Department for Environment Food & Rural Affairs

www.gov.uk/defra

# The National Flood Emergency Framework for England

## December 2014

Environment Agency

PREPARING FOR EMERGENCIES

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

https://www.gov.uk/government/publications/the-national-flood-emergency-framework-for-england

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**Front cover photo of a group taken by boat from the flooded Little Venice caravan park flooding in the village of Yalding, Kent December 2013 courtesy of the Daily Mail.**

**Back cover photo of Royal Marines using full waterproof outfits as they arrive to help victims in the flooded Somerset village of Moorland February 2014 courtesy of the Daily Mail.**

## Contents

# Part one: Understanding flood emergency planning and response

**Billing Aquadrome 2012. Photo courtesy of the Environment Agency**

# Section 1: Introduction to the National Flood Emergency Framework

## Flooding – a frequent hazard

Flooding is a frequent hazard to life and property. We know from the Environment Agency's national assessment of flood risk (updated September 2014) that:

- one in six homes in England is at risk of flooding;
- 2.4 million properties are at risk of flooding from rivers or the sea in England
- 3 million properties are in areas at risk from surface water flooding; and
- Approximately 600,000 properties are in areas at risk from all three types of flooding.

As well as flooding from rivers, the sea and surface water, there are significant risks for some communities from groundwater flooding and water from failed or overflowing reservoirs. The scope of this National Flood Emergency Framework extends to these risks too.

## Flooding happens!

Flooding happens. It happens many times each year – often to people, communities and businesses that have suffered from flooding in the past. Its severity has ranged from minor inconvenience to destruction of properties, businesses, livelihoods and normal family life.

No part of England can expect to escape the impact of flooding entirely. As well as the potential to cause serious harm to human health and property damage, flooding causes wider social and economic damage and disruption. It is difficult to forecast the exact timing of flooding or the precise nature of its impact. This is particularly true for surface water flooding and flash flooding in river catchments. This uncertainty is one of the main challenges for policy makers and planners. Measures to prevent and control flooding require coordinated local and national effort and cooperation.

Some recent examples of flooding incidents can be found at Annex A.

## National Flood Emergency Framework – what it's for

This Framework sets out the government's strategic approach to achieving the aims set out below and is intended for use by all those involved in planning for and responding to flooding from:

- the sea;
- rivers;
- surface water;
- groundwater;
- reservoirs;
- artificial waterways and canals

The concept of a National Flood Emergency Framework was promoted by Sir Michael Pitt in his report on the summer 2007 floods. Its purpose is to provide a forward looking policy framework for flood emergency planning and response. It brings together information,

guidance and key policies and is a resource for all involved in flood emergency planning at local and national levels. It is a common and strategic reference point for flood planning and response for all tiers of government and for responder organisations.

More precisely, the purpose of the Framework is to:

- ensure operating authorities (i.e. Environment Agency, Lead Local Flood Authorities, District Councils, Internal Drainage Boards, Highway Authorities, Water and Sewerage Companies) and delivery bodies understand their respective roles and responsibilities;
- give all players in an emergency flooding situation a common point of reference - bringing together information, guidance and key policies in a single planning document;
- establish clear thresholds for emergency response arrangements;
- place proper emphasis on the multi-agency approach to managing flooding events;
- provide clarity on the means of improving resilience and minimising the impact of flooding events;
- provide a basis for individual responders to develop and review their own plans; and
- be a long term asset that will provide the basis for continuous improvement in flood emergency management.

The existing multi-agency flood planning guidance is currently under review by Defra, DCLG and the Environment Agency.. The existing guidance is available in a separate document[1]. Updates to the rest of the Framework will occur if substantial changes are required.

## National Flood Emergency Framework – what it's not for

This Framework provides information and planning assumptions to inform and encourage contingency planning. It is not intended to provide detailed operational guidance for individual emergency planners or responders.

The scope of the Framework does not extend to recovery from flooding emergencies. There is specific national guidance on recovery from emergencies, which can be accessed via the Cabinet Office's UK Resilience web resources.

This plan covers flooding from artificial waterways and canals. However in practice, such flooding incidents would normally be localised emergency incidents. So the Canal and Rivers Trust (formerly British Waterways), which manages some 2,200 miles of waterways, has its own emergency plans in place which include dealing with the breach of a canal or reservoir embankment. It has plans that include arrangements for liaison with Local Resilience Forums (LRF) and Category 1 and 2 responders (including emergency services).

[1] https://www.gov.uk/government/publications/the-national-flood-emergency-framework-for-england

# A Framework for England

It is a National Flood Emergency Framework for England. However it has been designed to take account of flood emergency planning and response in other parts of the United Kingdom, for which the devolved administrations have responsibility. Each of the devolved administrations has tools, information, advice and guidance that you might, on occasions, want to refer to.

**Ready Scotland**[2] contains advice on how members of the public in Scotland can prepare for all kinds of emergencies and disruptive events, including severe weather. It includes links to the Scottish Environment Protection Agency's flooding pages.

The **Welsh Government**[3] is responsible for developing flood and coastal risk management policy in Wales and largely funds flood and coastal activities undertaken by operating authorities across Wales. From April 2013 Natural Resources Wales has undertaken a similar role to that of the Environment Agency in England. Effective cross border working is essential to the management of flood emergencies, and the Welsh Government fully supports collaborative working with partners in England during flood events.

The **Rivers Agency in Northern Ireland**[4] and **NI Direct**[5] websites contain advice on how members of the public in Northern Ireland can reduce the impact of flooding on their homes and businesses. Details of how to report a flooding emergency to the Northern Ireland Flooding Incident Line are also given.

# National Flood Emergency Framework – what we want to achieve

In planning and preparing for a flooding emergency, the government's strategic objectives, as outlined in the Concept of Operations produced by the Cabinet Office, are to:

- protect human life and alleviate suffering; and, as far as possible, property and the environment;
- support the continuity of everyday activity and the restoration of disrupted services at the earliest opportunity; and
- uphold the rule of law and the democratic process.

The National Flood Emergency Framework is intended to focus on the first of these. In doing so, it covers the development, maintenance, testing and, where necessary, implementation of operational response arrangements that are:

- able to respond promptly to any changes in alert levels;

[2] http://www.readyscotland.org/
[3] http://wales.gov.uk/topics/environmentcountryside/epq/flooding/?lang=en
[4] http://www.dardni.gov.uk/rivers
[5] http://www.nidirect.gov.uk/flooding-in-your-area

- developed on an integrated basis, combining local flexibility with national consistency and equity;
- capable of implementation in a flexible, phased, sustainable and proportionate way;
- based on the best available scientific evidence;
- based on existing services, systems and processes wherever possible, augmenting, adapting and complementing them as necessary to meet the unique challenges of a flood emergency;
- understood by, and acceptable to, emergency planners and responders;
- designed to promote the earliest possible return to normality.

# Section 2: What emergency planners and responders need to know about national emergency management

## What emergency planners and responders need to know about national emergency management

An emergency (or disruptive challenge) as defined in the Civil Contingencies Act 2004 is a situation or series of events that threatens or causes serious damage to human welfare, the environment or security in the United Kingdom.

Managing any emergency comprises three main phases:

- preparation (pre-planning);
- response (mitigating an immediate risk or stopping things getting worse); and
- recovery (a longer-term activity of rebuilding, restoring and rehabilitating the community).

The response phase comprises two separate but closely related and often overlapping challenges: crisis management and consequence (or impact) management. These are both designed to control and minimise the immediate challenges arising from an incident.

Crisis management involves the phase of the response that attempts to prevent or avert an imminent emergency, along with work that puts in place protective or other measures to mitigate the effects of an emergency, prevent further damage or disruption and secure the scene. It also includes actions taken to address the immediate effects of an incident and may include managing hostage situations, fighting fires, search and rescue, caring for the dead and injured, providing public health advice, evacuating those at risk and disseminating public information. The duration of the crisis management phase can vary from a few hours or a few days to a few months (for example in the case of an outbreak of an animal disease) until the situation is brought under control.

Consequence management usually take place in parallel to crisis management and is concerned with steps taken to prevent the impact of an incident escalating. It includes managing wider consequences and services such as restoring transport networks or electricity supplies, managing community relationships, and providing shelter to displaced persons.

## Managing a crisis - from local emergency to national catastrophe

The local response is the basic building block of the response to any emergency in the UK. Emergencies (or major incidents) are routinely handled by the emergency services and other local responders without the need for any significant central government involvement. Such emergencies may include major road crashes, localised flooding and many industrial accidents. The police will normally take the lead in co-ordinating the local response where a crime has been committed, or if there is a threat to public safety.

In England, the primary responsibility for planning for and responding to any major emergency rests with local organisations, acting individually and collectively through Local Resilience Forums (LRFs) and Strategic Coordination Groups (SCGs). Public and private

organisations need to work with and through their local forum to develop plans for maintaining critical services and business continuity during a flooding emergency and to respond to the wider challenges that will result.

A list of LRFs and their contact details can be found at the following website: https://www.gov.uk/.

