though concerns are raised as to the scope for inaccuracy in self-reported information. Concerns are also raised in relation to the potential for undertakers having to self-report financial information, this being potentially intrusive and/ or unfair, and with unclear consequences to undertakers.
- 7.48 Respondents generally agree with the principles of a risk-based classification for reservoirs; emerging from the consultation analysis is a need to clarify the difference in this situation between risk and consequence, and how these two concerns will interact to form the classification. There is no overall consensus regarding whether certain reservoirs should be made exempt from the classification regime.
- 7.49 For some reservoirs, the reservoir safety regime will increase the regulation imposed. The vast majority of respondents suggest an initial period of free registration for all reservoirs entering the new regime. Responses are mixed, however, as to whether registration charges should be a flat rate or a proportionate charge related to risk/ consequence of an uncontrolled release of water from the reservoir. There is no consensus from respondents as to whether existing reservoirs should have to re-register, though many respondents feel it logical to transfer existing information into the new regime for efficiency savings.

- 7.50 The costs to SEPA of compliance with legislation must be recovered in an appropriate manner; most respondents do not agree that these costs should be recovered through subsistence fees due to the financial pressure this would place on reservoir undertakers. Those respondents who are in support of subsistence charging either support a means-tested approach or charging on a sliding scale linked to cost, offence and reservoir risk categorisation. In situations where SEPA has to undertake emergency works in the interest of public safety, most respondents agree that SEPA should be able to recover these costs from the reservoir undertaker. A number of issues which could complicate this procedure are drawn out (see section 7.19), with some respondents identifying that affordability should not be a concern for undertakers; they ought to have appropriate public liability insurance.
- 7.51 The vast majority of respondents identified Option 2 – An updated risk-based version of the current system as the preferred implementation model. A key difference to the current regime would be that all reservoirs which have the capacity to hold 10,000 cubic metres or more would have to be registered. Some respondents select Option 3 – retaining the current model, feeling that the cost of implementing a new system outweighs the potential public safety benefit. No respondents select Options 1 or 4.
- 7.52 Regarding proposals for a Scottish panel of engineers to carry out technical functions under the new legislation for Scotland, there is overwhelming support from respondents, with some caveats; many respond highlighting confusion around the restriction this might place upon engineers operating across boundaries. Should restrictions apply, this might raise costs associated with a smaller labour pool within Scotland. This point will require clarification from the Scottish Government.
- 7.53 Most respondents generally accept that Supervising Engineers should be required to include in their annual statements information regarding action the owner or undertaker have or have not taken to deal with maintenance issues. Setting certain parameters which engineer's reports should fall within is felt to represent a positive move towards improved reservoir maintenance. Some of the proposed detail of these reports is queried by respondents, in particular the use of dates and deadlines for works to be completed. Regarding notice boards, many respondents hold no strong objection in principle, but question the benefit of such boards considering the implied cost, and many respondents disagree with the posting of personal contact details on these boards for security reasons. No respondents identified the potential for third parties to be interested in the classification of reservoirs, who might find notice boards useful.

8 ANNEX A - LIST OF QUESTIONS ASKED IN CONSULTATION

Implementation of the Flooding Act

Reservoir flood plans

Q1. What should be the criteria for determining whether a reservoir requires preparation of a flood plan?

Q2. Should there be different levels of flood plans for high, medium and low risk reservoirs? If not, what alternative system should be adopted?

Q3. If 3 different categories are used, what information should be included in a flood plan for each of them?

Q4. Should all flood plans include an inundation map?

Q5. Should SEPA prepare basic inundation maps for all reservoirs over 10,000 cubic metres?

Q6. How often should plans be reviewed and updated?

Q7. How often should plans be tested?

Q8. Should Panel Engineers have a role in the preparation, testing and approval of flood plans? If so, what should their role be?

Q9. Should the Scottish Government provide financial assistance towards the preparation of reservoir flood plans in order to assist smaller private businesses and individuals to comply with new legislation?

Q10. Who should have access to flood plans?

Q11. Who should have access to inundation maps?

Incident Reporting

Q12. Do you agree that the criteria proposed are the correct criteria for determining whether an incident should be reported? If not, please suggest the criteria which should be used and why.

Q13. What information should be provided in the report?

Q14. Who should be made responsible for reporting the incident?

A Risk-Based Approach to Reservoir Safety

Q15. Do you agree that the minimum volume figure should be 10,000 cubic metres, or another figure? If you are proposing a different figure, please explain why.

Q16. Do you agree that the criteria for inclusion and/or exemption can be based on other objective criteria such as embankment height, elevation, type of construction etc?

Q17. What information should be requested at the point of registration to enable an effective risk-based approach thereafter?

Q18. How can we design the registration process to minimise the burdens imposed by registration?

Q19. Do you agree with the proposed risk based classification for reservoirs? If not, on what basis do you think risk should be defined on?

Q20. Do you consider that particular categories or types of reservoirs should be exempt from the proposed regulatory regime? If so, what are the categories or types and why?

Q21. How can the financial burden on owners of reservoirs which are being brought into the regulatory regime for the first time be minimised?

Q22. Should there be a flat rate charge for registration, or should the charge be proportionate to the risk/consequence of an uncontrolled release of water from the reservoir?

Q23. Should registration be free for an initial period to encourage new sites to register?

Q24. Should existing reservoirs have to be re-registered?

Q25. Should SEPA's ongoing enforcement costs be recovered through subsistence fees and should they be on a sliding scale?

Q26. Should SEPA be able to reclaim costs of emergency works from the undertaker for measures taken in the interests of public safety?

Q27. Which is your preferred implementation model and why?

Q28. Are there any elements of the other models which could be usefully incorporated into your preferred model?

Q29. If you think another approach not outlined here would deliver reservoir safety more efficiently, please provide details of the approach and how it will deliver reservoir safety.

Q30. Do you agree with the proposed arrangements for creating panels of engineers?

Q31. What lessons can be learnt from the current appointment process of Panel Engineers?

Q32. Do you agree with each of the proposed minor amendments?

- The proposed changes to reporting requirements; and
- The proposed requirement to erect notice boards.

Q33. Are there any other minor changes to the current regime you would recommend?

9 ANNEX B - A RATIONALE FOR THE 10,000M³ VOLUME THRESHOLD

- 9.1 The 10,000m³ figure was proposed through the consultation. This figure was determined following advice from the sector, specifically ICE. This Annex briefly outlines and justifies the use of this figure, informed by investigative analysis from ICE.
- 9.2 ICE established the Reservoir Safety Consultative Group (RSCG) to liaise with Defra and the EA on proposed new legislation for England and Wales. Membership of this group included inspecting engineers and reservoir owners.
- 9.3 The RSCG noted that, in England and Wales, there were a large number of reservoirs over 10,000 cubic metres in volume. A significant number of these reservoirs would present a hazard to the downstream population in the event of failure.
- 9.4 It was also known that there have been a number of incidents in recent years involving reservoirs between 10,000 and 25,000m³ where emergency intervention had been necessary to prevent their failure. These incidents included partial failure of the Maich fishery in Renfrewshire, which was under 25,000m³ in volume and so not subject to the requirements of the 1975 Act.
- 9.5 The consultative group considered that, in the context of the 'risk-based' approach on which the new legislation was to be based, which had regard to the consequences of reservoir failure upon human life, 10,000m³ represented an appropriate minimum level.
- 9.6 Additionally, the RSCG took account of Defra's proposed classification regime, where supervision and inspection requirements would only apply to High-risk sites and that provision has also been made which ensures smaller reservoirs (below 10,000m³) which are identified as being high risk can also be regulated, without imposing unnecessary bureaucracy on a large number of owners of very small reservoirs.
- 9.7 ICE took account of advice of the RSCG and as a result support the 10,000m³ volume.
- 9.8 The Scottish Government is keen to retain a consistent reservoir safety regime with England and Wales where possible, as this will facilitate comparable professional standards for panel engineers to operate under both sides of the border. The Scottish Government considers the 10,000m³ volume threshold for registration to be a judicious minimum level for registration. The Scottish Government intends to ensure the minimum can be amended if evidence suggests it would be appropriate to do so.

10 ANNEX C - WORKSHOP DATA

10.1 Four workshops were held in separate locations across Scotland: Inverness, Edinburgh, Glasgow and New Galloway. The information gained during public and open discussion has been collated by the Scottish Government and is presented thematically below.

	Key themes	Questions	Responses
Reservoir flood plans	Reservoir definition	Clarification was sought on the definition of a reservoir for the purposes of the proposals.	In the context of water resources, a reservoir is generally understood to be a place where water is retained above the natural lie of the land by a man-made structure. This water is <i>reserved</i> for later use by agriculture, hydro power, fishing, amenity, flood retention, industry and domestic household use. The supply of water using such storage developed in the UK during the 19 th century alongside the development of sewer infrastructure and legislation to ensure the standard of drinking water to improve health. Indeed, some 70% of all reservoir dams in the UK were constructed before 1900. Reservoirs are a key component within the water supply regime.
		The issue was raised of if SEPA will be able to accurately classify a reservoir.	The identification of reservoirs that fall between 10,000m ³ and 25,000 m ³ will be allocated by SEPA from the information available and issued to the reservoir owner. The owner will then have the opportunity to agree or dispute the given classification. If disputed by the owner, the classification can be looked at again by SEPA. This will give the owner the opportunity to challenge the classification before a formal appeals process.
	Inundation maps	Concern was expressed as to whether or not inundation maps would be issued.	The publication of inundation maps is a security issues which will be decided by the UK Government as it is not a devolved matter. It is possible the maps will be made available to the public but only under supervision and only to those areas where someone has a specific interest.
		It was asked whether the government would pay for new inundation maps.	Part of the purpose of this consultation is to ask our stakeholders if the Scottish Government should pay for new mapping. It would greatly help if reservoir owners who have already prepared proper inundation maps could offer those maps; it would help establish the proper costings and additionally may be all that is needed to accurately categorise the risk of each reservoir with an existing map.
		There was a concern regarding inundation maps	The preparation of inundation maps after the incident at the Ulley reservoir in 2007 now allows emergency planners to plan a response to any emergency. This doesn't necessarily mean these

		and whether they were accurate enough to properly classify the risk posed by each reservoir.	maps can be used for risk classification, and the maps tend to over-estimate risk, but they are a good starting point. The panel also commented that inundation maps will be the first indication of a reservoir's classification. The quality of the maps can differ; other, more detailed maps may also show velocity and depth.
		The issue was raised as to whether inundation maps would be used for the planning of any development.	Inundation maps would also be used to provide the first indication of whether a planned development is potentially in an area of risk. The developer might subsequently decide that the costs are too high; in any case, such costs should not end up back with the owner.
	Panel Engineers	With the aim of reducing flood risk overall, it was asked if there will be enough Panel Engineers to go round, especially if there are a number of dry reservoirs constructed as part of flood alleviation measures.	It is not foreseen that there will be enough new dry reservoirs built to create a problem in terms of availability of Panel Engineers. A more pressing concern could be the number of Supervising Engineers, especially given their general age profile! However, in the event of Low-risk reservoirs dropping out and no longer needing to be regularly inspected, there could actually be less of a demand for Supervising Engineers.
		The issue was raised of whether the new regulations would require Panel Engineers to register separately in Scotland to England and Wales.	ICE will manage this as consistently as possible; it could be a case of ticking two boxes on the same form rather than two entirely separate applications, which is not something we would favour.
		The question was asked of whether Panel Engineers might migrate to SEPA.	It is unlikely. SEPA will contract Panel Engineers in when there is a need for specific technical advice or emergency work, and would be reliant on those Panel Engineers to advise and take action. Panel Engineers are not, though, relevant for SEPA's day-to-day administrative role, and so the issue of migration isn't foreseen.

