

# GUIDANCE ON RESERVOIR EMERGENCIES

## Warning and Informing the public

Flood Emergencies  
Programme



Civil Contingencies  
Secretariat



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## 1. Introduction

The purpose of this guidance is to set out what information should be communicated to the public prior to, and in the event of, a reservoir emergency. The information and guidance included is not intended to be prescriptive. Top (or single) tier Local Authorities, who will have primary responsibility for the task, and other LRF partners are experienced in this area and are expected to tailor their individual communications packages according to local circumstances, but the national lines on reservoir safety and risk should be used consistently, and we recommend that the attached template is used as the basis for local information leaflets. At present there is no legislation that requires reservoir owners to undertake Warning and Informing.

The 2007 summer flooding, and the consequent Pitt Review identified shortcomings in the Reservoirs Act 1975 and reservoir emergency preparedness and response. The number of incident reports on dams during the floods and the Ulley Dam incident reinforced the need to amend the Act and to ensure that the resilience community was better prepared.

From 2010 there may be a legal requirement for reservoir undertakers to produce a reservoir flood plan. These plans will consist of:

- an inundation map (showing geographical areas that could flood as a result of reservoir failure);
- an onsite response plan (how the owners would respond to a failure); and
- a communications plan, which would set out how the owners would work with category 1 and 2 responders to facilitate the procedures set out in the off-site plan.

The Environment Agency has produced high level inundation maps for the approximately 2,100 reservoirs covered by the Reservoirs Act.

The top-tier Local Authority in which a dam is sited will co-ordinate production and maintenance of the counterpart off-site plan, engaging others LRF members as required (and downstream LRFs where applicable) as well as the reservoir undertaker. Both warning the public in the event of an emergency and informing the public in advance (and possibly subsequent to an event) should be carried out in liaison with reservoir undertakers. It is essential that on-site warning and informing contains consistent and complementary messages.

Top tier Local Authorities will receive a list which sets down the relative priority with which each dam should be treated: which dams should be the subject of specific off-

site plans, and which dams can be included in a broader generic off-site plan. The maps will all be available by the end of December 2009. We expect that LRFs will prioritise production of a generic plan above any specific plans. (The Generic Plan may form the core of any subsequent specific plans). This will ensure that, as early as possible, a plan exists that will address any reservoir emergencies within the locality.

Adjoining top tier LAs should liaise with each other to ensure that messaging and, as far as practicable, format are consistent when communicating. For example, where a property is in the inundation zone of more than one reservoir and those reservoirs are in different top tier LA areas, LAs should ensure that the information given is essentially the same and given in a similar format to reduce the potential for confusion.

## **2. Findings from research into Public Attitudes to Reservoir Safety**

In Summer 2009, the Environment Agency commissioned a total of 10 extended group discussions with residents living within the inundation zones of 5 reservoirs in England, for which outline inundation maps had already been created.

In summary the conclusions of the group discussions were as follows:

- There was low awareness and understanding of reservoirs; difficulty grasping how they pose a flood risk from “failure”
- Awareness and perceptions of risk are influenced by:
  - type of community/residents: long term residents have lived safely with the reservoir and see less risk
  - type of reservoir: tendency to view familiar type as safer than another; different perceptions of small sailing “lake” than big obvious reservoir
  - type of undertaker: strong concern that a private owner may cut corners on inspection and maintenance
  - topography and proximity: harder to imagine a “wall of water” in a flatter area, and perception that only those close to the reservoir are at risk
- After discussion, there was strong recognition of the need for transparency to inform residents of the possible risk and for a very clear and consistent list of key information that should be provided in a letter or leaflet from [Group’s preference] Environment Agency and the local Council:
  - Basic information on status and safety at local reservoirs
  - Reassurance that inspections and maintenance procedures followed and enforced
  - Confirmation that emergency response plan in place
  - Details of evacuation routes and locations
  - Impact of reservoir risk on home insurance
  - Contact details for general queries and for emergency situations
  - Details of where further information can be found

- There was a general consensus that maps should not be distributed but should be available
- It is important that released map outlines are credible, otherwise many will rely on their own judgments (based on land and proximity) to gauge risk.
- Collaborative working between the Local Authority and the emergency services should facilitate more effective communications for the whole community. A joint communication is more effective at getting information across to the community as well as being a more efficient use of resources.

These findings were drawn from the experiences of members of the public close to reservoirs and, in some cases, those near to reservoirs where emergency situations had arisen. They have been used to inform this guidance document and the template provided.

### **3. Key Public information Messages**

The following facts underpin current policy and it may be useful to incorporate some or all of these key points in your warning and informing material:

There are approximately 2100 dams which retain over 25,000 cubic metres (approx 5 million gallons) above natural ground level in England and Wales. These potentially pose a risk to people and/or property.