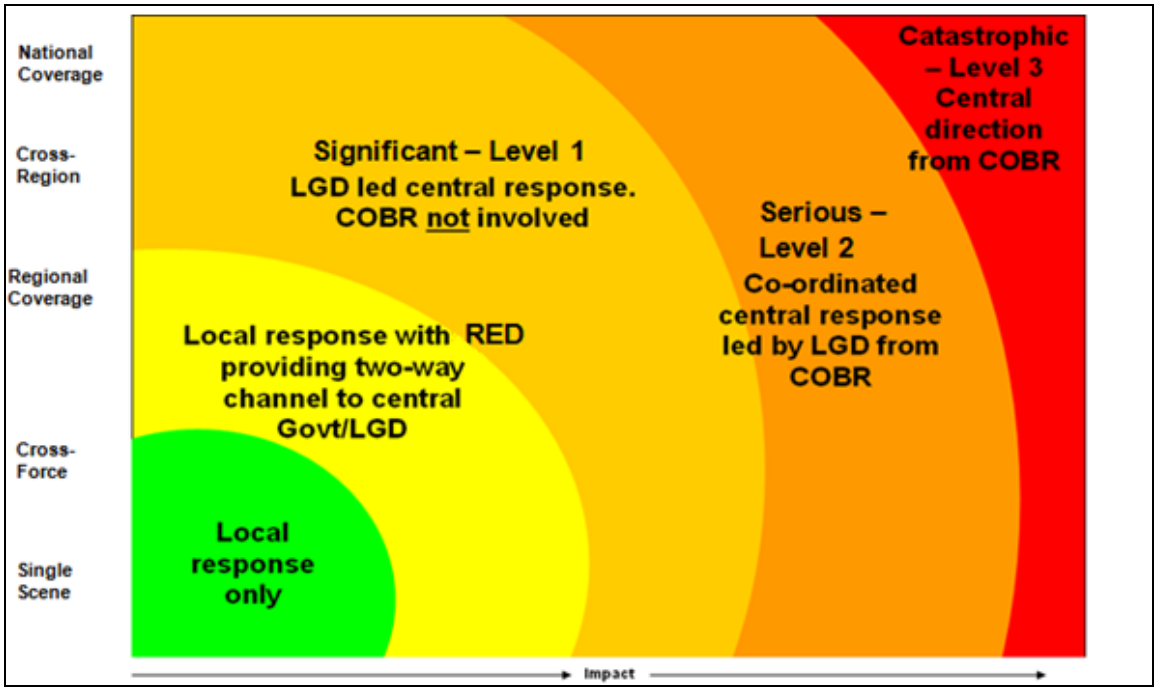
The local multi-agency response is co-ordinated through a Strategic Co-ordinating Group (SCG) located in the Strategic Co-ordination Centre (SCC). The chair of the group, whether a police lead or Local Authority Chief Executive, is often known as the Gold Commander.

The principle of subsidiarity emphasises the importance of local decision making supported, where necessary, by co-ordination at a higher level. In order to aid planning, further understanding, and provide guidance to responders and central government planners on when they might expect central government involvement in responding to an incident, three broad types (or levels) of emergency have been identified which are likely to require direct central government engagement.

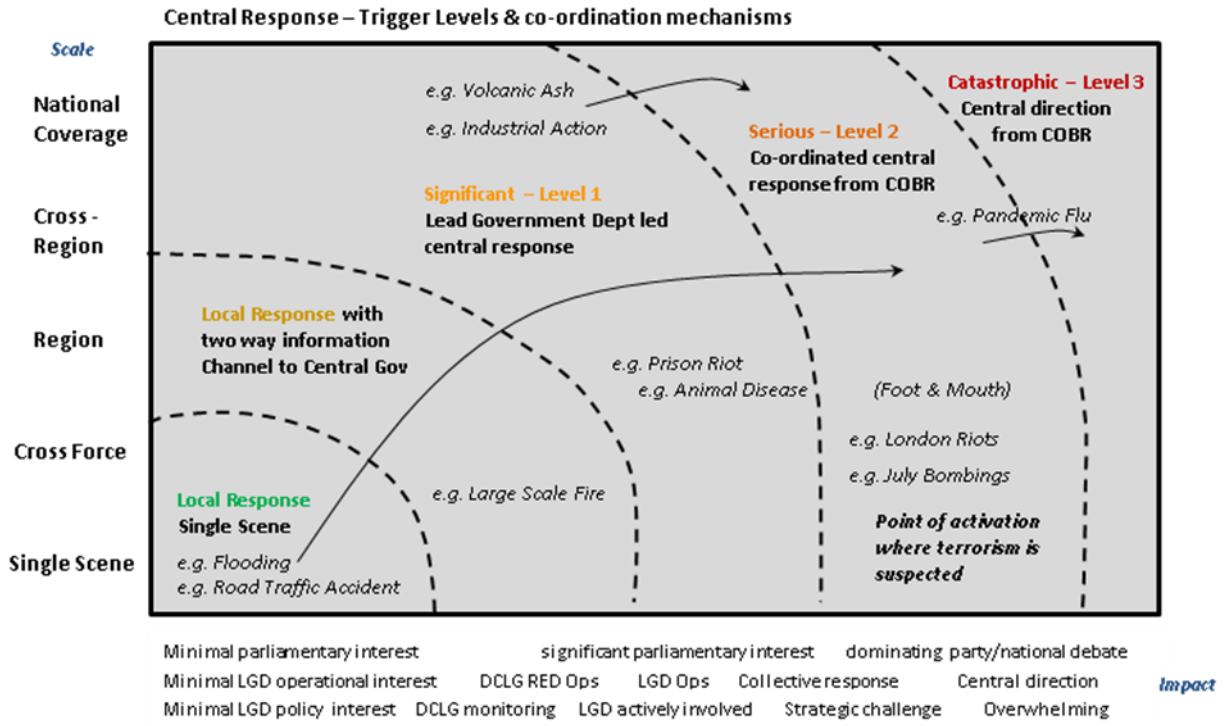
The full detail can be found in the **Concept of Operations (or CONOPS)**[6] – the specific arrangements for the response to an emergency requiring co-ordinated UK central government action – which can be found on the Cabinet Office's website.

Figure 2.1 indicates the characteristics of different levels of emergency and the likelihood of central government engagement according to the actual or potential spread of an emergency and its effect.

**Figure 2.1 Emergency Levels**




[6] https://www.gov.uk/government/publications/the-central-government-s-concept-of-operations




## National emergency management: Cabinet Office Briefing Rooms (COBR)

In some instances, the scale or complexity of an emergency is such that some degree of central government support or co-ordination becomes necessary. A designated Lead Government Department (LGD) or, where appropriate, a devolved administration would be made responsible for the overall management of the central government response. Defra are LGD for responding to floods from all sources, with recovery transitioned to DCLG.

In the most serious cases, the central government response would be co-ordinated through the Cabinet Office Briefing Rooms (COBR). Ministers and senior officials, as appropriate, from relevant UK government departments and agencies, along with representatives from other organisations, as necessary, are brought together in COBR to facilitate effective and timely decision making based on a common understanding of the situation, supported by the best available specialist advice and modelling.

Where COBR is activated in response to a no-notice incident, its default strategic objectives are to:

- protect human life (and, as far as possible, property and the environment); and alleviate suffering;
- support the continuity of everyday activity and the restoration of disrupted services at the earliest opportunity; and
- uphold the rule of law and the democratic process.

The COBR structure is designed to be flexible to adapt to the circumstances at hand. The Cabinet Office would, in consultation with the Lead Government Department, decide on which components should be activated and how they might best be used. It would also

provide the Secretariat support and ensure that business is managed effectively across all areas of activity in response to the emergency. In practice, the actual response to a specific emergency would need to take into account the nature of the challenge and other circumstances at the time including consideration of consequence management and recovery issues.

## Flooding – local or national?

The table in Figure 2.2 gives a broad indication of where flooding events match up to national CONOPS. However experience has shown that the media and political response to flooding events can escalate beyond the level of involvement which Defra, as Lead Government Department, might be expected to have if CONOPS is the only reference. In practice, factors such as media response, number of properties flooded, depth of flooding and impact on critical infrastructure will determine the level the emergency response and Lead Government Department involvement and role.

**Figure 2.2: CONOPS levels emergency**

| Level of emergency | Description | Level of engagement |
|---|---|---|
| **3: Catastrophic** | • A high and potentially widespread impact and requires immediate central government direction and support such as a 9/11 scale terrorist attack in the UK, or a Chernobyl scale industrial accident.<br>• Flooding example: floods affecting a significant proportion of England; thousands of displaced persons; serious damage to critical infrastructure. | • COBR/Civil Contingencies Committee. Prime Minister or nominated Secretary of State leads in the event of a catastrophic incident requiring the involvement of central government from the outset to deliver an effective response, or where Emergency Powers are invoked. |
| **2: Serious** | • Has, or threatens, a wide and prolonged impact requiring sustained central government co-ordination and support from many Departments and Agencies.<br>• Flooding example: floods in several counties; hundreds of displaced persons; actual, or risk of, critical infrastructure disruptions. | • Response co-ordinated from the Cabinet Office Briefing Room (COBR) by the Lead Government Department. The crisis response may require deployment of wider government resources. The Civil Contingencies Secretariat (CCS) provides overall co-ordination and support on impact management and recovery issues. |

| | | |
|---|---|---|
| **1: Significant** | • Has a narrower focus e.g. prison riots, severe weather or a terrorist attack with limited consequences.<br>• Flooding example: floods in more than one county, some displaced persons and potential risk to critical infrastructure. | • The Lead Government Department Minister runs the crisis response from their premises using their own emergency facilities as appropriate. The Civil Contingencies Secretariat (CSS) advises as and when necessary. |
| **Local** | • Events which are routinely handled by the emergency services with local government, such as road crashes, localised flooding or industrial accidents.<br>• Flooding example: local flooding; small scale evacuation; no risk to critical infrastructure. | • No significant central government involvement. Normally be led by the police/Gold Commander for larger emergencies. |

## Working across local levels to respond to flooding: Response Coordinating Groups

A Response Coordinating Group (ResCG) is most likely to be established when an incident affects more than one police force areas, or has the potential to do so. The ResCG is a communication tool hosted by DCLG Resilience & Emergencies Division (RED) to ensure all relevant partners have consistent information, joint risk assessment and worst case scenario planning can take place and joint mitigation measures can be put in place as required.

DCLG may, on its own initiative, or at the request of local responders, convene a ResCG in order to bring together appropriate representatives from local Strategic Coordinating Groups, or other relevant organisations.

The ResCG would not interfere in local command and control arrangements. It will be set up based on risks identified at the time, such as LRFs faced with East Coast tidal flooding, or LRFs facing common issues such as in the South of England in winter 2014.

## Reporting the Impacts of Flooding

Defra is accountable for reporting the overall impacts of flooding during the response phase and DCLG during the recovery phase. The Environment Agency, local authorities, the Fire Service, infrastructure operators and central government departments can all provide situational awareness to Defra and DCLG to fulfil these roles.