Flood maps and plans	A query was raised regarding onsite plans being made available to the public.	Onsite plans are purely for operators in the result of a breach. They are not related to public safety, and there is an argument that it could potentially be dangerous to release such information to the public. Anything related to public safety should be covered by existing Civil Contingencies legislation.	
	The availability of flood maps was raised as a possible issue.	Flood maps will be securely held by SEPA, with limited availability to the public. DEFRA had difficulty with long-standing security issues, but are now able to publish maps showing the extent of flow from each reservoir. Even though such information is freely available elsewhere in the world, it is currently only maps of inundation areas that can be published here. Maps relating to speed of travel, velocity and loss of life are still restricted and held securely.	
	Concern was raised regarding flood plans and the possibility of misuse.	A flood plan will have two elements; an Onsite Plan and an Inundation Map. The Inundation Map will be the information that the Government will give out, and an Onsite Plan will be mandatory for any High-risk reservoirs. Concern was also expressed that some information contained in plans should not be made public for security reasons. It was suggested that Owners would be best placed to know what information to keep private when they are compiling any plan and submit these separately to SEPA. Again, these proposals are questioned in the consultation and respondents are encouraged to give their views.	
	It was asked when inundation maps would have to be completed by.	SEPA are currently in the process of working out such a timetable, but nothing has been set yet and this is an open topic for discussion. Nothing will be in place until 2012 in any case; the bill will not be enacted until 2011, and then there will be secondary legislation to consider. In the case of a Low-risk reservoir, registration may be the only compliance action that is needed. Once a Low-risk classification has been assigned, there may be no further mapping required.	
	An estimate of the cost of an inundation map was asked for.	Based on Environment Agency estimates for a basic map, around £1500. In the case of a High-risk reservoir, a more detailed map would be needed. Someone will have to fund SEPA to do this; the matter of who is yet to be decided.	
	It was raised whether operators should liaise with Civil Contingencies when creating plans.	In the future, this could be done with the involvement of SEPA as the administrative body.	

Incident reporting	Incident reporting	It was asked how incidents would be reported, and how it could be ensured that incidents were reported and not missed.	Incident reporting is currently voluntary in England and Wales, however it is encouraged that any incident is reported so that lessons can be learned. There is a likelihood that owners, especially owners of Low-risk dams, may not report an incident for many reasons; lack of expertise, the fear of being sued, loss of reputation and so on. However, in the future it will be mandatory to report any incident. Panel Engineers are keen on this so they can learn from each incident.
A risk-based approach to reservoir safety	Reservoir risk categorisation	It was asked who would carry out reservoir risk assessments.	The risk assessment will be carried out by SEPA, but in consultation with ICE Panel Engineers.
		An issue was raised regarding the current reservoir classification procedure and how these would be affected.	A system to classify reservoirs as A, B, C or D already exists, however these classifications are not always accurate. As in England, the proposals are likely to immediately classify existing category C and D reservoirs as Low-risk, as these probably do not pose any risk to public and property. It could also be that some sites were wrongly classified (as was found by the Environment Agency); SEPA's intention to use inundation maps and the new risk categorisation process to re-assess each site will result in accurate classifications.
		There was concern as to whether the reservoir owner would be liable for higher charges if their reservoir classification changed because of a future development downstream.	If a reservoir is classified as Low-risk, but that classification would have to change as a result of any future development downstream, the proposal in England is for the developer to pay for any work needed to meet the higher risk classification requirements. In such instances, the development would need to use SEPA as a consultee; the owner would need to be advised of the potential development so they could object to it if need be. As part of the planning process SEPA would be consulted on any new developments. Additionally, it will also be important that local authority planning departments have access to inundation maps so that they are aware of flood risk areas and can therefore avoid using these areas for development.
		The question was asked if a nearby road would be used to determine the classification or a	A road next to a reservoir would not be used to determine the classification; only habitation will be considered. Campsites are a difficult issue and would need to be looked at.

	reservoir.	
	The point was strongly made that the use of the word 'risk' was potentially misleading, and 'consequence' was a more accurate term.	The terms 'risk' and 'consequence' have caused confusion. This has been repeatedly raised and so will be looked at carefully. Despite 'risk' being the more familiar term, any classification will actually be judged by the consequence of a failure. Ultimately, though, 'consequence-based' might be a more confusing term for people.
	The question was asked of what the purpose is of a Medium-risk category. It was highlighted that the old system essentially consisted of 2 categories; A and B (potential for loss of life), and C and D (no potential for loss of life), and suggested that turning two categories into three was unnecessary.	There was a discussion of the meaning of the word 'risk', which is defined as probability times consequence. Assessments will ultimately be made by engineers on the basis of consequence, so the use of the word 'risk' will have to be looked at. The idea of 'risk' when dealing with a reservoir is very different from the risk posed by a river; a reservoir could very well be unaffected by any external factors, and the structure could permanently just stand there. 'Risk' is essentially used because it is a familiar term. The consultation refers to a 'risk-based' approach as the ultimate aim is still to reduce any risk to public and property. It is acknowledged that the term is being misused, but ultimately, under the FRM Act, everyone involved has a duty to reduce the risk of flooding from all sources.
	It was raised that there is a possibility the public could misunderstand how 'risk' is being used here, and assume that all reservoirs therefore pose an imminent risk. It was suggested that categories of A, B, C and D would be more appropriate and cause less public alarm regarding proximity to a High-risk reservoir.	It could be argued that the public may not be as aware of the risk from reservoirs as they are of the risk from river – it is not an issue that is often in the media or public eye. The evidence for this is summed up by there being no attendance from members of the general public at these workshops despite advertising in local press; this is a contrast compared with public attendance at workshops held when FRM was in its consultation stage. It was agreed that unless there is direct and visible proximity to a dam, members of the public may not be fully aware of the status of nearby reservoirs. However, there was also agreement that mention of a term such as 'High-risk' may make a lay observer concerned about whether the dam will fall down next week.
	The point was raised that it	A Panel Engineer will reach an assessment in part by disregarding the actual condition of a dam, and

		<p>is extremely difficult to assess the probability of a dam failing, especially as there are so few examples to refer to.</p>	<p>firstly looking at any potential for loss of life downstream. Subsequent recommendation in the interests of safety can therefore be made. In the future, however, consideration will also have to be given to the probability of a failure, even though this will almost certainly be low. This is in order to gain a more complete picture of flood risk, The essence of the argument, though, is that if the risk to public and property is seen as high, then a reservoir should be classified as High-risk regardless of the probability of failure.</p>
		<p>Some undertakers have a good relationship with their local SEPA staff in their area. Will these SEPA staff have any input to the classification of reservoirs?</p>	<p>SEPA have staff and office in local areas. These staff may not be the same people who work with the reservoir owner/undertaker to establish the reservoir classification, but this will be looked at as a good practice recommendation.</p>
		<p>The question was raised of who would be responsible for paying for any works on a reservoir where the risk classification could potentially be changed as a result of a development downstream.</p>	<p>In conjunction with Development and Planning colleagues, we are looking at the affects any new development might have on a reservoir. We recognise that this could have an effect on the classification of a reservoir especially if a site is designated as low-risk but there is a development planned downstream.</p> <p>The idea is that, alongside the Flood Risk Management (Scotland) Act 2009 (FRM), there will be an integrated approach to reservoir safety, flood risk management planning and development planning.</p>
		<p>It was raised that there appeared to be an overlap between proposed new legislation and the requirement of the Flood Risk Management Act, and that it should be recognised that a reservoir could contribute to an existing flooding event, particularly downstream in an urban area.</p>	<p>The Flood Risk Management Act is trying to implement a holistic approach to all flood risk. However, the key role of the Panel Engineer is firstly the safety of each reservoir, and if that extends to overtopping or controlled flooding as a matter of necessity, the Panel Engineer would look at the possibility on a case-by-case basis. The owner may well argue that the reservoir being there in the first place reduced flood risk downstream, and that it could be better to let some water out in order to prevent a larger release.</p> <p>It is generally accepted that the risk of flooding from any reservoir is very low compared to the risk of fluvial flooding, but the operator is still ultimately responsible for mitigating their risk either way.</p>

		<p>The question was asked if there was a possibility of 'no build' zones downstream from a reservoir, as development has the potential to change the classification of a dam.</p>	<p>Flood Plans include the potential risks resulting in a release of water from the dam; developers should have to take this into account when considering whether to build in a downstream area. There does, however, need to be a mechanism in place to prevent reservoir owners being charged as a result of a development downstream changing the classification of their dam.</p>
		<p>It was highlighted that there are rumours of Inundation Mapping showing more Medium and High-risk reservoirs than was previously expected.</p>	<p>In terms of producing Flood Plans, SEPA will be an administrative body and so will not have the necessary technical expertise. A Supervising Engineer will need to approve any plans to provide technical input. Panel Engineers can also bring an independent point of view, helping owners to balance their commercial interests with professional obligations. This question is open in the consultation, nothing has yet been drafted and we are open to suggestions.</p> <p>The owner is ultimately responsible for providing an Onsite Plan. A Supervising Engineer will check if this is in place, but it is the owner's responsibility to provide it. There is an inherent issue with owners who do not have the technical expertise to do this, and so might incur additional costs.</p>
		<p>It was asked how the minimum volume for classification would be assessed.</p>	<p>There is no definite answer to this question yet. There could be an approach whereby initial screening is undertaken, followed up by a more thorough investigation and assessment in cases where there is doubt.</p>
		<p>It was asked if 10,000m³ will definitely be the minimum volume.</p>	<p>10,000m³ is certainly the proposed minimum volume, down from 25,000m³, at present. However, the proviso to this is that any reservoirs that pose a risk to public or property but that are under 10,000m³ could still be brought under the new legislation. The reason for the drop to 10,000m³ is that we know there are some reservoirs in this bracket which pose a risk, the incident at the Maich fishery (which was under 25,000m³ and therefore not regulated) being an example. Additionally, although rare, there have been examples of reservoirs being artificially lowered to come under the previous threshold.</p>