#### **Reservoir Safety in the United Kingdom**

- There have been no fatalities in the UK from dam inundation since the 1920s, but there is no room for complacency.
- Across the country as a whole, the likelihood of individual dam failure is very low. There has been no dam failure causing loss of life since 1925. However, the potential impact of a failure can be high and failures have occurred since 1925
- All the sites falling under the Reservoirs Act must be kept under supervision by qualified engineers and periodically inspected. Government, under the Water Act 2003, has given the Environment Agency the role of enforcement authority with an overview of reservoir safety.
- Reservoir owners have a legal responsibility for the safety of reservoirs.

### **4. Who to Warn and Inform – Public Information Zones**

It is recommended that the Public Information Zone should comprise

- all those within two hours of inundation within the extent of the wetted area; and
- all those within within the extreme Hazard zone.

The Extreme Hazard Zone is likely to include deep fast flowing water and is defined as being dangerous for all. The definition is based on a Function of Velocity (Metres per second) and Depth (Metres)  $d \times (v=0.5)$

>2.5	Extreme	Dangerous for all  <i>“Extreme danger: flood zone with deep fast flowing water”</i>
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**Those to consider targeting specifically within an inundation zone and others who need further information include;**

- All those at risk generally
- Groups who may have particular needs
- Infrastructure operators
- All Cat 1s and 2s
- Vulnerable sites, e.g., holiday camps, industrial zones

**Downstream LRFs may also need to be part of an information sharing protocol**

## 5. What Information and When

Those engaged in warning and informing the public will need to think carefully about what information different audiences will want, and when. Specific information will be needed in an emergency and more general awareness information should be shared with the public prior to any emergency.

As well as clear instructions, relevant to the audience, the frequency of the communications should be considered to ensure that community awareness is maintained. Communications should provide site and emergency planning unit contact details for handling issues or concerns from the community and set out the procedures that you have in place for dealing with queries and concerns/complaints. Warning and informing material should also refer to central websites where more information can be found.

**The key areas are threefold:**

1. Working together: building trust with the community;
  - Key: How can we maximise trust and acceptance of the possibility of inundation?
2. The balance between being transparent and causing anxiety;
  - Key: What are those in the inundation zone’s main concerns about the possibility of inundation, and what information can address those concerns?
3. How best to communicate with the public about risk;

- Key: What are residents' preferences in terms of communication methods and channels for information about reservoir risk and how can we best meet them given financial constraints?

In order to achieve these objectives you should:

- Identify the most appropriate way to communicate the risk of reservoir flooding to local communities in order to minimise anxiety and confusion as far as possible.
- Identify the type and level of information people need and the most appropriate delivery channels for this information

## 6. Issues to Consider

- If information is not specific it may give rise to a large volume of potentially inappropriate questions so be as specific as you can
- Information needs to be shared between organisations about vulnerable groups, etc.
- The communications strategy needs to balance awareness raising with the need to prevent alarm/increased security risks
- Need to be very clear about differences between fluvial type flooding and reservoir inundation flooding
- May need regular communication to maintain awareness
- Risk information needs to be counter-balanced always by low likelihood statements; however, understating the risk may invite apathy and reduce resilience
- Media may focus on worst case scenarios
- Vulnerable groups/ sites may need targeted publicity material
- Publicity needs to go to public and the media at the same time
- Some households could receive several notifications unless coordinated at LA/LRF level and beyond
- Explicitly link communications with Pitt Review and central steer

The separately issued FAQs and the sample leaflet provide you with appropriate material for this task.

## 7. Informing Methods

The methods available to deliver important and urgent information to members of the public are extremely varied. For informing **prior** to an emergency methods to consider should include (*but not necessarily be limited to*):

- mail shots (letters, laminated cards, calendars etc) media campaign (local press or radio for example)
- information in public libraries and council offices
- websites (such as LRF/ top tier LA ones).

- meetings with community groups, housing associations, etc.

The messages within the attached sample leaflet have been tested and contain most of the basic information needed in a first contact. Any additional material you produce locally should be consistent with the lines contained within the separately issued FAQs.

When using mailings make clear the importance of the information contained to reduce the possibility of it being thrown away as junk mail. In mailings, consider including with any letter a card/laminate of the emergency instructions and contact numbers. People are less likely to throw these away.

It is worth considering including reservoir inundation within broader preparedness community liaison events. Such events give the local community an opportunity to raise queries and their concerns. They provide useful feedback on the effectiveness of communications and provide an opportunity to reassure the public of the safety record and the site's beneficial role in the community. These groups work well when there is representation from the site, the Local Authority (e.g. emergency planning/business continuity advisors), emergency services, residents, businesses and local representatives.

Messages need to be consistent and presented in a consistent way. The level of detail should be proportionate to the risk and impact. People are likely to want to be told:

- the level of risk – both generic and site specific – and why action is being taken now
- what the consequences of a dam breach would be
- impact on any planning applications
- the current safety record and any safety measures in place
- what the responders will do in the event of an emergency
- how they will receive information in the event of an emergency
- trigger points
- what they should do with the information they have been given
- evacuation routes and whether cars should be used or not
- safe areas
- how to prepare for an evacuation (tying in to community resilience)
- existence and location of reception centres and/or rest centres
- anticipated level of damage/properties at risk of demolition
- source of/ reason for the risk: particularly important where more than one reservoir might affect them
- if their lives could be at risk

Decisions will need to be made as to what it is practical and sensible to communicate and reasons why some information is not being relayed, if that is the case. The general lines to take are included in the separately issued FAQs.