## Definition of flooded properties

Properties include both homes and businesses (this is a non-statutory working definition used for the collection of data)

**Properties flooded** are those where it is considered that the property has been flooded internally, i.e. water has entered the property;

- Basements and below ground level floors are included;
- Garages are included if in the fabric of the building. Garages adjacent or separate from the main building are not included;
- Includes occupied caravans and park homes, but not tents.

This definition is based on homes, but includes businesses where water has entered the fabric of the buildings.

**Properties affected:** are those where water has entered gardens or surrounding areas which restricts access, or where flooding has disrupted essential services to the property such as sewerage. For businesses this includes those where the flood waters are directly preventing them trading as usual.

## Roles and Timing of Reporting of Properties Flooded

This data is managed by Defra using Environment Agency information, supported by multi-agency partners and the DCLG Resilience Team. Once we enter the recovery phase, responsibility for managing the data on the number of homes and businesses flooded and affected shifts to DCLG working primarily with local authorities.

Early reporting of flood impacts means that scarce resources can be prioritised and the need for any government support can be determined. It can also be used to provide local responders and those who work across wider areas, such as utilities, with a broader picture of what is happening. Accurate data gathering after an incident helps government and other agencies assess and target resources to help communities recover. All agencies support in providing early reporting of flood impacts is key to this and they are requested to support this work.

It is important that the Lead Government Department (LGD), or COBR if in operation, gathers information on the impact of flooding incidents as soon as possible after it has happened. Early intelligence is important for flooding as weather systems track across the country and different impacts can be seen in different areas. The information provides a central view across different parts of the country so that the overall scale of the impact can be seen, likely short and medium term consequences can be determined and any priorities for recovery examined. It is the scale of impact that is very useful in the early stages of any incident rather than a precise measurement, broad numbers of properties affected, major impacts on infrastructure and major local service disruption.

## Level of Certainty in Recording and Period Covered

Property numbers reported should always reflect the known current situation. This number can include confirmed properties flooded and estimated numbers that are believed to be flooded before specific counts can be conducted. The number can be amended as flooded properties are confirmed and should always reflect the maximum total number of individual properties flooded during the flood event. It should be as accurate as possible but it is understood that reported figures can be uncertain during the early stages of reporting.

Defra, working with EA and DCLG, are looking at technological solutions to improve data collection and mapping.

Unless there are two very discrete flooding events divided in timing and type the properties should be counted once, even though flood waters may enter the house more than once during an event as tide and river levels fluctuate as more rainfall occurs. If there are two discrete events timing of the flooding should always be stated.

## Type of flooding and data gathering

For **primarily river and coastal flooding**, it is likely that the Environment Agency can provide a good initial view of the likely scale of properties flooded/affected. This is supplemented by reports of local service disruption provided by DCLGs RED team and the Environment Agency from any multi-agency meetings held. In all types of flooding it is useful for all agencies to work together to gather the best, most accurate figures on flooded properties available.

These arrangements will be particularly important during a **major coastal flooding incident,** which has the greatest potential impact of all flood risks in terms of risk to life, property and impact on the UK economy.

**Surface water impacts** are less predictable and more immediate, although improved risk mapping is being developed. Prediction of **groundwater impacts** is also less well developed. Although it is likely to follow a similar pattern to previous events when aquifers overflow, evidence of this is only held for the last few years.

For surface and groundwater, the Environment Agency and DCLG RED will work with responders at the local level to gain an initial view of the scale of the impact. **Support from local responders in providing this information as soon as possible is key to gaining a clearer picture to determine any support needed.** Over a period of time each top-tier local authority acting as a Lead Local Flood Authority will need to fulfil their duty to investigate these occurrences, so early initial data gathering is very useful to inform this process as well.

If a **major incident** occurs such as winter 2013/14 when several SCGs sit and COBR is in operation then the data will be gathered from reports into SCG. These **need to be confirmed as the most accurate data available by the relevant Gold Commander chairing the SCG.** This means that is beneficial to have a multi-agency approach to reporting properties flooded from all sources and other impacts that the floods are causing

such as disruption to services.  Defra will collate situational awareness reports from all sources during the response phase to produce a single view of flooding impacts.

It is suggested that local responders report flood impacts (such as flooded properties) to EA Area Teams and to their DCLG Resilience Advisor who will pass on this information to Defra (as the Lead Government Department), especially where a multi-agency meeting is not taking place.

## Data collection for flood recovery

When a major incident occurs and government is providing support to impacted areas then it is important that a more accurate record of flood impacts is developed in order to target funds.

At this stage it is likely to be collected by local authority area and will differentiate between homes and businesses, the numbers should be confirmed rather than estimated.  In order to target funds in the 2013/14 flood incident the following data on recovery was collected:

- **Total homes flooded**
- **Homes flooded where residents were unable to return**
- **Total Businesses flooded**
- **Businesses not yet fully operational**

DCLG will require regular returns from local authorities where funding is made available and for 2013/14 set up a portal to support data gathering.

# Section 3: What emergency planners and responders need to know about the legal framework

# The Civil Contingencies Act 2004

The **Civil Contingencies Act 2004 (CCA)**[7], and accompanying non-legislative measures, delivers a single framework for civil protection in the United Kingdom capable of meeting the challenges of the twenty-first century. The Act is separated into two substantive parts and the relevant section in terms of emergency planning is local arrangements for civil protection (Part 1). A short guide[8], which explains the workings of the Act, is available from GOV.UK.

## Part 1 of the CCA

Part 1 of the Act and supporting Regulations and statutory guidance *(Emergency Preparedness)* establish a clear set of roles and responsibilities for those involved in emergency preparation and response at the local level. The Act divides local responders into two categories, imposing a different set of duties on each. Guidance[9] is available on this part of the Act.

Those in Category 1 are organisations at the core of the response to most emergencies (e.g. emergency services, Local Authorities, Environment Agency, NHS bodies). Category 1 responders are subject to the full set of civil protection duties. They are required to:

- assess the risk of emergencies occurring and use this to inform contingency planning;
- put in place emergency plans;
- put in place Business Continuity Management arrangements;
- put in place arrangements to make information available to the public about civil protection matters and maintain arrangements to warn, inform and advise the public in the event of an emergency;
- provide advice and assistance to businesses and voluntary organisations about business continuity management (Local Authorities only);
- share information with other local responders to enhance co-ordination; and
- co-operate with other local responders to enhance co-ordination and efficiency.

Category 2 organisations (e.g. Health and Safety Executive, transport and utility companies) are regarded as “co-operating bodies” and are less likely to be involved in the heart of planning work but will be heavily involved in incidents that affect their sector. Category 2 responders have only two duties. They must:

- share information with other local responders to enhance co-ordination; and
- co-operate with other local responders to enhance co-ordination and efficiency.

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[7] Civil Contingencies Act, 2004 http://www.legislation.gov.uk/ukpga/2004/36/pdfs/ukpga_20040036_en.pdf and Explanatory Notes http://www.legislation.gov.uk/ukpga/2004/36/pdfs/ukpga_20040036_en.pdf

[8] Civil Contingencies Act, A Short Guide http://www.essex.gov.uk/Your-Council/Local-Government-Essex/Documents/15mayshortguide.pdf

[9] Emergency Preparedness, Guidance on Part 1 of the Civil Contingencies Act 2004, its associated Regulations and non-statutory arrangements https://www.gov.uk/government/publications/emergency-preparedness

The **Civil Contingencies Act 2004 (Contingency Planning) Regulations 2005**[10] establish the Local Resilience Forum, the principal mechanism for multi-agency resilience work. Category 1 and 2 organisations come together to form Local Resilience Forums (based on police areas) which help co-ordination and co-operation between responders at the local level.

The bulk of Part 1 of the Act was brought into force in November 2005 (the duty on Local Authorities to provide advice and assistance to business and voluntary organisations about business continuity management commenced in May 2006). In 2012 the **CCA 2004 (Contingency Planning) (Amendment) Regulations**[11] were introduced. They introduced changes to the detail of the requirement that organisations share information and co-operate.

## The Reservoirs Act 1975[12]

One of the hazards identified in the National Risk Assessment is the risk of the catastrophic failure of a large reservoir[13]. Reservoir safety is enforced though the Reservoirs Act 1975. **Schedule 4 of the Flood and Water Management Act (2010)**[14] makes amendments to the Reservoirs Act 1975.

Phase 1 of the amendments to the Reservoirs Act 1975 was implemented in July 2013, with the key requirement to designate reservoirs as 'high-risk' if human life is endangered in the event of failure. In future only 'high-risk' reservoirs will be subject to the full requirements of the Act. The Environment Agency plan to complete the designation process by mid-2015.

In terms of on-site plans (flood plans), these are covered by Sections 12A, 12AA and 12B of the Reservoirs Act, as amended by the Water Act 2003 and the Flood and Water Management Act 2010. Although, there is no legal requirement under the Reservoirs Act, some owners may have prepared them anyway.

Off-site plans come under the Civil Contingencies Act, and reservoirs are one of a range of hazards that an LRF may consider. LRF 's have the discretion to either make specific plans for any reservoirs in their area or cover reservoir flooding with a generic plan. Some Local Authorities were funded to prepare off-site emergency plans for the 100+ highest priority reservoirs in England and Wales as identified by Defra.

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[10] Civil Contingencies Act 2004 (Contingency Planning) Regulations 2005 http://www.legislation.gov.uk/uksi/2005/2042/pdfs/uksi_20052042_en.pdf and Explanatory Memorandum http://www.legislation.gov.uk/uksi/2005/2042/pdfs/uksiem_20052042_en.pdf

[11] Civil Contingencies Act 2004 (Contingency Planning) (Amendment) Regulations 2012 http://www.legislation.gov.uk/uksi/2012/624/pdfs/uksi_20120624_en.pdf

[12] The full text of the Reservoirs Act 1975 http://www.legislation.gov.uk/ukpga/1975/23/pdfs/ukpga_19750023_en.pdf

[13] Various information on the Reservoirs Act 1975 and reservoir safety on the Environment Agency's website http://www.environment-agency.gov.uk/business/sectors/118421.aspx

[14] The full text of the amendments in Schedule 4 of the Flood and Water Management Act 2010 http://www.legislation.gov.uk/ukpga/2010/29/schedule/4

# Flood and Water Management Act 2010

The **Flood and Water Management Act 2010**[15] (the Act) provides for better, more comprehensive management of flood risk for people, homes and businesses, helping to safeguard community groups from unaffordable rises in surface water drainage charges and protecting water supplies to consumers.