			When the volume of a reservoir is under 10,000m ³ , we would only be interested in looking at any sites with a level of risk. Any reservoirs over 10,000m ³ with no risk will be kept on a register for the purposes of completeness. The principle behind this thinking is that we would have to identify all reservoirs between 10-25,000m ³ anyway in order to establish which of these pose a risk; to keep all records on the register will be useful both for a more complete understanding of the condition and location of dams in Scotland, and in the case of any future planned development downstream.
Exemptions to the new legislation	It was raised that consideration might be given to excluding structures such as outlets of lochs which pose little or no risk despite the volume being above 10,000m ³ .		There will be specific exemptions that need to be finalised, such as swimming pools, tanks, duck ponds and so on. Any other proposals for exemptions will be considered carefully.
	It was raised whether service reservoirs should come under the Act.		This is another question that is being considered; should there be exclusions, and what those exclusions should be? We will ensure that there is a mechanism to allow this, as we do not want to create duplicate regulation. Canals will be excluded and other categories considered. At this stage we need to build in flexibility so that we can consider all possibilities for exclusion. One of the benefits of Scotland's new legislation is that, in regulatory terms, it will also remove reservoirs that pose no risk to anyone. They will be registered and that's it.
Appeals process	The role of SEPA in settling disputes was question, particularly where appeals could go beyond SEPA. It was noted that nothing appears to be written down on this. It was further expressed that there was concern about how SEPA would handle appeals.		The Scottish Government is seeking views from all of its consultees on whether there should be a further right of appeal beyond SEPA e.g. an appeal to Scottish Ministers. There will, however, be an appeals process for owners to ask for their classification to be reconsidered if they disagree with their allocated classification. From the point of view of Flood Risk Management, public safety should take precedence in Scotland. As an enforcement body, SEPA must be sure that the appeals process is fair and robust in order to uphold public safety.
	It was expressed that it may be self evident that some reservoirs pose no		It is acknowledged that there will be a huge amount of work involved in finding all small reservoirs. An option may be to open registration for free, with a free map prepared for each owner as an incentive, with any later registrations being charged.

		risk, and that the classification process should take this into account.	
		The question was asked whether SEPA will carry out classifications in-house.	The method of classification has not yet been decided upon, but this will be planned when there is an idea of the reservoir numbers involved. SEPA will need to consult with the ICE on this process. SEPA are keen to get any categorisation process correct at the first time of asking in order to avoid appeals.
Relationship with existing UK legislation		Concern was expressed about the extent to which Scotland's legislation will keep in line with changes in England and Wales	It is recognised that Scotland is slightly at variance with legislative changes being made in England and Wales. The intention is that the system should still be workable with minor differences between the two; it is not foreseen that there will be major changes. If the Act in England and Wales ultimately falls or is delayed, this will not affect the Scottish plans.
		The point was made that the consultation document does not make clear whether there are separate Scottish and English panels.	It will be necessary to have a separate panel of engineers to the English and Welsh panels. However, we intend to maintain the current process whereby only one application will be needed to be on all three panels. There should be no practical difference when applying for the Scottish Panel. It is not the intention to reduce an already limited pool of Panel Engineers.
		Concern was raised as to what will happen in Scotland with Panel Engineers working to different legislation than in the rest of the UK.	One of the differences between the current UK legislation and the proposed Scottish legislation will be a devolved panel. Reservoir safety is a devolved matter but the Scottish Government is proposing to keep to the current approach where we can and maintain as much consistency as possible. The new Act in England and Wales which is currently going through the Houses of Parliament will amend the Reservoirs Act and set up new panels for England and Wales. Panel Engineer will need to say whether they are applying to the England and Wales panel and/or the Scottish panel, but it will be one application.
		The question was raised as to how much of the proposed new legislation would be the same as England and Wales, and how much consistency there would therefore be.	SEPA are working closely with the Environment Agency to learn lessons regarding systems and processes in use elsewhere in the UK. SEPA will use the familiar system of consultation with Panel Engineers before making any decisions, so there will be as much consistency as possible. However, with a minority government, this is not entirely certain and changes could be made before the legislation is finalised.

	SEPA's enforcement role	Concern was expressed that SEPA are the proposed new enforcement authority, but they also have other interests. It was asked whether SEPA could see their enforcement duty as more of a Health and Safety concern instead of a clearly defined reservoirs issue.	Health and Safety is a UK reserved issues, whereas reservoirs are devolved – this is therefore something Scottish Ministers need to be concerned with. In terms of SEPA's role, FRM has added a public safety role in addition tot heir existing environmental duties. SEPA will fulfil this by acting as an administrative body and buying in independent technical expertise by using Panel Engineers.
		Confirmation was sought that SEPA currently own no reservoirs.	This was confirmed. SEPA are just an enforcement body and do not have a conflict of interest in this respect.
	Costs and charging	The issue of an increase in costs to private owners was raised.	There may be a reduction in costs to some reservoir owners, particularly larger reservoir that would be classified as low-risk. However, some reservoirs would fall under new legislation for the first time, and this means that new or additional costs to some individuals will inevitably occur.
		There were concerns raised for the owners of small reservoirs who may not be able to afford additional costs. The question was posed of it there was the possibility of an additional 'No-risk' category.	Any reservoirs registered as low-risk sites will be initially registered, but after this there will be no inspection requirements as long as there are no changes in circumstance. Low-risk sites will remain on the register so that there is a record of them in the event of any development downstream of other change in circumstances. It is part of the consultation whether there should be a registration charge for reservoirs designated as low risk. It is possible that medium and high-risk reservoirs could incur a registration charge, but low-risk sites could be exempt. There may also be scope for a 'No-risk' category. This is being looked at and will ultimately be decided by Ministers. The consultation also asks if there should be an initial amnesty on registration to encourage owners – especially of low-risk reservoirs – to register promptly at no expense to themselves. The job of finding all small reservoirs will be huge, and an incentive such as this may reduce the size of the task. There was strong support expressed for statutory mapping to be carried out by SEPA at no cost to

		owners.
	Confirmation was sought on whether stakeholders would have input into the nature of any charging scheme.	This is an important part of the consultation and views are being sought on how best to recover costs. As with any CAR scheme, there must be a three-month consultation on any proposals, and ultimately any final proposal must be signed off by Ministers. It is not an internal matter for SEPA. Indeed, whether there will be a charging scheme is not certain and is therefore up for discussion.
	It was asked that, in the event of a charging scheme being implemented, if the public would be able to express their views.	It is questioned in the consultation whether SEPA could charge for the reservoir classification process. If there is a charging scheme, the proposals will be publicly consulted on. The scheme may also be weighted to ensure a fair and proportional charge. It is anticipated that the regulatory process will be much cheaper and less resource intensive with the new legislation than CAR licenses.
	Concern was raised whether smaller reservoir owners would be able to afford registration costs.	Most reservoirs in Scotland are owned by large companies. Many of these companies are shedding reservoirs they no longer require to save costs. It is assumed that a larger company will be able to afford any charges imposed on them, but that there could be a grant scheme for smaller organisations to help them with excess costs.
	It was asked if there is a possibility of an annual charge. Concern was expressed that this is needless, as even though 32 enforcement bodies (Local Authorities) will be reduced to one (SEPA), the practical role will ultimately be the same.	This is an important part of the consultation, and we are asking you three questions. If you have views on whether a grant scheme should be in place, or the suitability of an annual subsistence charge, please submit them. There is ultimately no getting away from the fact that someone will have to pay for these changes; ultimately either owners or the taxpayer. SEPA will have annual costs which will need to be recovered. There is not yet enough information to accurately estimate these costs. It needs to be borne in mind that there may already be an annual cost to the owner for visits from a Supervising Engineer.
	Timescales	The Bill will be introduced in Autumn 2010 with some legislation commencing in 2011. The focus will initially be to identify the reservoirs which fall between 10,000m ³ and 25,000m ³ . The work on reservoirs which are 25,000m ³ or more will also start as there is information already held on these reservoirs. This work will consist of chasing non-compliance of work to be done.
	Timescales for the new Bill and its implementation were asked for; how long it could take full roll-out, and	It is planned that the new Reservoir Safety Bill will be introduced in Parliament in August/September this year and passed summer 2011. However, implementation of the procedures (in particular the identification of all sites) could take up to 5 years; as a result, identifying high-risk sites before Low-risk sites is definitely the way to go.