The main purpose of communications with those in the inundation zone is to avoid, if possible, or minimise the effect of an emergency. The local community must be



aware of and understand the emergency instructions so that they can take effective action. Communications and instructions must be clear and relevant for the whole community, including those who are partially-sighted, hard of hearing, elderly, residents, employers, landlords, workers, schools, hospitals, shops and commuters.

Site owners/ undertakers and Local Authorities should work together to ensure that arrangements to communicate with residents, local businesses and the wider community are crafted in such a way as to ensure local business needs are met; making provision where appropriate for joint communications with relevant bodies.

## **8. Ensuring your Communications are robust and fit for purpose**

The templates provided can be used as the basis for your Public information material. If you do not use the template or if you produce any additional communications material it is recommended that it should contain the following:

1. Name of reservoir and agencies involved in planning and potentially response evident
2. Very brief history of reservoir and purpose it serves if deemed appropriate
3. Indication of the risk – i.e. it is very low for individual reservoirs
4. Brief description of the type of flooding a reservoir failure could cause- i.e. deep fast-moving water in some areas
5. Statement that there is no increase in risk and why the work is being done now
6. Indicate how people are likely to be contacted
7. Dos and Don'ts
8. Evacuation Routes where available
9. Listing of communication routes likely to be affected (road closures, train and bus routes)
10. Where to find out more information both during and prior to (eg local radio in the event and EA or LRF websites prior to) an event

Annex A, ***Preparing the public to act in case of reservoir failure*** example plan provides an in-depth plan checklist and is a useful tool for ensuring that your warning and informing planning is robust.

You should also follow the guidance given in Chapter 7 of the Civil Contingencies Act guidance, *Emergency Preparedness, Warning and Informing the Public*.

## **9. Emergency Warning Methods**

**Immediately in an emergency and during the first hour or so;**

**The PUBLIC NEEDS:**

- basic details of the incident - what, where, when (and who, why and how, if possible);
- to know the implications for health and welfare;

- advice and guidance (eg stay away and/or prepare for evacuation); and
- reassurance (if necessary).

#### **The PUBLIC WANTS to know:**

- other practical implications such as the effect on traffic, power supplies, telephones, water supplies, etc;
- a helpline number; and
- what is being done to resolve the situation.

#### **BROADCASTERS will REQUIRE:**

- well thought-out and joined-up arrangements between the emergency services, Local Authority and other organisations, capable of providing agreed information at speed;
- an immediate telephone contact; and
- a media rendezvous point at an appropriate location – possibly the scene.  
(See further information at: [BBC's - Connecting in a Crisis – http://www.bbc.co.uk/connectinginacrisis/index.shtml](http://www.bbc.co.uk/connectinginacrisis/index.shtml))

The methods available to deliver important urgent information to members of the public are extremely varied and some depend on the availability of power supplies or phone lines. Some may require careful consideration of the risks to human life and health, in case at the time of an emergency staff or members of the public are exposed to danger while they are warning or being warned.

For warning in the **event** of an emergency, methods to consider should include (*but not necessarily limited to*):

- Mobilising officers to go round on foot and knock on doors with evacuation cards (where time and safety considerations allow);
- From car or helicopter, by loudhailer or other amplified means;
- Media announcements;
- Electronic/variable message boards, eg at the roadside or on motorways;
- PA announcements in public buildings, shopping centres, sports venues, transport systems, etc.;
- Automated telephone/fax/e-mail/text messages where practicable;
- Information in public libraries and council offices;
- Websites (such as LRF/ LA ones);
- Meetings with community groups, housing associations, etc.; and
- Electronic/variable message boards, eg at the roadside or on motorways

## **10. Handling the Media**

The media may be present in large numbers from an early stage of a reservoir emergency, arriving locally within hours, and seeking information probably before the emergency services co-ordinated response is operational. They will attempt to get as close to the site as possible, in search of information and images. They will be equipped with up-to-date communications technology seeking information for

immediate broadcast and to reporting deadlines. Most importantly, they are likely to provide the most effective and resilient method of quickly reaching large numbers of people.

In the event of, or in advance of, a major potential or actual emergency, arrangements should be put in place to co-ordinate the response to the media. The following should also be considered:

- Establishment of a media briefing centre (MBC)
- Responder organisations providing agreed media briefing on their own areas of responsibility through the MBC
- Development of a media strategy to provide a clear framework for press officers and reporters detailing the regularity of press conferences, briefings, locations etc
- Systems to ensure that press releases from the various organisations can be shared and agreed prior to issue
- How an ongoing stream of information might be collated in order to meet the needs of the broadcast media.
- Arrangements for updating information on organisations' websites or, where available, for the multi-agency major incident website to be 'switched on'.

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