In terms of emergency planning, while the CCA establishes a clear set of roles and responsibilities for those involved in emergency preparation and response at the local level, the Flood & Water Management Act (2010) outlines responsibilities in terms of planning. Lead Local Flood Authorities, which include County Councils, Metropolitan and Unitary Councils, have responsibility for the management of local flood risk, which includes surface runoff, groundwater and flooding from ordinary watercourses (smaller rivers and streams). To discharge these responsibilities they work with District Councils in their area and other important partners.

## Specific roles in managing surface water flooding

Flooding from surface water happens when the local drainage system cannot cope with the rainfall. It is extremely difficult to predict precisely where surface water flooding will happen as it is dependent on ground levels, rainfall, and the local drainage network.

Historically the split in responsibilities between Local Authorities and water companies has meant that there has not been a common approach to the management of drainage systems in urban areas. As described above the Flood & Water Management Act (2010) has made roles clearer.

Under the **Flood Risk Regulations (2009)**[16] Lead Local Flood Authorities are also responsible for assessing, mapping and planning for local flood risk. Water companies and Lead Local Flood Authorities are working in partnership to manage surface water flooding.

The Environment Agency has a Strategic Overview role in England for all types of flooding. In fulfilling this role they are working with Local Authorities to help them develop the knowledge and understanding of the areas at risk of flooding from surface water. In responding to flooding where the Environment Agency does not take the lead i.e. surface water, groundwater and flooding from ordinary watercourses, where the Environment Agency have capacity outside of its core response, the EA would aim to support partners' response where they can. This would include attending command centres, providing equipment and assistance where available, or instigating response by providing valuable forecast information through the Flood Advisory Service

Since July 2009, surface water flooding maps have been available to Local Resilience Forums and Local Planning Authorities. A new flood map for surface water was published

[15] http://www.legislation.gov.uk/ukpga/2010/29/pdfs/ukpga_20100029_en.pdf
[16] http://www.legislation.gov.uk/uksi/2009/3042/pdfs/uksi_20093042_en.pdf

online in December 2013 and made available to Local Authorities, Local Resilience Forums and other partners; this is the primary national source of information on the risk of surface water flooding.  In some locations Local Authorities hold more representative local maps based on detailed local modelling; some of these local maps have been incorporated in the national map available online, and more will be incorporated as the national map is updated in future.

# Section 4: What emergency planners and responders can expect from central government

# What emergency planners and responders can expect from central government and who does what

Serious flooding emergencies require co-ordinated multi-agency responses, clear lines of demarcation and quick decision making – often by individual organisations but sometimes collectively. Central government departments, and their agencies, contribute to those multi-agency responses but have different roles to play, based on their policy responsibilities, expertise, experience and powers.

This section of the National Flood Emergency Framework is designed to help emergency planners and responders understand the division of responsibilities within central government and its agencies and to help you to know where to go for information, advice and assistance.

# What emergency planners and responders can expect from central government by Department

National flooding emergencies require central government to work singularly and collectively. Collectively, the overall strategic objectives of the government's involvement are to ensure that it will:

- react with speed and decisiveness;
- respect local knowledge and decision-making wherever possible, without losing sight of the national strategy;
- prioritise access to scarce national resources;
- use data and information management systems to gain a national picture and support decision making without overburdening front-line responders;
- base policy decisions on the best available science and ensure that the processes for providing scientific advice are widely understood and trusted;
- draw on existing legislation to respond effectively to the event, and consider the need for additional powers;
- apply risk assessment methodology and cost benefit analysis within an appropriate economic model to inform decision-making;
- work with international partners to share information and request assistance if necessary; and
- explain policies, plans and practices by communicating with interested parties (including the public) comprehensively, clearly and consistently in a transparent and open way that addresses national and local concerns while encouraging and listening to feedback.

## Defra as the Lead Government Department for flooding

Within UK central government, departments deliver their responsibilities (generally through local agencies) and are accountable to Parliament for their effective delivery. This includes effectively managing emergencies that fall within their responsibilities. One Department –

the Lead Government Department (LGD) - usually takes overall responsibility for assessing the situation, ensuring that Ministers are briefed, handling media and parliamentary interest, and providing co-ordinated policy and other support as necessary to local responders. Other government departments will provide support to the LGD to ensure a co-ordinated response; however, individual departments will remain responsible, including to Parliament, for their particular policy areas.

Defra is the Lead Government Department for flood emergencies in England. The Cabinet Office document, **The Lead Government Department and its role – Guidance and Best Practice**[17]**,** sets out the requirements for handling an event.

**Figure 4.1: Role of the Lead Government Department**

| **Role of the Lead Government Department** |
| --- |
| **Maintain a state of readiness.**<br><br>This entails:<br><br>• building up the Department's resilience to shocks and its capacity to lead the response;<br><br>• identifying and maintaining the capabilities that local responders and those at each level of crisis management can call upon;<br><br>• maintaining press/public information contacts, so that the Department is in a position to effectively co-ordinate the press/public information effort during a crisis;<br><br>• planning for and leading negotiations with the Treasury for any necessary additional funds; and<br><br>• keeping aware of the changing set of risks, threats and vulnerabilities which bear upon its fields of responsibility. |
| **Move into action immediately as an emergency arises and where central government co-ordination is required**<br><br>This entails:<br><br>• acting as the focal point for communication between central government and the multi-agency strategic co-ordinating group(s) on the ground;<br><br>• producing a brief, accurate situation reports on the nature and scale of the emergency and a handling plan; |

[17] https://www.gov.uk/government/uploads/system/uploads/attachment_data/file/61355/lead-government-departments-role.pdf

- drawing upon and applying the relevant capabilities applicable to the emergency in hand;
- taking whatever executive decisions and actions are needed from the centre to handle the emergency or to help the local responders to deal with it;
- acting as the focal point for information flows;
- co-ordinating and disseminating information for the public and the media at the national level;
- accounting to Parliament and leading in the submission of evidence to any subsequent government-appointed inquiry; and
- learning and sharing the lessons from the emergency.

In line with the arrangements for application of the central government machinery, Defra will normally co-ordinate the cross-government response to lower level national flooding events (serious – level 1 (see section 2)) and will handle it within the Department. Level 2 events (significant) will still be co-ordinated by Defra but through COBR. More serious events (level 3 - catastrophic) will be fully escalated to central co-ordination by the Civil Contingencies Secretariat, with Defra support, within COBR.

Defra maintains a 24 hour a day, 7 day a week system duty rota for receiving reports of possible or actual flooding, with close working between the Defra Duty Officer, the Flood Forecasting Centre and the Environment Agency. Defra's permanent emergencies team takes the lead when serious flooding is imminent or has already happened (in the event of unexpected severe weather for example) and maintains close liaison with the Environment Agency's 24/7 National FCRM Duty Manager.

Defra has a dedicated Emergency Operations Centre (EOC) located in London, with permanently available IT and communications capabilities.

As well as having a Lead Department role, Defra staff must also consider the impacts of a potential or actual flooding emergency on wider Defra policy interests, including animal welfare, farm businesses, countryside access, water supply, rural communities and waste. Defra has responsibilities for key infrastructure and industry in the form of the water industry and agriculture. So it is important that all relevant policy leads in Defra are engaged in the emergency response to:

- assess the impact of the flooding for their policy area;
- discharge their normal policy and regulatory responsibilities throughout the response to the emergency;
- co-ordinate their response activities with stakeholders both inside and outside Defra;
- disseminate information about their specific activities; and
- contribute to cross-Defra co-ordination.

An important aspect of any flooding event is the closure of emergency operations. Defra (and other government departments) will begin to scale down their involvement in the response as soon as Ministers are satisfied that it is prudent to do so. This is likely to depend on:

- the immediate emergency having passed;
- satisfactory cross-government recovery arrangements;
- adequate local resources to manage the situation; and
- formal arrangements in place to learn lessons from the floods.

The Department for Communities and Local Government is the Lead Government Department for flood recovery (see separate entry later in this section).

Another important aspect of Defra's Lead Department role is to ensure that flood emergency management processes are exercised at an appropriate frequency.

The following table provides a summary of what you can expect from Defra.

**Figure 4.2: What emergency planners, responders and government can expect of Defra**

| Stage | Defra actions |
|---|---|
| **Preparing for flooding** | • Ensuring that structures and resources are in place so that that the Flood Management team and other parts of Defra can play their part in responding to a flooding event.<br>• Encouraging Local Resilience Forums (LRFs) to prepare appropriate emergency plans for flooding and providing guidance.<br>• Ensuring central government has appropriate national planning assumptions for flooding.<br>• Planning and participating in emergency exercises.<br>• Every Friday to provide weekly reviews of readiness/risk on behalf of the Secretary of State |
| **When flooding is forecast** | • Using Flood Forecasting Centre, Environment Agency and Met Office information to anticipate events (and their likely scale) as far as possible – and, on that basis, raise levels of preparedness in central government. Where possible the transfer from a state of readiness to taking action will be prompted by the Flood Forecasting Centre arranging a National Flood Advisory Service teleconference. This normally involves Defra, Cabinet Office, Met Office, FFC, Environment Agency and DCLG. Other government Departments may also be invited. This early opportunity to assess the threat may then lead to Defra arranging a Lead Government Department |

| | |
|---|---|
| | teleconference or taking a watching brief.<br>• Initiating communications across central government, including press offices and providing situation reports. |
| **When flooding happens** | • Advising Defra Senior Management, Ministers, other government departments and agencies on the developing scale of events.<br>• Ensuring effective communications with Parliament, the news media and others.<br>• Collecting briefing on the impacts of the flooding on all interests.<br>• Working with Cabinet Office on escalating or de-escalating the central government response.<br>• Co-ordinating the cross-government and multi-agency response to the flooding.<br>• Facilitating Ministerial and other VIP visits to the affected areas.<br>• Ensuring that clear responsibilities are established for overseeing recovery and aftermath issues. |
| **When flooding subsides** | • Liaising with the Department for Communities and Local Government (CLG) on recovery matters.<br>• Advising on follow-up Ministerial/VIP visits.<br>• Ensuring arrangements are in place for identifying any lessons to be learned. |

## Met Office

The Met Office is the official source of meteorological information in the UK. With a resilient 24/7 capability it provides a number of services that help authorities prepare for, and respond to, flood emergencies, primarily the National Severe Weather Warning Service (NSWWS).