		how long before SEPA's impact would be felt.	The flood Risk Management Act's responsibilities regarding reservoirs have not yet been properly commenced so that both pieces of legislation under the Flood Risk Management Act now, as it would only be changed. This does mean that it will be 2012 at the earliest before the first impact is felt.
		It was pointed out that the timeline specified in the current Act for maintenance and repair work is unclear, and asked whether this could be clarified.	The current Act specifies timescales for maintenance as 'where practicable', which is vague. The EA has interpreted this as a general rule as follows – for category A and B sites, work is expected to be done within 3 years. For category C it is 4 years, and category D, 5 years. If the work is not done within these timescales, the Panel Engineer will begin follow-up action.
		Concern was raised over enforcement notices; it was queried what an enforcement notice actually does, and if it could affect timescale dates.	An enforcement notice may have little impact on smaller businesses but as these notices are published, they can have a significant impact on a water or energy company's share price and are therefore a powerful motivator to larger companies. Fines are a more effective sanction on smaller businesses. If a reservoir is re-inspected this could push back any existing maintenance notice date, however discretion may be used if the work has started or there are mitigating circumstances. This should always be with the discretion of the Panel Engineer, and should not be seen as a general rule.
		It was asked what the timescale is for the new legislation.	We intend to repeal the existing Reservoirs Act in Scotland and replace with the new Act. We had originally considered allowing DEFRA to legislate on our behalf however DEFRA were not in a position to do this due to time and resource issues regarding their legislative programme, and changes they wanted to rush through. We are not intentionally waiting for the English and Welsh legislation to go through; however ours will go through in a different parliamentary term.
Other points	Public consultations	It was asked whether there will be more consultation with stakeholders before the bill is drafted.	The ongoing public consultation, of which these public workshops are a part, will run until April 18 th 2010. The consultation responses and analysis will be made available to the public (where agreed) by the summer. We cannot start drafting the bill before this analysis is complete, and the Regulatory Impact Assessment (RIA) could change based on the responses. As the implementation date is 2012, it is unlikely that there will be more time to run a further consultation with stakeholders before the bill is drafted. The Bill will hopefully be introduced to Parliament in the Autumn, but as there are lots of stages it is not anticipated that the Act will be in place until 2011.
	CAR regulations	A definition of the CAR	All engineering works in or in the vicinity of rivers, lochs and wetlands now require authorisation

		regulations was asked for.	under the Water Environment (Controlled Activities) (Scotland) Regulations 2005. this includes any work done by local authorities to manage flood risk, and works by others that have the potential to increase flood risk. In considering applications under CAR, SEPA assess whether new activities will increase flood risk to homes and businesses. SEPA can refuse applications where flood risk cannot be mitigated.
		The number of reservoirs with a CAR license was asked for.	Each of the 670 reservoirs currently under the Act in Scotland should have a CAR license and are charged an annual subsistence fee.
		Concern was raised as to who would be responsible for monitoring a controlled release of water that did not conform to the Act.	Under CAR regulations, SEPA would be responsible for monitoring any controlled release of water which did not conform to the current Act.
		The issue of CAR licenses was raised and whether or not CAR fees would be in addition to any new reservoir charges.	If a charging scheme was introduced, any future reservoir charges would be in addition to the CAR fees, although SEPA would look to replicate the existing systems where possible. Where appropriate they will seek to use existing information; however, for sites under 25,000 ³ , there may be very little information available.
		It was asked if the CAR process could be merged with the new reservoir legislation.	Combining the new legislation with the CAR regime if mentioned in the consultation document. This was put to our stakeholders but was not favoured. We are happy to take views and would prefer to integrate the processes as much as possible. Where applicable, SEPA will look to integrate the new procedures with existing process and systems, which will minimise costs.
		Concern was expressed that there could be owners of small reservoirs who do not know about the public consultation, or even that there are proposed legislative changes.	Anyone who currently holds an impoundment license was contacted as part of this consultation. Many organisation have been contacted and asked to cascade the information, and adverts have been put in the press to advertise these workshop events.
	Small owners	Strong concern was expressed by members of an angling club as to who will fund any changes made necessary by new	A high percentage of dams are owned by commercial business, but we are aware that there are many smaller owners too. We are asking the open question whether a grant scheme is necessary to assist small owners. T is a major consideration whether the taxpayer should pay for a potential risk that has ultimately been created by someone else. The first intention of this legislation is to prevent risk to the public; in order to do this, it may be necessary to have a grant scheme. If not, the risk is

	<p>legislation. It was stressed that there was a possibility small owners might not be able to pay new SEPA bills in addition to existing expenditure on engineers.</p>	<p>created that owners may abandon dams to try and avoid additional charges.</p>
	<p>The number of small reservoirs newly falling under legislation was sought.</p>	<p>There is currently not enough detailed information on volumes which makes an estimate on the numbers of reservoirs difficult, but based on Environmental Agency and Local Authority estimates, SEPA estimate around 300-400 new sites which will need to be registered, at most. This would mean around 1,000 reservoirs on the SEPA register. A survey of Local Authorities was carried out to try and establish this information, but it was inconclusive as LAs do not currently have to keep any records of reservoirs under 25,000m³ which are not under the current Act.</p>
	<p>Argyle and Bute Council expressed specific concern that their estimates suggested approximately 30 reservoirs exist in their catchment with a volume of over 10,000m³, and would therefore be newly regulated, all of which were in the hands of small owners. It was stressed that such estimates suggest a large percentage of newly regulated dams would therefore be owned by small, private owners which should be borne in mind when drafting legislation.</p>	
	<p>Further concern was</p>	<p>To clarify – CAR charges are not the same thing as what is being discussed here and will remain as</p>

		expressed that small owners who are required to spend more money on administrative issues under new legislation might actually find themselves financially unable to deal with practical issues. Additionally, clarification was sought whether existing records that are registered with district councils will be re-used to determine classification.	a separate process. The cost of registration would if a charge is made would apply to reservoirs between 10 and 25,000m ³ that will newly fall under the legislation. We would consider whether existing owners should have to pay again, and where information is already available, SEPA will obtain it.
		It was stressed that small private owners should be regarded as a different proposition to private industry – they are often pressed to pay fees, although it was acknowledged that ultimately the regulations are for public good.	There needs to be a balance between the benefits of recreation and amenities provided to the public by such small owners as angling clubs, and the need for proper safety management. We are sure that this will come back strongly through consultation responses.
	Decommissioning	Concern was raised as to whether some owners would decommission their reservoirs to avoid the new legislation.	The benefits of bringing a reservoir up to standard should outweigh the risks of decommissioning it to avoid new costs. The proposed legislation does not want undertakers to take decommissioning into their own hands as this may cause more issues. Under common law, reservoir owners are liable for reservoir safety.
		It was raised that in some cases where a new owner has taken on responsibility for a reservoir, advice	By the very act of holding back water, a risk to the public is created; in this respect, there is no difference if the responsibility for this lies with an angling club or with private industry. Regardless of previous awareness for such a liability, we do not want anyone decommissioning a dam to avoid being regulated, so we are asking whether people need financial assistance.

		given on the responsibility for liabilities may have been ignored.	
		Concern was expressed that extra costs are being brought in for many reservoirs that are already safe, and as such already have associated costs.	Ultimately it is not in the interest of the taxpayer to bankrupt an angling club owner, thereby actually creating a liability instead of preventing risk. As previously mentioned, this consultation is taking place so we can gain the views of everyone affected and reach an acceptable agreement. In any case, there is a significant expense involved in decommissioning a dam. A CAR license would be needed for any such work in the first place; work in breach of this would result in penalties being imposed anyway.
	Owner suitability	It was raised that there are some absentee owners who have brought reservoirs at reduced cost and are subsequently lax regarding maintenance and the payment of fees.	This is recognised as a considerable headache and the Environmental Agency in England and Wales have sometimes been left to foot the bill for repairs. SEPA is keen to avoid this. Whilst anyone is entitled to sell their assets, it could be that tests to determine a 'suitable owner' might be introduced. This new regulatory regime may help determine this (especially in regard to who can afford to take on the role of an owner), and once it is in place, it may regulate any future sales. Issues of multiple ownership are also being looked at carefully with lawyers; there is no final answer on this yet, however.
	Identifying owners	It was suggested that it is usually not 'professional', smaller owners who present any problems.	The new regulatory regime should mean that if lax owners are consistently pursued, they should eventually get the message. It is always difficult to properly engage with the owners of smaller reservoirs. This consultation has written to all CAR license holders and has advertised the public workshops as much as possible, including in the local press. There are also individuals owners and angling clubs represented on the Reservoir Safety Stakeholders Group (RSSG). Ultimately, though, it is very difficult to engage one-to-one with smaller organisations, especially when it is not necessarily clear who they are. The views of such owners will be very important in determining who will fund any plans that will have to be prepared under the new legislation.
	Reservoir tenants	The issues of reservoir tenants was raised and whether or not they would have an involvement or influence in the classification process.	It was suggested that if a reservoir owner rents out their reservoir to a third party for any reason, the tenant should have a say in the classification process. A blanket approach may be proposed, but the third party who rents or uses the reservoir also has an interest, and so should have an involvement in the proposals and subsequent classification in conjunction with the owner.

	Reservoir sales	The issues was raised of how reservoirs would be treated if an inspection had been carried out previously, but no work has been done to rectify the issues raised. How would these reservoirs be treated if the reservoir was to be sold?	Reservoirs which fall under the current Act and which were last inspected some time ago may still have maintenance or repair work outstanding. To bring the reservoir up to standard, this work would need to be completed. It is possible that reservoirs in these circumstances could be allocated a Low-risk classification under the new legislation depending on their location. They would therefore not be regulated. This would affect the conditions of sale if the owner wished to sell. Current legislation does not specify timescales for work to be completed. This causes problems if an owner tries to sell or if a tenant wants to buy. New legislation will specify timescales for work to be completed, and these timescales will be enforced. If timescales are not met and it is determined that emergency works are required, SEPA may commission the work to be done and charge the owner accordingly.
	Reservoir numbers	It was asked how many reservoirs above 10,000m ³ would newly fall under the proposed legislation.	A rough estimate suggests that around 250 additional reservoirs will fall under new legislation when the minimum volume is lowered to 10,000m ³ .
		It was asked whether the government would pay for new inundation maps.	Part of the purpose of this consultation is to ask our stakeholders if the Scottish Government should pay for new mapping. It would greatly help if reservoir owners who have already prepared proper inundation maps could offer those maps; it would help establish the proper costings and additionally may be all that is needed to accurately categorise the risk of each reservoir with an existing map.
		It was asked how many reservoirs there were in Scotland, and how many more will fall under the Act if the minimum volume level drops to 10,000m ³ .	There are currently over 650 reservoirs in Scotland which fall under the Act. However, if the volume is reduced to 10,000m ³ , it is estimated that there are an additional 250 reservoirs that would subsequently fall under the new legislation. A significant proportion of those reservoirs would still be classified as low risk and require nothing more than registration.
	Reservoir identification and size	What will happen when a landowner does not know the exact volume of their reservoir?	Any owners who are unsure if the volume of their reservoir is 10,000m ³ or greater can use information they hold, details from SEPA or a Panel Engineer to identify the correct size of their reservoir and whether or not it will fall under the Act. In the case of the latter option, unsure owners could be asked to come forward, which could lead to an assessment by an independent Panel Engineer on behalf of SEPA. The potentially high number of these requests would mean high-risk sites would have to be prioritised.
		Concern was raised as to what was acceptable criteria for determining the	A rough estimate of volume at this stage would be acceptable. The legislation will ideally be as flexible as possible; for example, a reservoir that was under the 10,000m ³ threshold but that poses a level of risk might still fall under the new legislation.