The Met Office will provide briefings on the meteorological situation to government (including COBR when activated – see section 2) as required with a team of regionally based Civil Contingencies Advisors – formerly Public Weather Service (PWS) (Advisors) - available to work with the emergency planning community to:

- discuss predicted or ongoing severe weather events to help emergency responders assess the risk in their particular area and put preparations in place to mitigate the impacts;
- ensure emergency management teams are aware of all other meteorological factors which could affect the incident and their potential impact;
- ensure the consistency of meteorological information and that all responders within the Command and Control Centre use this information;
- interpret this information for the responders where required;

- source other scientific advice available from the Met Office and act as a point of contact between the Met Office and the responders, thereby freeing up the responders' resources and allowing them to focus on incident management; and
- if required and appropriate, arrange for routine forecasts and other information to be supplied to aid the recovery phase.

Weather information and the National Severe Weather Warning Service are available to the public through the Met Office website, television broadcasts and social media channels.

The Met Office also provides Hazard Manager, which is a free-at-point-of-use service, designed mainly for Category 1 and 2 responders to aid the work of incident management teams in dealing with a variety of environmental emergencies, including flooding. The service is designed to supplement the role of the Met Office Advisors (Civil Contingencies) in providing consistent weather related information and guidance for the UK Emergency Response community.

See Section 5 for details on Hazard Manager.

## Environment Agency

The Environment Agency is the principal flood and coastal risk management operating authority in England. With particular regard to flood emergency planning, through the Flood and Water Management Act 2010, the Environment Agency will:

- communicate the risk of flooding (using campaigns, community engagement events, multiple media channels including social media, media releases, radio and television interviews, as well as the direct issue of flood warnings to over 1 million homes and businesses) to increase the awareness of people living, working and travelling in river and coastal flood risk areas so that they can take steps to prepare themselves and their properties for flooding;
- work with civil contingency partners and critical national infrastructure operators to help them understand the risk of flooding in their locality, by providing flood data and mapping and to help them to develop incident response plans (inc. multi-agency flood plans) where required;
- alert and engage LRF partners to actual flooding (including calling Local Flood Advisory Service telecons or joining precautionary/severe weather telecons called by partners), attend response and recovery SCGs/TCGs (Gold/Silver) with appropriately trained personnel;
- work with spatial planners and advise developers on improving the development of locations so that flood resistance, resilience and safe access and escape are put in place;
- provide and develop flood forecasting and warning services, currently for fluvial and coastal flooding and in some areas groundwater flooding, so that prior notice of flooding can be provided to civil contingency partners, business and the public;
- deploy with partners temporary flood defences where impacts can be mitigated;
- operate its flood defences for rivers and the coast so that protection from flooding can be put in place; and

- provide operational support to other organisations where resources allow.

## Flood Forecasting Centre

The Flood Forecasting Centre (FFC) is a partnership between the Environment Agency and the Met Office, combining the organisations' meteorology and hydrology expertise to forecast for river, surface water, coastal and groundwater flood risk at a LLFA level.

With a dedicated 24/7 team based in one national centre, the FFC provides the best possible intelligence and support to existing Environment Agency and Natural Resource Wales flood warnings and the Met Office National Severe Weather Warning Service (NSWWS). By combining knowledge and experience, the FFC has improved the ability to deliver countrywide longer lead time flood guidance and more accurate, targeted information to Category 1 and 2 responders. This will provide people in areas at risk of flooding with more time to protect themselves and their homes from the impacts of flooding. The FFC is responsible for arranging (with Defra) a National Flood Advisory Service teleconference, as summarised in Table 4.2. This is used to trigger escalation from a state of readiness, to one of taking action.

More detailed information on flood prediction tools is included elsewhere in the National Flood Emergency Framework. However, the following provides a summary of the FFC's main services.

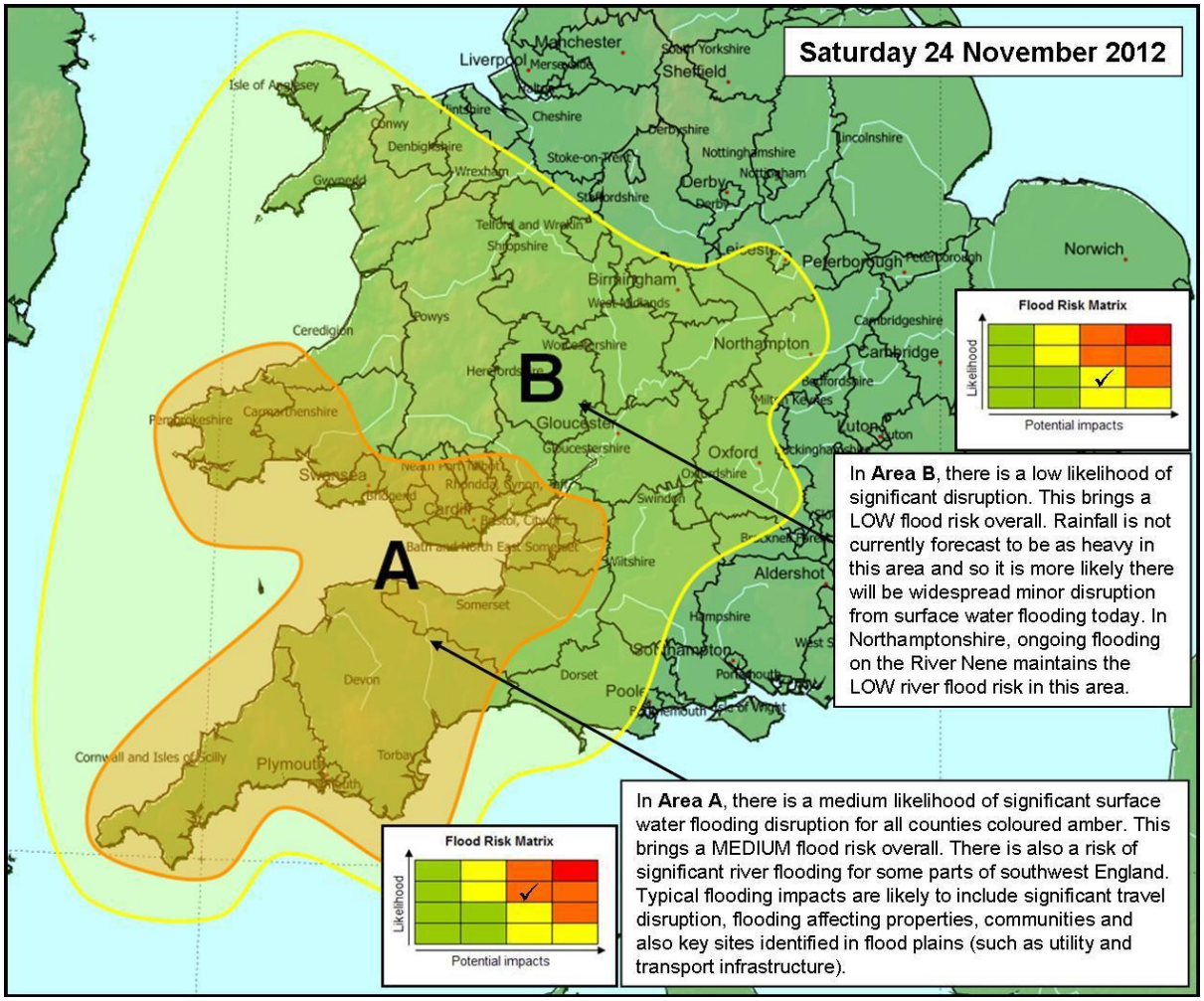
*The Flood Guidance Statement (FGS)* – this provides a daily flood risk assessment for Category 1 and 2 emergency responders to assist with strategic, tactical and operational planning decisions. This assessment of flood risk is shown by county across England and Wales over five days. It identifies developing situations that could cause flooding, threaten communities and pose a risk to lives. The FGS assesses the risk for all types of natural flooding – coastal, tidal, river, groundwater and surface water flooding.

It presents a collated assessment by the Flood Forecasting Centre (FFC) and the local Environment Agency and Natural Resources Wales flood forecasting teams. The FGS presents our best combined understanding of risk based on weather forecasts, flood forecasts, catchment conditions and operational status of flood defences.

During 2011-2012 improvements were made to the FGS and the underpinning forecasting of surface water.

Further enhancements to the FGS include the area of concern maps with separate flood risk matrices focusing on regional, and when possible, local detail. An example is shown in Figure 4.1.

**Figure 4.1: FGS area of concern map**




The FGS is issued by the FFC every day at 10:30am. It is also issued at other times through the day and night, if the situation warrants and/or the flood risk changes.

A Flood Guidance Statement User Guide will help customers interpret the information and put it into relevant context.

The centre operates a 24/7 service where it is possible to discuss the FGS. It is also possible to contact Environment Agency or Natural Resources Wales Flood Resilience Teams or Met Office Advisor (civil contingencies) for information on the local situation.

Category 1 or 2 responders can register online to receive daily Flood Guidance Statements[18].

## Department for Communities and Local Government

During a major incident, the Department for Communities and Local Government (DCLG) will provide a government liaison officer and support team as required. They will attend the local SCG on behalf of the Lead Government Department (Defra) and represent the interests of other Departments as required. They will act as a conduit for information

[18] www.ffc-environment-agency.metoffice.gov.uk

(including situational awareness) between central government departments and the local area.

These staff can provide particular support in relation to consequence management - where the scale and nature of a flooding incident is such that the effects are likely to be felt outside the immediate locality or may overwhelm the local response. They work closely with other government departments and can help local responders to ensure that a coordinated and coherent message is given to the public.

DCLG also has a key role in co-ordinating Fire Service Assets at a National Level. Catastrophic and large scale incidents place significant demands on local Fire and Rescue Services and have often required a national co-ordinated response from across the country. The **National Co-ordination and Advisory Framework**[19] (NCAF) provides support and advice to the Fire and Rescue Services and central government during incidents that are of national significance and/or require national co-ordination.

DCLG's Chief Fire and Rescue Adviser (CFRA) will be responsible for the co-ordination and advisory framework structure during incidents of national significance and/or require national co-ordination.

During activation the DCLG Operations Centre will be considered as the hub of the NCAF arrangements and will provide support for the Chief Fire and Rescue Adviser (CFRA) and the DCLG Resilience Team.

Where co-ordination and communication is required over a number of local resilience forum areas then DCLG (either at its own request or at the request from partners / LGD) may decide to convene a Response Co-ordinating Group (Res CG). This meeting will invite affected areas to participate and provide advice on co-ordination and communication. DCLG has a specific role in the recovery phase from a flood emergency and where central government co-ordination is required, DCLG will take on the role of Lead Government Department for flood recovery. In this role DCLG will:

- act as the focal point for communication between central government and the multi-agency recovery co-ordinating group(s) at local level;
- agree, across government, clear aims and objectives for the recovery process, including criteria for standing down recovery mechanisms and structures;
- ensure that recovery issues are identified and acted on during the response phase of an emergency and that there is a smooth and effective handover from response to recovery;
- produce brief, accurate situation reports on the nature and scale of the emergency;
- produce a handling plan as soon as possible;
- draw upon and apply the relevant capabilities applicable to recovery from the emergency in hand and, if required, co-ordinate the support needed from other government departments and agencies through COBR;

[19] https://www.gov.uk/government/uploads/system/uploads/attachment_data/file/7629/opguidancencaf.pdf

- use its authority decisively to take whatever executive decisions and actions are needed from the centre to help the local responders to deal with it;
- co-ordinate and disseminate information for the public and the media at the national level, collaborating with other government departments and the Civil Contingencies Secretariat;
- account to Parliament and lead in the submission of evidence to any subsequent government-appointed inquiry; and
- learn and share the lessons from the emergency.

## Department of Health

In the event of a widespread flood emergency, the Department of Health (DH) will initiate and direct the government health response, providing specialist advice and information to Ministers, other government departments and responding organisations. It will also be responsible for the effectiveness of the health response.

DH will coordinate the health response during a flooding incident by working closely with:

- NHS England to provide assurance that local NHS responders have the capacity and resources to deal with any surges and changes to an NHS organisation's routine activity as a result of flooding;
- Public Health England (PHE) to ensure that public health messages during a flooding incident are communicated consistently to all health professionals and the general public in the affected locations, and ensure that monitoring and reporting of infectious disease as a result of flooding is reviewed, accessing PHE expert advice as needed. (Further details on PHE's role are set out below); and
- the social care sector by working with DCLG, to understand the impact on social care services, to enable DH ministers in their role as stewards of the system, to take policy decisions as appropriate. If necessary, DH may also have a role to coordinate (in conjunction with DCLG and Local Authorities) national activity, for example identifying capacity or developing best practice guidance.

## Public Health England

Public Health England (PHE) provides specialist health protection, epidemiology and microbiology services across England (UK-wide for aspects of chemical and environmental hazards). Two of PHE's core functions[20] are directly related to national flooding emergencies: to protect the public's health from infectious diseases and other hazards to health; and to improve the public's health and wellbeing, and reduce health inequalities.

PHE provides national leadership and expert advice to support the local NHS and Directors of Public Heath in Local Authorities who are responsible for the health of their populations. PHE does this by providing evidence and knowledge on local health needs,

[20] Public Health England: Our priorities for 2014/15 https://www.gov.uk/government/organisations/public-health-england/about#priorities.

alongside practical and professional advice on what to do to improve health, and by taking action nationally where it makes sense to do so.

PHE also ensures there are effective arrangements in place nationally and locally for preparing, planning and responding to health protection concerns and emergencies, including the future impact of climate change. PHE is working with the Department of Health, Department for Environment, Food and Rural Affairs and other colleagues across government to address actions in the Healthy and Resilient Communities chapter (Chapter 4) of the National Adaptation Programme (NAP).

Under the Civil Contingencies Act 2004, PHE is responsible to the Secretary of State for Health as a Category 1 Responder in the event of a national emergency. PHE has developed guidance, templates and tools for key roles, responsibilities and processes required in the activation, escalation and de-escalation of health protection incidents related to flooding, such as infectious disease outbreaks or chemical hazards. During health protection incidents, PHE is legally obligated to provide the following emergency response measures:

- Risk assessment
- Maintenance of a risk register
- Planning arrangements for prevention of emergencies and response to emergencies
- Planning arrangements for Business Continuity Management
- Warning and informing
- Sharing information
- Co-operation with partner agencies (planning, response and recovery).

With respect to proactive, long-term initiatives to reduce vulnerability to flooding, PHE will promote, protect and advocate for public health and wellbeing by:

- Developing and maintaining key relationships with Health and Wellbeing Boards, Local Authorities, local resilience fora, local health resilience partnerships, NHS commissioners and the providers of public health services from the public, third and independent sector to support the delivery of improved outcomes for the public's health;
- Highlighting the need to consider the risk of flooding arising from the impact of local planning and spatial design decisions and encouraging systematic review of these risks using Health Impact Assessment as appropriate;
- Monitoring indicators from the Public Health Outcomes Framework, several of which may be linked to flooding episodes;
- Researching, collecting and analysing data as well as reviewing and sharing evidence and knowledge about the public health impacts of flooding and how to prevent and mitigate such impacts;
- Working with partners to promote and protect the public's mental health and wellbeing as an integral part of the overall response to a flooding emergency; and
- Providing leadership and expertise in public health crisis communication during emergencies, including the provision of a 24/7 service to the media at national and regional level.

## Department for Transport

The Department for Transport (DfT) works with transport infrastructure owners and operators to facilitate contingency planning for natural hazards such as extreme weather events. Flooding is a high likelihood risk with potentially significant impacts on transport networks. Planning for flooding events is therefore a priority for most transport owners and operators.

Scientists predict that flood risk is likely to increase over time as the UK experiences changes in weather patterns from gradual changes in our climate. All transport modes are engaged in long term planning for flooding via the National Adaptation Programme (July 2013).

### Highways Agency

The Highways Agency (HA) is responsible for operating, maintaining and improving England's strategic road network on behalf of the Secretary of State for Transport.

The HA emergency planning team has contingency plans to identify high flood risk areas on the Strategic Road Network (SRN). They have an ongoing programme of work to provide mitigation measures, such as turnaround points on motorways to allow road users to exit the SRN in a severe flood. HA Emergency Planners work with Local Resilience Forums across the country to develop response strategies for flood events and participate in incident response exercises.

The HA is a Flood Risk Management Authority as defined by the Flood and Water Management Act 2010 and has responsibility for:

- exercising its flood risk management functions in a manner consistent with the National Flood and Coastal Erosion Risk Management Strategy and guidance; and
- co-operating with other Risk Management Authorities in the exercise of their functions.

### Local Roads

Local Highway Authorities (LHA) and Local Resilience Forums (LRF) are responsible for implementing contingency plans for flood events. LHAs and LRFs work with the Department for Communities and Local Government Resilience Emergency Division in initial flood response. LHAs have plans to fund repairs to flood-damaged roads. DfT would only consider offering assistance in the most extreme circumstances. Chapter 6 of this Framework illustrates such multi-agency planning.

### London Transport

Transport for London (TfL) is a partner in the pan-London multi-agency response to flooding events. TfL personnel would be engaged at operational, tactical and strategic levels of the multi-agency incident command. TfL is responsible for contingency planning for its services and infrastructure and it works in partnership with other category 1 and 2 responders and is a member of the London Resilience Forum.

### Rail

The UK rail network is owned and operated by Network Rail with trains owned and operated by Train Operating Companies (TOCs). Network Rail has primary responsibility for flood protection of rail infrastructure and has plans and procedures in place to manage events such as floods. Network Rail is implementing schemes to improve flood resilience and recovery times for unavoidable floods at critical locations on the network, within the framework of its Weather Resilience and Climate Change Programme. If an incident is severe and impacts the surrounding environment Network Rail has plans for working with stakeholders including TOCs and the Environment Agency. The TOCs are responsible for managing impacts of flooding incidents on their services. The industry as a whole, under the leadership of the National Task Force, is also working together to ensure that actions for the rail sector arising from Richard Brown's Transport Resilience Review are being taken forward within or alongside the Resilience Programme.

### Aviation

Airport owners and operators are predominantly private sector organisations. They are responsible for developing resilience plans to manage impacts from weather related natural hazards. Most UK airports are located at high elevations and on well drained sites so flooding is considered reasonably low risk. However, Flood Management Strategies are included in airport resilience plans to manage flood risks to physical infrastructure. Airport operators liaise with Local Authorities, the Environment Agency and weather forecasting services to monitor flood risks. DfT Aviation and Civil Contingencies officials maintain regular contact with airport operators to discuss their flood management strategies.

### Maritime

UK ports are predominantly owned and operated by private companies who are responsible for the planning and recovery of events such as floods. The DfT is working with port stakeholders to investigate the potential implications of a tidal surge on UK ports. DfT has developed 'Deep Port', a maritime resilience mapping data base to assist contingency planning for adverse events including floods.

## Department for Business, Innovation and Skills

The Department for Business, Innovation and Skills (BIS) engages with the telecommunications and postal services industry to ensure they have adequate plans in place to respond to an emergency. For flood related emergencies affecting these sectors, BIS will feed into the Government response and act as a communication channel between these industries and Central Government.