		size of each reservoir.	
		An issue was raised regarding any disputes over the size of a reservoir, and how such disputes would be treated.	If the size of a reservoir is in dispute, the Environment Agency have previously gone out to undertake a survey, and have borne the cost of this. It is naïve to assume that owners will automatically come forward to submit their reservoir. It could be that, as in England and Wales, a GIS survey is needed to identify the number of reservoirs, and any unregistered or borderline sites would be individually inspected.
		The question was asked as to whether two or more reservoirs which were each less than 10,000m ³ , but linked together, would fall under the proposed legislation.	A series of two or more reservoirs that were individually less than 10,000 ³ in volume, but linked together, would be classified according to their combined volume.
		An issue was raised as to whether Panel Engineers would help identify any small reservoirs which will fall under the new legislation.	Panel Engineers will be asked if they know of, or can identify any reservoirs which will fall into the proposed 10,000m ³ volume limit. A grant facility may also be available to undertakers of smaller reservoirs to aid any registration and initial costs.
		Concern was expressed as to how difficult it will be to identify reservoirs that will fall under the new Act.	It will be very difficult to find certain reservoirs and their owners. SEPA will undertake this research, but it will have to be done carefully. There is the possibility that owners may take matters in their own hands and decommission reservoirs which may cause more problems.
	Reservoir maintenance	The question was raised whether new legislation should be more specific about the required standards of maintenance for dams.	The idea of 'maintenance' can be extremely broad. An Inspecting Engineer could include details of any issues which could potentially become a problem in any report. It was advised that this is a matter of guidance among Engineers, who are gradually becoming more consistent with such standards.
		Concern was raised regarding the maintenance of reservoirs and the fact that this was not always being completed.	There is evidence that there is a reducing level of reservoir maintenance. If maintenance is not completed, it could result in problems escalating. Public safety is the concern and Panel Engineers will come down hard; maintenance may become enforceable at the statutory inspection. SEPA's role in this is administrative only, and they would accept a Panel Engineer's recommendation in the interests of safety.

	The role of local authorities	The question was raised as to whether there would be a financial benefit in moving from 32 enforcement authorities to a single enforcement authority (SEPA), and whether those efficiency savings could cover some of the new burdens on reservoir undertakers.	<p>There are 32 Local Authorities who currently each have individual responsibility for the enforcement role under the current legislation. Some of these authorities have responsibility for hardly any reservoirs, which means the resources saved in each individual local authority by the new bill will be minimal. Ultimately, though, this is a case of pulling together for a better approach to reservoir safety, rather than a cost saving exercise.</p> <p>The manpower committed by each Local Authority to the enforcement role can be very variable, and often action is only taken when the public are specifically at risk. This would not be the case with the consistent enforcement role carried out by one body, SEPA.</p>
	Other points	It was asked if there was a precedence for catastrophic dam failures.	There is, but only internationally. Aging dams will cause more problems and further maintenance requirements. Weather patterns may also affect structures.
		The issue was raised of who would complete any inspections under new legislation.	Inspections will be done by Panel Engineers. Reservoir owners appoint an engineer to the dam. If no engineer has been appointed then SEPA will make the appointment.
		The issue of downstream development was discussed, and how this could affect the risk category of a reservoir.	The Flood Risk Management (Scotland) Act 2009 will help determine the planning procedures for any proposed developments downstream of a reservoir.
		Concern was raised regarding reservoirs which have more than one owner.	Multiple owners need to be identified and will hold shared responsibility. This also applies in the case of any movement of water between two separately owned sites. The responsibility of owners in such circumstances must be very clearly articulated in the new legislation.
		Much concern was expressed regarding the term 'undertaker' and how unpopular it was.	The Scottish Government and their lawyers are looking at possible alternatives to the term undertaker, as it is clearly not favoured.
		Issues were raised regarding the reports of the Panel Engineers, and	The reports of Panel Engineers can be challenged through a structured process, but engineers don't make recommendations lightly, there are some serious problems out there that could incur a high cost to fix. Owners should be aware that the decommissioning of a dam could be just as expensive

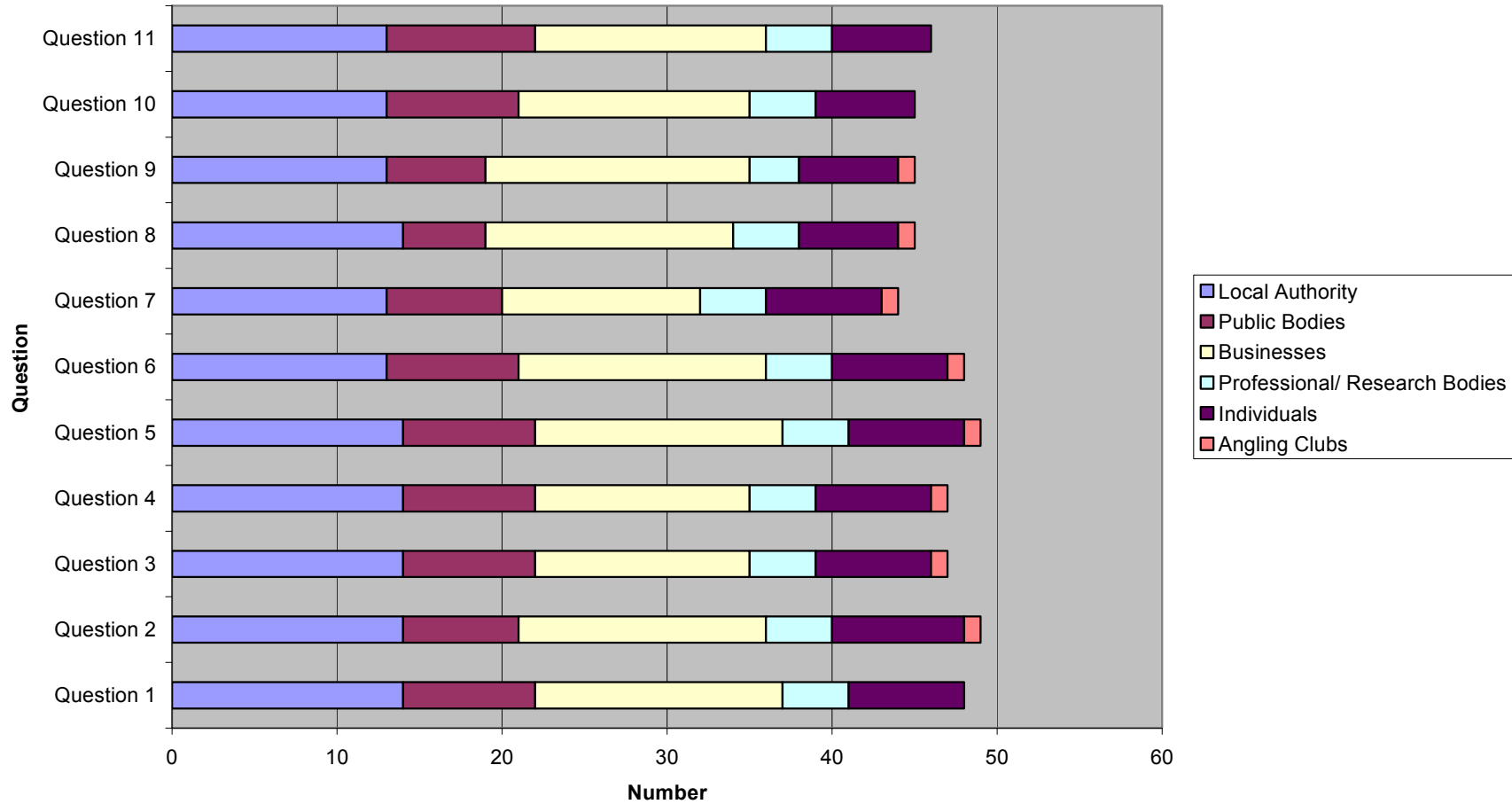
		whether they will always be accepted.	as continuing with it.
		The issues was raised as to whether the next election would affect any of the proposals or work to be done.	The Flood Risk Management Act has a challenging implementation programme and is a big burden of SEPA. This will continue after the next Scottish election, but even though public safety is an apolitical issue and will not be challenged, some details may change.
		The question was asked if wildlife would be taken into account when looking at reservoir safety.	Environmental concerns will be taken into consideration when classifying a site, although it is accepted that the new regime is looking at the safety of people and property first and foremost.
	Other points from the panel	Enforcement duties currently sit with Local Authorities, but the Flood Risk Management Act (Scotland) 2009 has transferred the enforcement responsibility to SEPA. This has not started yet.	
		It is recognised that if a reservoir owner wished to sell the reservoir, a Low-risk reservoir would sell more easily than one classified as High-risk.	
		The responsibility currently lies with the Local Authority to ensure reservoirs and dams are managed appropriately, but there also could be input from environmental and health and safety legislation.	
		The new legislation should not be a cause of problems for owners. Nobody want an owner to take action themselves to try and avoid costs brought on by new legislation. A Panel Engineer will gladly point out any practical ways in which an owner could solve any problems themselves.	
		The Scottish Government needs to look carefully at precisely which structures will fall under the new Act. Duplicate legislation is not needed, and any structures such as storage tanks may already be regulated.	

11 ANNEX D - LIST OF ORGANISATIONS INVITED TO RESPOND TO THE CONSULTATION

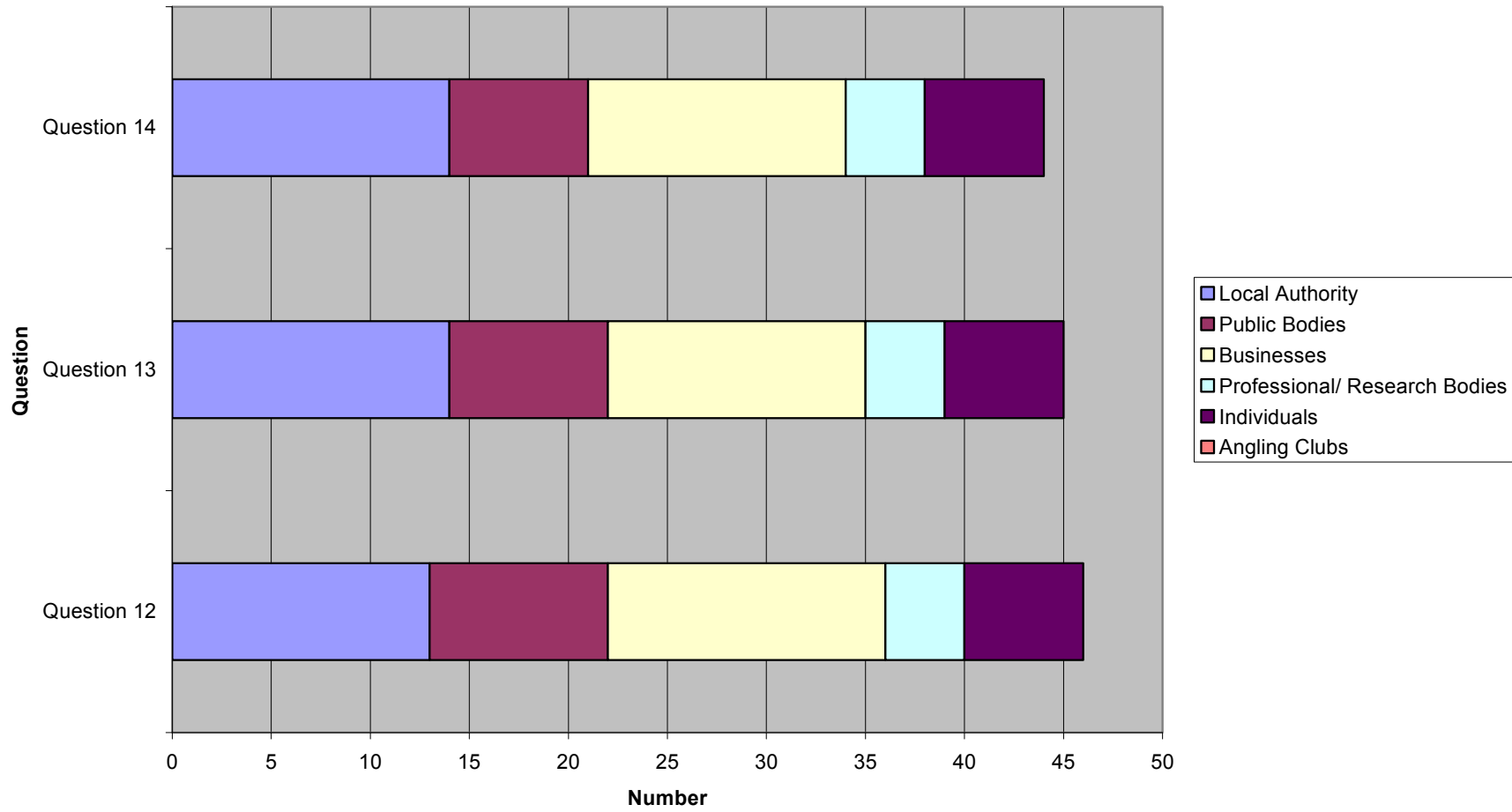
Association of British Insurers
British Dam Society
British Waterways
Chartered Institute of Water and Environment Management
Chief Fire Officers Association Scotland
Confor
Controlled Activities Regulations (CAR) Licence holders
Convention of Scottish Local Authorities
Defra
Environment Agency
The Fire Brigades Union Scotland
Forestry Commission Scotland
Historic Scotland
Homes for Scotland
Independent Consultants
ICE
Institute of Chartered Surveyors
Jacobs Babtie
JBA Consulting
Local Authorities Flooding Manager and CEO
Met Office
MWH Ltd
NFU Scotland
Red Cross
Reservoir Safety Stakeholder Group (RSSG)
RSPB Scotland
Scottish and Southern Electricity
Scottish Environment Link
Scottish Environment Protection Agency
Scottish Flood Forum
Scottish Natural Heritage
Scottish Rural Property and Business Association (SRPBA)
Scottish Water
Scottish Wildlife Trust
WWF Scotland

12 ANNEX E - BREAKDOWN OF RESPONDENTS TO QUESTIONS BY SECTOR

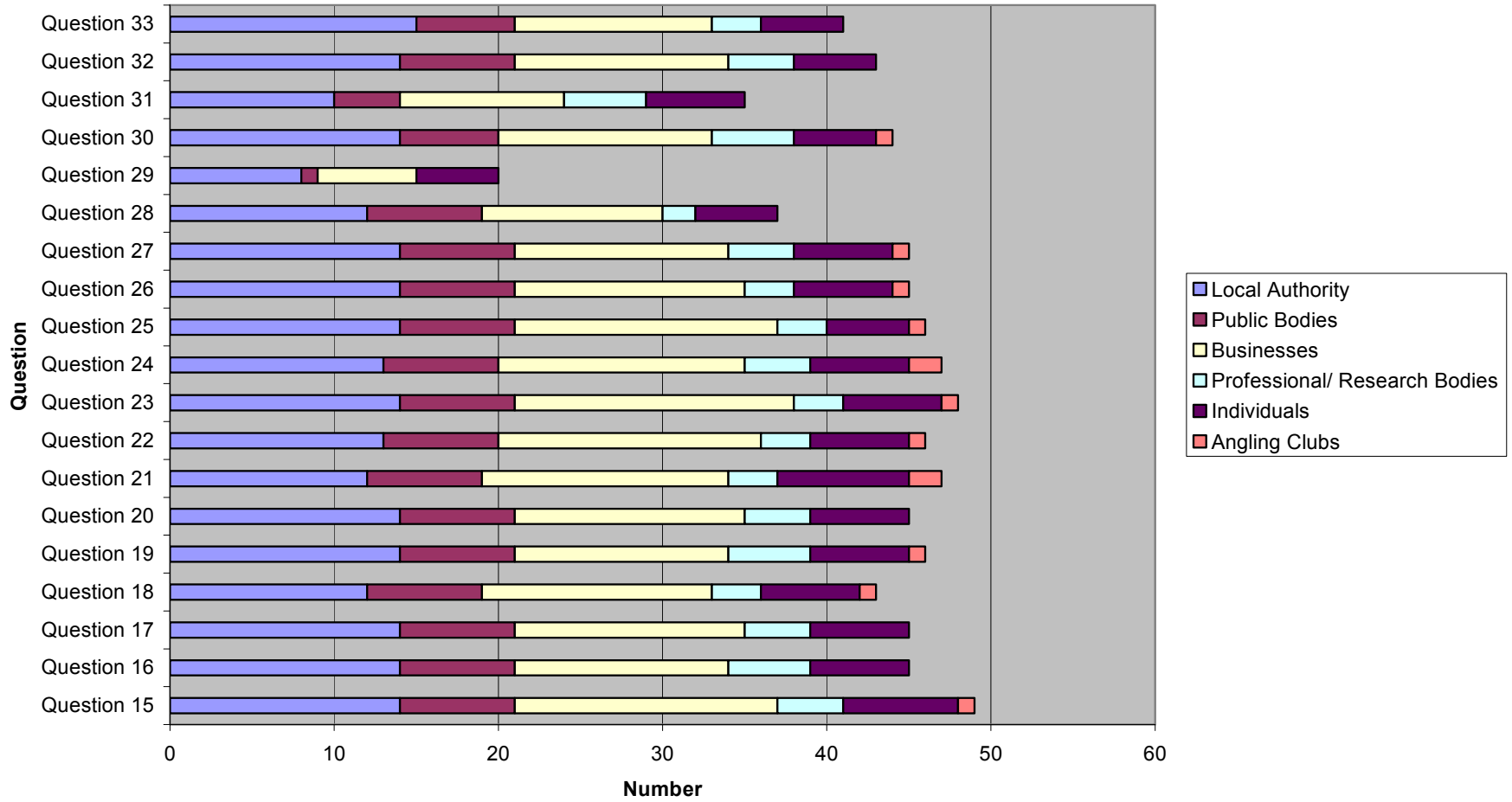
Reservoir Flood Plans



Incident Reporting

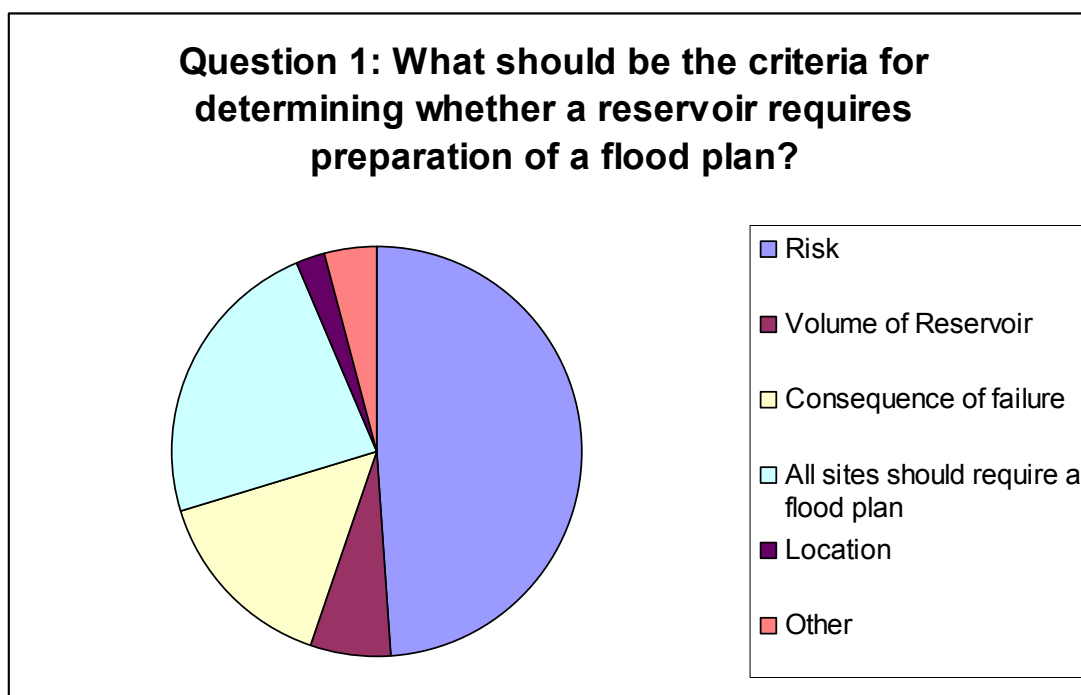


A Risk-Based Approach to Reservoir Safety

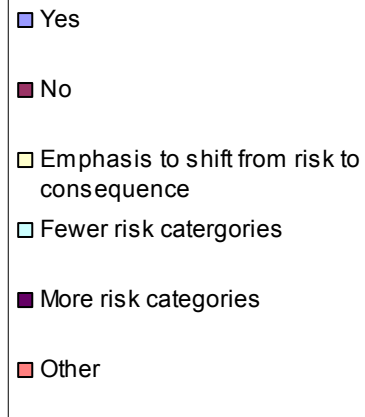
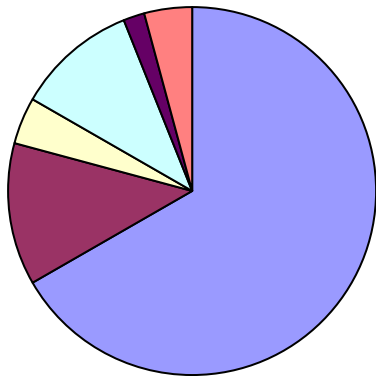