## Department of Energy and Climate Change

The Department of Energy and Climate Change (DECC) works closely with the energy sectors (upstream & downstream oil and gas and electricity) to ensure that industry recognises the impact a flooding emergency would have on the UK and to ensure they have plans in place to deal with such situations, so that any disruption to consumers is

minimised. Should it become necessary due to the severity or consequential impact of the emergency DECC and industry, in consultation with other stakeholders, could introduce a range of measures including those set out in the National Emergency Plan for Downstream Gas and Electricity (NEP-DGE) and National Emergency Plan for Fuel (NEP-F) to help ensure the maintenance of essential supplies and services, in the event of disruption to energy supplies. It should be noted however that these emergency plans should not be utilised for business continuity purposes, given that we would expect robust business continuity plans to be in place.

In general terms, companies are responsible for the operational management of incidents impacting on supplies and although major supply emergencies can occur either very suddenly or as a result of a developing situation, it is highly likely that companies will have taken independent action to mitigate and manage incidents before government becomes involved.

In the event of a major emergency DECC is responsible for providing the interface between industry and central government. DECC could also have a role to play in the use of emergency powers that are available to the Secretary of State.

At the local level, if the flooding incident impacted on gas or electricity supplies, the Gas Distribution Network (GDN) and/ or electricity Distribution Network Operator (DNO) would normally liaise directly with the local 'Gold Command' for consequence management, usually through the utilities sub-group, and with the Local Resilience Forum for planning purposes.

## Ministry of Defence

Although no responsibilities are placed on Defence under the Civil Contingencies Act in the event of a civil crisis, the MOD recognises that it may receive requests for assistance in the event of a crisis beyond the capability or capacity of the civil authorities. All requests for military support that receive Ministerial approval will be provided at best effort, within the limits of resources available at the time, balanced against core military tasks and will attract marginal costs(unless there is an immediate risk to life).

**Defence Capabilities for Civil Emergencies**

- **Niche Capabilities:** Defence provides specific, niche capabilities that already form part of normal UK resilience operations, such as Search and Rescue (SAR) and Explosive Ordnance Disposal (EOD). There are additional niche capabilities that Defence could offer that may not be readily available from other sources, such as geographical support and air surveillance.
- **Augmentation:** Resilience planners should not place any reliance on Defence support as it may not be available at the time and should always be considered as a last resort. In the event of a flood emergency, the MOD would expect to receive requests for:
    - **General manpower.** Tasking such as erecting flood defences, assisting population evacuation, traffic control, assisting at police safety or security cordons, etc.

    - **Logistics support.** Tasking such as food and water distribution, provision of transport and/or drivers, support to rest centres, etc.
    - **Engineering.** Civil, electrical and mechanical engineering support including the provision of chartered engineers to provide advice at SCG/TCG level. This can include provision of temporary bridging and all manner of infrastructure repair.

- **Liaison:** In the event of a crisis the MOD will place Military Liaison Officers (MLO) within key co-ordination groups such as Gold and Silver commands. These will be managed by the Joint Regional Liaison Officer (JRLO) of the Army Regional Brigade within whose region the incident has occurred. MLOs should be used in the first instance at the local level for advice on Defence capability.

## National emergency management: working with the devolved administrations

The balance of activity between UK central government and the devolved administrations will depend on the nature of the emergency and the terms of the devolution settlements, that being:

- whether the incident affects Scotland, Wales and/or Northern Ireland; and
- whether the response to the emergency includes activity within the competence of the administration.

The devolved administrations will mirror many of the tasks of the UK central crisis mechanism as well as fulfilling the same tasks as the English regional structures. In every case, the precise balance of activity will depend on the competence of the devolved administration involved (i.e. the terms of their devolution settlement) and the nature of the incident.

If the emergency takes place in Scotland, Wales or Northern Ireland and relates to a devolved matter, the devolved administration will be the nominated Lead Government Department. Flooding is a devolved matter. If the emergency occurs in England but has cross-border implications for devolved issues the relevant devolved administration will lead on this aspect in their territory and provide advice and support as necessary to the UK government so that effects can be understood and potential mitigation measures considered.

# Section 5: Tools for flood emergency planners and responders

# Overview

One of the most difficult tasks for emergency planners and responders is knowing when to act. In the case of flooding, there are a number of factors that you need to take account of. It is inevitable that a degree of judgement will be needed.

However, the extent to which flood emergency planners and responders need to apply judgement has declined. Since April 2009, the Flood Forecasting Centre has provided a hub of hydrometeorological expertise to deliver flood risk assessments. This information is brought together by an operational hydrometeorologist who works with the Chief Forecaster at the Met Office, drawing on intelligence on catchment conditions from the Environment Agency Areas and Natural Resources Wales. The Environment Agency's Flood Advisory Service, details of which can be found in this section, helps planners and responders interpret flood forecasts and warnings, and make informed decisions about their flood response.

**Figure 5.1: Decision support – overview of products to consider**

| Product | Delivered by | Relevant to which types of flooding? | Importance |
|---|---|---|---|
| **Daily Flood Guidance Statements** | Flood Forecasting Centre | All | High – trigger for preparation and action |
| **Public Flood Warnings** | Environment Agency | River, coastal and some groundwater | High – trigger for action |
| **National Severe Weather Warning Service (NSWWS)*** | Met Office | All | High – keep watch and trigger for preparedness |
| **River and sea levels on the internet** | Environment Agency | River and coastal | Medium – keep watch |
| **Targeted Flood Warning Service** | Value Added Resellers with EA data | River and coastal | High – keep watch, trigger for preparedness and action (for Cat 1 and 2 services) |
| **Highways Agency website** | Highways Agency | All | Low – consequence of flooding |
| **Rail disruptions** | National Rail Enquiries | All | Low – consequence of flooding |

* NSWWS does not specifically warn for flooding, however some weather elements such as rain and strong winds could result in flood impacts, which will be warned for.

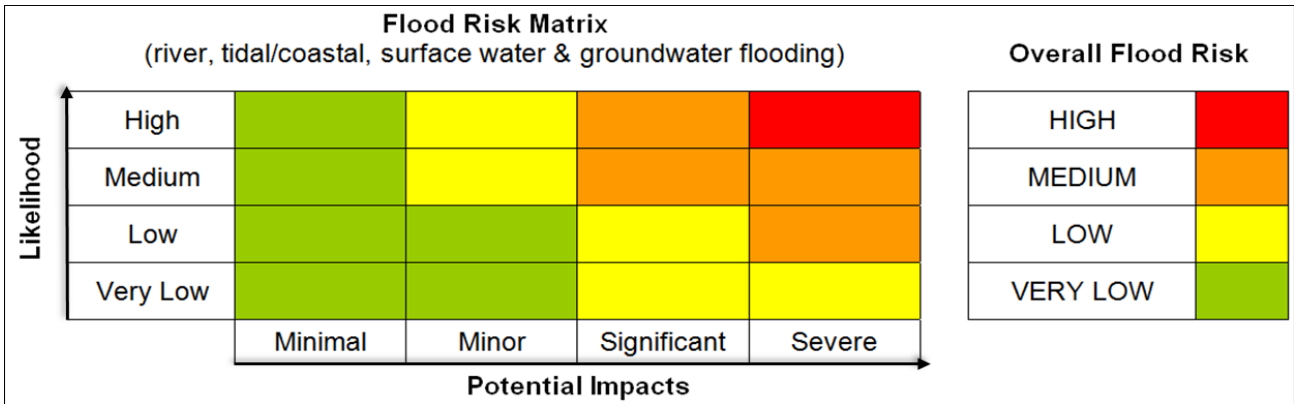
# Daily Flood Guidance Statements: vital information for flood emergency planners and responders

The Flood Forecasting Centre (FFC) issues daily Flood Guidance Statements that provide information for Category 1 and 2 responders to help them with their emergency planning and resourcing decisions. It gives an overview of the flood risk across England and Wales over five days, identifying possible significant weather, that could cause flooding and disruption to normal life.

The FGS is issued by the FFC every day at 10:30am. It is also issued at other times through the day and night, if the situation warrants and/or the flood risk changes.

Flood Guidance Statements present an assessment of the likelihood and impact of flooding. This is based on meteorological information, an understanding of the situation across river and groundwater dominated catchments and the coast, and the sensitivity to surface water flooding. The flood risk matrix shown in Figure 5.2 underpins this assessment.

**Figure 5.2 Flood risk matrix and flood impacts**




| Flood Impacts Table | | | |
|---|---|---|---|
| **Minimal Impacts** | **Minor Impacts** | **Significant Impacts** | **Severe Impacts** |
| • Generally no impact, however there may still be:<br>○ Isolated and minor flooding of low-lying land and roads;<br>○ Isolated instances of spray/wave overtopping on coastal promenades; and<br>○ Little or no | • Localised flooding of land and roads – risk of aquaplaning.<br>• Localised flooding could affect individual properties.<br>• Individual properties in coastal locations affected by spray and/or wave | • Flooding affecting properties and parts of communities.<br>• Damage to buildings/structures is possible.<br>• Possible danger to life due to fast flowing/deep water/wave overtopping/wave inundation. | • Widespread flooding affecting significant numbers of properties and whole communities.<br>• Collapse of buildings/structures is possible.<br>• Danger to life due to fast flowing/deep water/wave overtopping/wave |

| | | | |
|---|---|---|---|
| disruption to travel although wet road surfaces could lead to difficult driving conditions. | overtopping.<br>• Localised disruption to key sites identified in flood plans (e.g. railways, utilities).<br>• Local disruption to travel – longer journey times. | • Disruption to key sites identified in flood plans (e.g. railways, utilities, hospitals).<br>• Disruption to travel is expected. A number of roads are likely to be closed. | inundation.<br>• Widespread disruption or loss of infrastructure identified in flood plans (e.g. railways, utilities, hospitals).<br>• Large scale evacuation of properties may be required.<br>• Severe disruption to travel. Risk of motorists becoming stranded. |

Floods are difficult to forecast since the expected weather is just one factor. To identify and assign the risk level, the FFC takes into account an assessment of:

- the probability of a severe or hazardous weather event occurring (very low <20%, low 20-40%, medium 40- 60%, high 60% or greater);
- recent weather conditions – whether the event is shortly after an earlier period of prolonged rain or other high impact weather;
- indicative knowledge about the condition of the catchments within the areas at risk – how saturated the catchments are, how high the rivers are and the underlying conditions;
- spatial and temporal extent– whether it is expected to be short and localised or will affect a large geographical area over several hours;
- timing– whether it coincides with a major sport, other outdoor activity, national holiday;
- impact of fluvial flow and spring tides – if a major fluvial event is being assessed, whether river outflow will occur at a period of high (spring) tides; or if a storm surge and large waves coincide with high (spring) tides;
- Groundwater levels; and
- Specific vulnerable locations.