13 ANNEX F - GRAPHIC REPRESENTATION OF RESPONSES

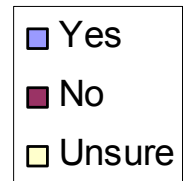
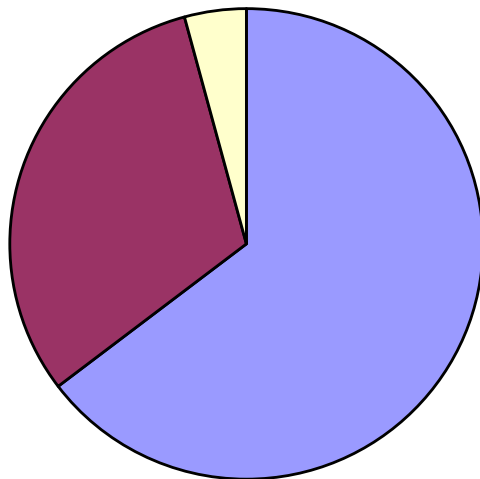
- 13.1 The main report is largely of a qualitative nature, in order to capture the range and detail of responses to individual areas where questions were posed. However, **for illustration only**, we provide in this annex responses in chart format to give an overall sense of how respondents answered individual questions.
- 13.2 The charts below should be **treated with caution**, for a number of reasons. The weights of different response types is one issue. So, in the charts here, a response from an individual is counted as 'one response' but that of a representative body, which has a membership of many hundreds of organisations and individuals, similarly counts as 'one response'. This means that this quantitative reporting risks underplaying the importance of some respondents' views and makes it extremely difficult to present statistical tables or charts in a meaningful way.
- 13.3 A further challenge is that the consultation was an open process, not a managed survey of opinion. Thus, quantitative reporting only shows those who chose to respond to the consultation, and many of those who did respond were specifically asked to do so by the Scottish Government. Further, if particular interest groups had determined to respond en masse to particular questions, quantitative reporting would be still more problematic.
- 13.4 Because of these difficulties, and because there were just 67 responses, we have not included numbers/percentages in the charts.



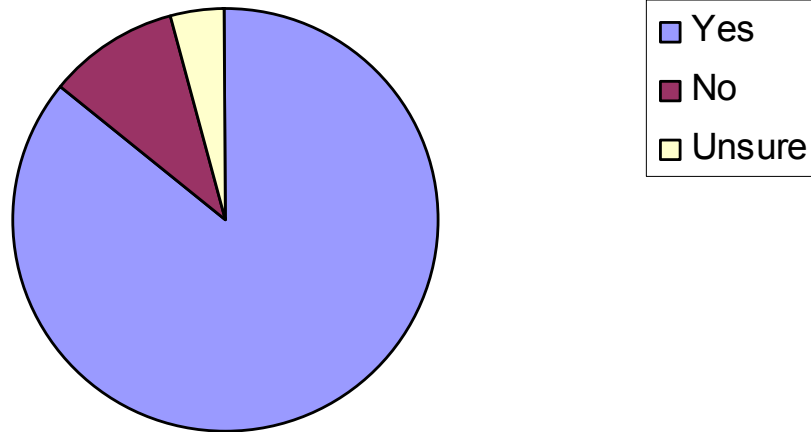
Question 2: Should there be different levels of flood plans for high, medium and low risk reservoirs? If not, what alternative system should be adopted?



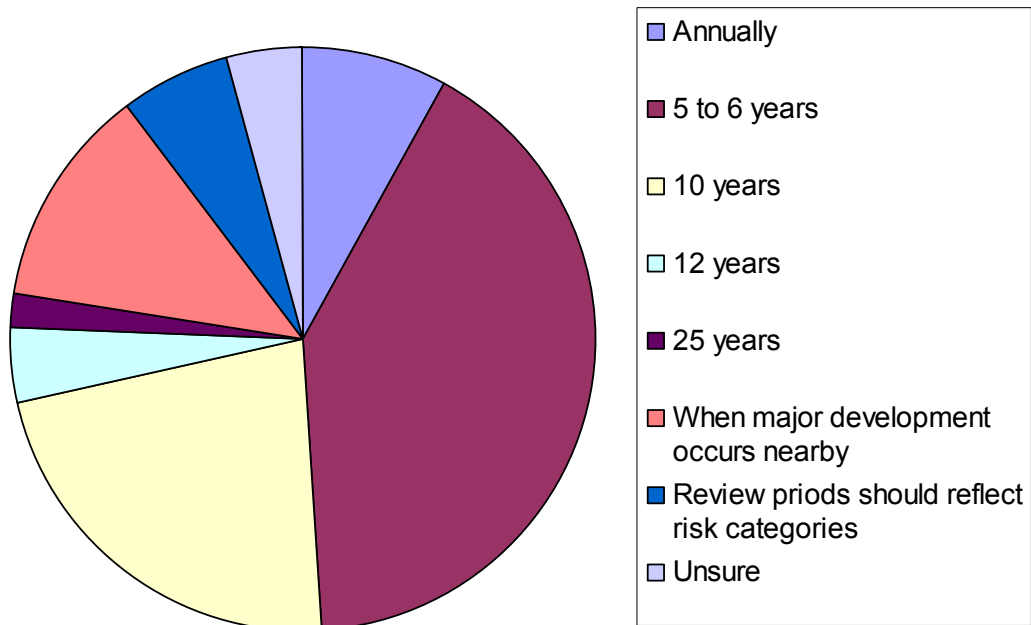
Question 4: Should all flood plans include an inundation map?



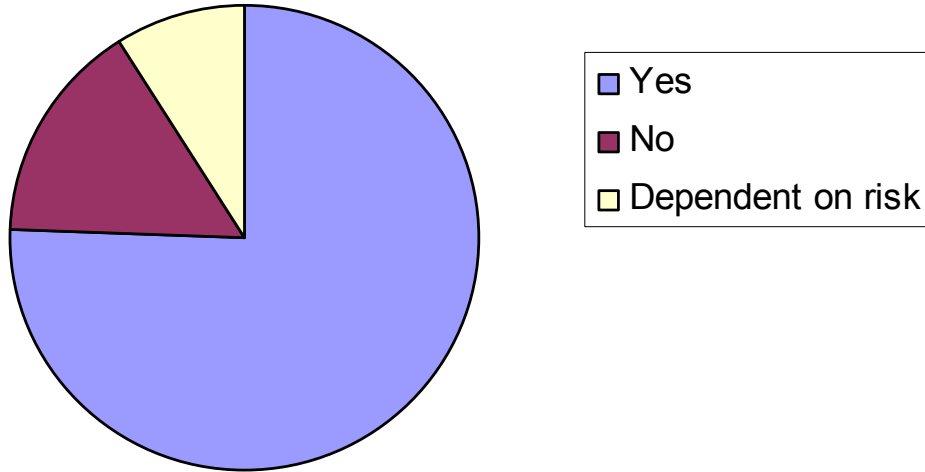
Question 5 - Should SEPA prepare basic inundation maps for all reservoirs over 10,000 cubic metres?



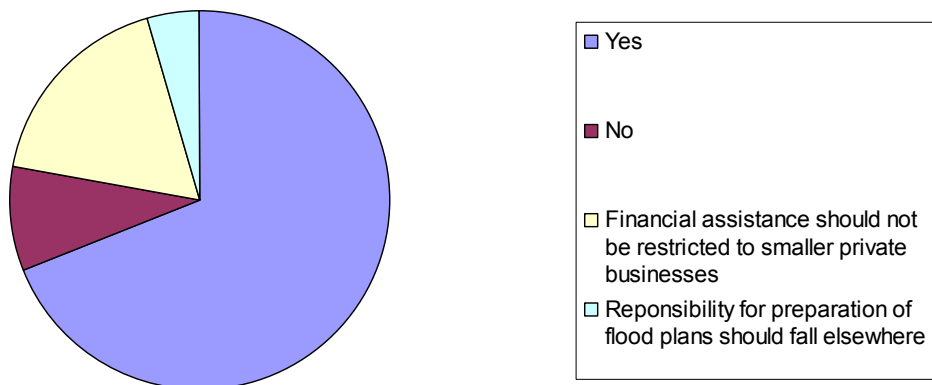
Question 6 - How often should plans be reviewed and updated?



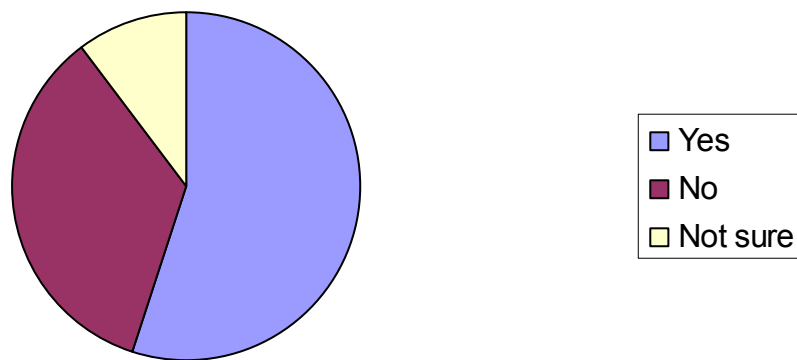
Q8 - Should Panel engineers have a role in the preparation, testing and approval of flood plans?



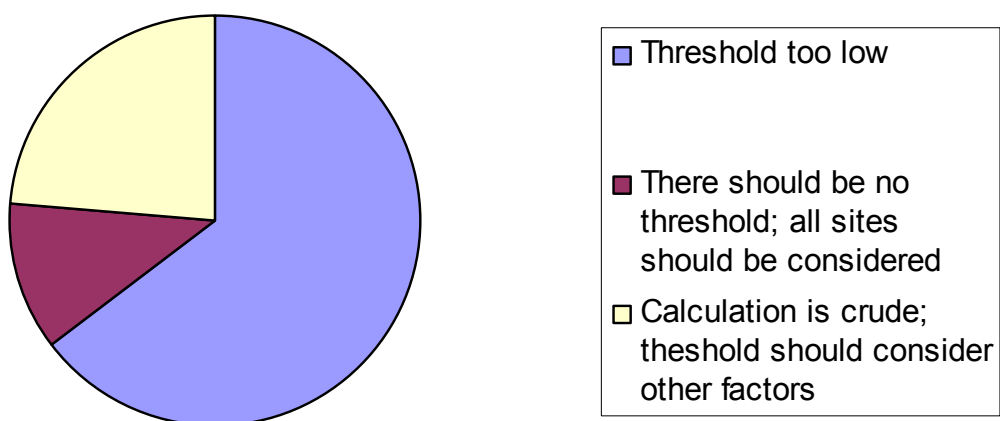
Question 9: Should the Scottish Government provide financial assistance towards the preparation of reservoir flood plans in order to assist smaller private businesses and individuals to comply with legislation?



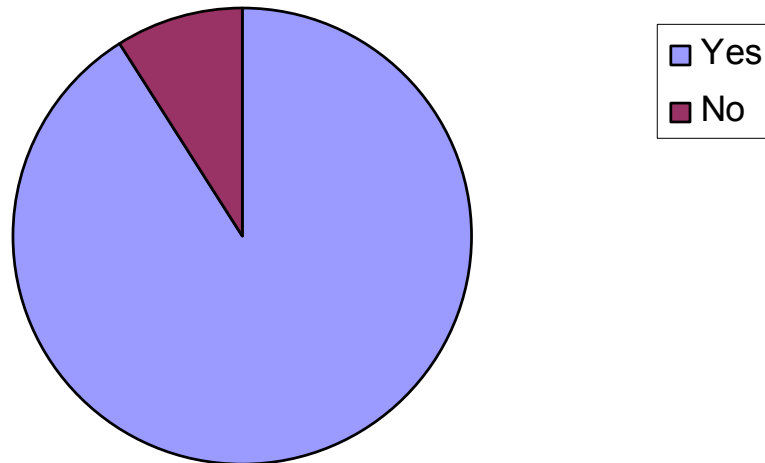
Question 15: Do you agree that the minimum volume figure should be 10,000 cubic metres or another figure? If you are proposing another figure, please explain why.



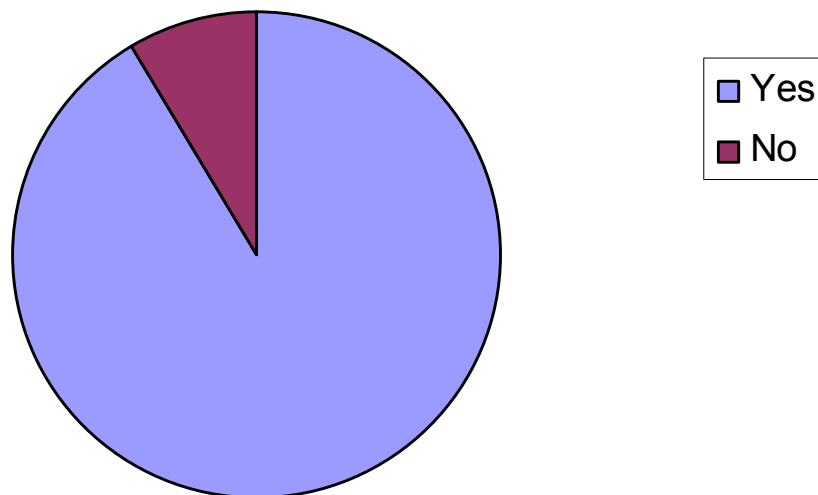
If a respondent answered no, what reason did they give?



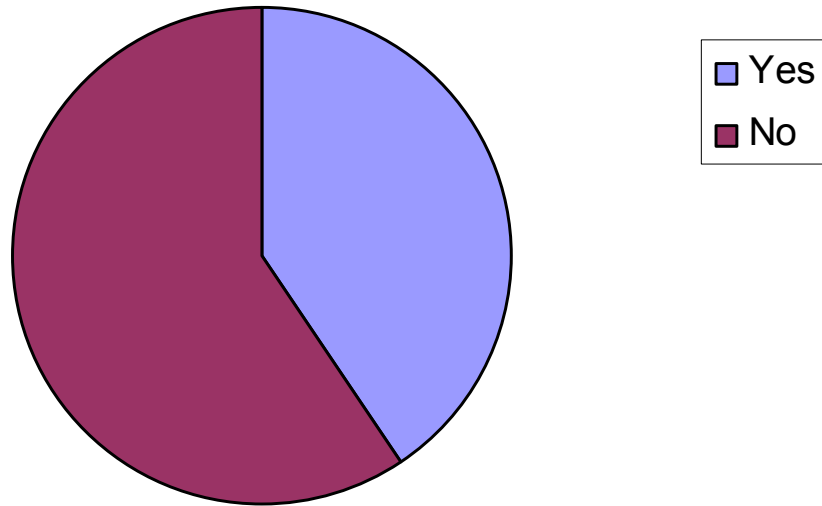
Q19 - Do you agree with the proposed risk-based classification for reservoirs?



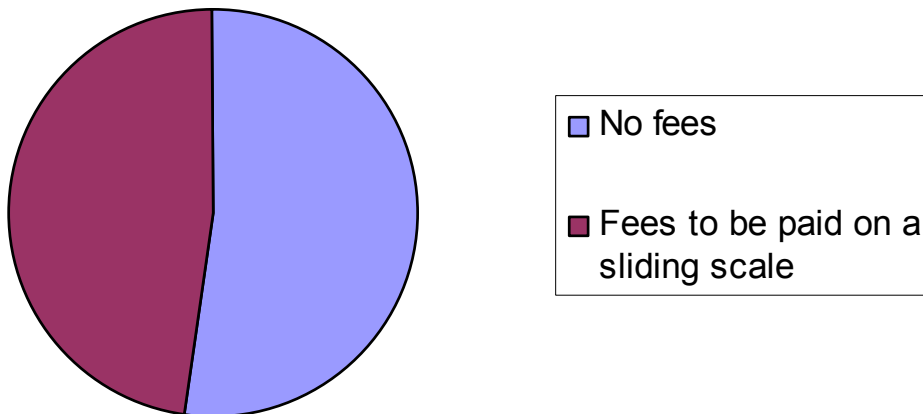
Q23 - Should registration be free for an initial period to encourage new sites to register?



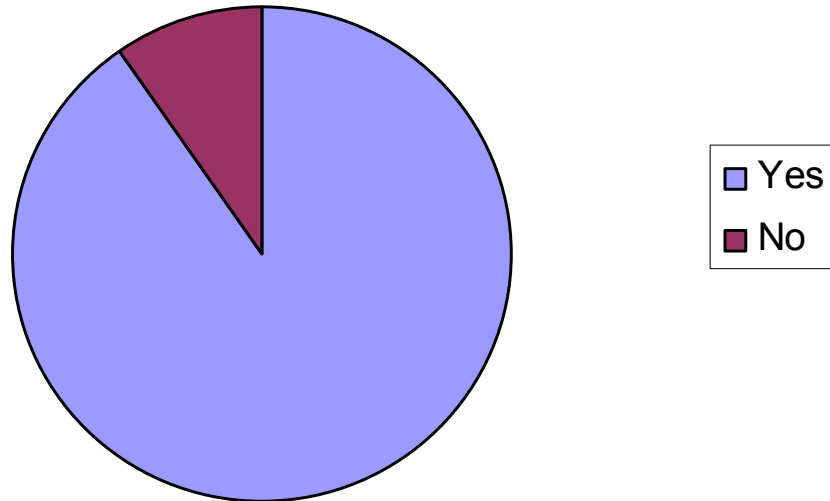
Q24 - Should existing reservoirs have to be re-registered?



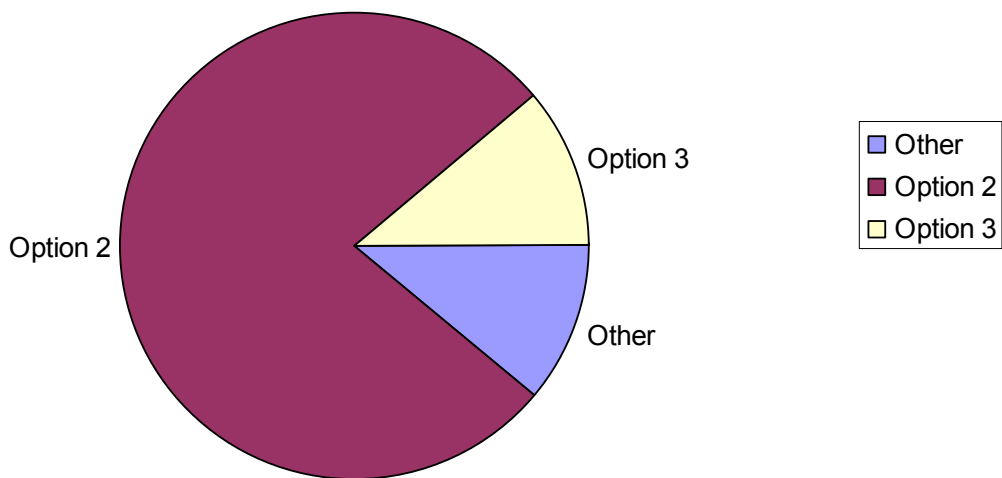
Q25 - Should SEPA's ongoing enforcement costs be recovered through subsistence fees and should they be on a sliding scale?



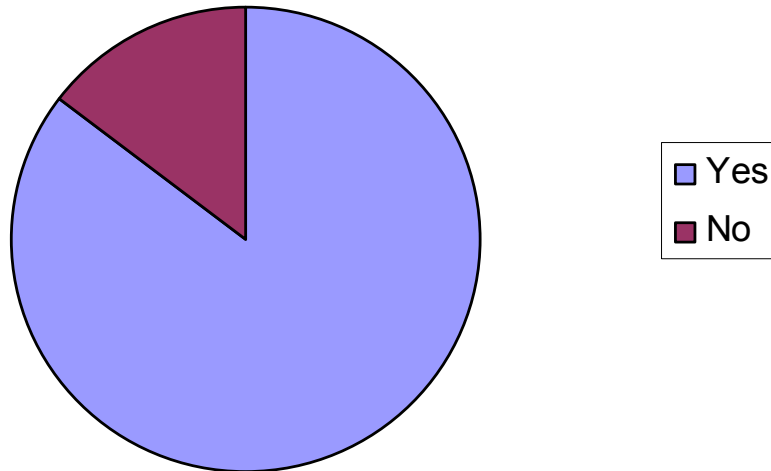
Q26 - Should SEPA be able to reclaim costs of emergency works?



Question 27: What is your preferred implementation model?



Q30 - Do you agree with the proposed arrangements for creating panels of engineers?



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