Risk levels are agreed on a daily basis between the operational hydrometeorologist, the Chief Forecaster at the Met Office, Environment Agency and Natural Resources Wales via Monitoring and Forecasting Duty Officers

All Category 1 and 2 responders can register to receive the Flood Guidance Statement[21].

A **Flood Guidance Statement User Guide**[22] will help customers interpret the information they receive and put it into relevant context for their counties. Response activity should be informed by consideration of the severity of potential impacts in particular.

[21] www.ffc-environment-agency.metoffice.gov.uk
[22] http://www.ffc-environment-agency.metoffice.gov.uk/services/FGS_User_Guide.pdf

### Flood Guidance Statements and Surface Water

Surface water flooding happens as a direct result of intense or extreme rainfall. It differs from river flooding in that it can happen before water enters a river or watercourse, or where none exists. Advance warning is difficult as it can happen very quickly when the level of rainfall is more than drains can handle. The effects of its impact depend on local landscapes and local conditions such as the state of culverts and receiving ground conditions.

During 2011-2012 improvements were made to the Flood Guidance Statement and the forecasting tools to assess surface water flood risk.

This helps responders take the right action, and reduces the impact of surface water flooding, ultimately improving public safety and reducing disruption. Benefits include:

- impacts on road network, transport and associated services minimised;
- Local Authorities and utility companies better informed to manage their response to surface water flooding;
- staff and resources deployed and managed more effectively;
- equipment, such as sandbags and temporary defences, mobilised and deployed in advance; and
- communication teams better informed and prepared to handle media and public response.

## Public Flood Warnings

The Environment Agency operates a flood warning service in areas at risk of flooding from rivers and the sea, and some groundwater areas. If flooding is forecast, warnings are issued using a set of three easily recognisable codes.

The Environment Agency codes form part of its staged flood warning service. Flood alerts, warnings and severe flood warnings are issued directly from Floodline Warnings Direct as recorded messages, texts or emails to landlines, mobile phones or digital devices (See section 7 for more on Floodline Warnings Direct or FWD). They are targeted to specific areas and tell people the actions they should take All properties in flood warning areas are encouraged to sign up for this service. Floodline and the Environment Agency's pages on the .GOV.UK website contain up to date information on the situation.

Details of the service can be found in Annex B.

## Met Office severe weather warnings

The Met Office website includes public weather information and the National Severe Weather Warning Service (NSWWS**).** The NSWWS warns the community by providing warnings of severe weather which could cause disruption, for example transport difficulties, property damage or threat to life. The NSWWS alerts communities by providing

warnings of severe weather which could cause disruption, for example transport difficulties, property damage or threat to life. The NSWWS includes alerts and warnings for rain, snow and wind – all factors that can significantly affect flood risk. Alerts and warnings are colour coded using the same matrix that underpins the Flood Guidance Statement.

Further details of the National Severe Weather Warning Service can be found in Annex C.

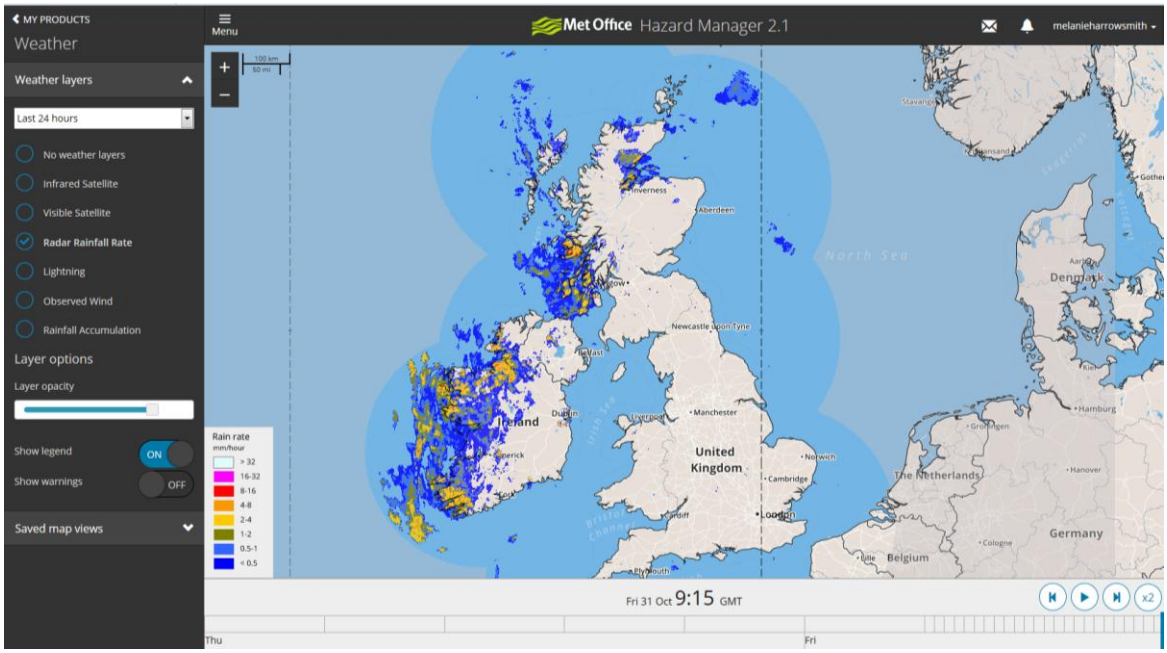
## Hazard Manager

Hazard Manager is a Met Office one-stop information source for the emergency response community, allowing access to all services in one location, using a single username and password. Hazard Manager provides:

- a one-stop information source which includes products such as the Flood Guidance Statement and National Severe Weather Warning Service and latest live weather information
- a password-protected web portal dedicated to Category 1 and 2 responders;
- improved visualisation and a map viewer;
- single user name and password to access all services;
- automatic password resetting; and
- individual login arrangements.

Anyone who works for a Category 1 or 2 responder organisations can access Hazard Manager (with some of the services restricted to approved users). Before you can access the service you will need to register[23].

**Figure 5.3: Hazard Manager, example display**




[23] http://www.metoffice.gov.uk/publicsector/hazardmanager/access

## River and sea levels on the internet

The Environment Agency pages on the .GOV.UK website provides emergency planners and responders with near real time information about river and sea levels at over 1200 sites across England.

The Environment Agency and Natural Resources Wales have monitoring stations across England and Wales that measure the level of rivers, lakes, the sea and groundwater. Most of the measurements are taken electronically and automatically sent to databases used by the Environment Agency's forecasting systems. These water level measurements for rivers and the sea are also sent straight to the EA website and published online. The information is updated daily during 'normal' conditions, and updated up to every 15 minutes during high flows.

Having up to date information on local water levels helps people living in flood risk areas to be better informed about the situation and decide what actions to take as the water levels change. This information also benefits people that use rivers for recreation such as anglers and boaters. It helps Local Authorities identify where raised water levels could result in problems with surface water flooding. It should be an important component of the information set that emergency planners and responders use to help inform decisions and actions when dealing with flooding from rivers and the sea.

The Floods section of the Environment Agency's pages on the .GOV.UK website includes links to river and sea level maps. Further information on this is available in Annex D.

## Decision support for flood planners and responders – Environment Agency National and Local Flood Advisory Service

The number and complexity of factors that flood planners and responders must pay attention to is significant and it is sometimes challenging to know when to activate your flood plan.

To address this, the Environment Agency operates a Flood Advisory Service for local partners. The service involves a joint teleconference chaired by a local Environment Agency representative, with the assistance of a Met Office Civil Contingencies Advisor where possible. This may be called, for example, when the Flood Guidance Statement is highlighted as low or medium flood risk (yellow or amber) or there is significant flood risk in your area. The service provides more co-ordinated and consistent information for partners on the current and forecast flood risk.

You can access full details of the Flood Advisory Service teleconference number and other important information from your local Environment Agency Area contacts or Met Office Civil Contingencies Advisor.

# Other tools: GOV.UK

Government and Environment Agency guidance can be found on GOV.UK. This provides a resource for civil protection practitioners, supporting the work which goes on across the United Kingdom to enhance our ability to prepare for, respond to, and recover from emergencies. The website includes the latest policy materials published by government in this area, and provides greater detail on some of the material included in this National Flood Emergency Framework. It has four main sections:

- the **Risk Assessment**[24] section has advice for practitioners on how to identify, monitor and address the most important risks to our national security. In this context, it includes information on the National Security Risk Assessment and the National Risk Register, and provides guidance for emergency responders and Local Resilience Forums.
- the **Preparation and Planning**[25] section provides information on how emergency planning work in the UK is organised and how government works to improve our preparedness for disruptive challenges. It also refers to the work of the Emergency Planning College in training those involved in this area, and the importance of reliable and resilient telecommunications when responding to emergencies.
- the **Response and Recovery**[26] section describes the lead role of local organisations in responding to emergencies, and how the UK central government response is organised in the more serious or complex emergencies. This section also refers to the part the National Recovery Guidance can play in recovering from the effects of an emergency.
- the **Building a Resilient Society**[27] section emphasises the importance of community resilience, business continuity and the infrastructure and corporate resilience programme in ensuring we are better prepared for and able to recover from emergencies, as well as the role that organisations beyond those with legal obligations can play in this area, with particular reference made to the work of the voluntary sector.

The Environment Agency made various flood related datasets available as Open Data in February 2014 to initially allow developers from technology companies like Google, Facebook and Twitter to combine with social media and other data feeds with the aim of creating innovative applications, helping those affected by the flooding.

The following datasets are now available as Open Data:

- Live Flood Warnings
- Flood Alert Areas
- Flood Warning Areas
- 3 Day Flood Forecast (the first 3 days from the FGS)
- River Levels

[24] https://www.gov.uk/risk-assessment-how-the-risk-of-emergencies-in-the-uk-is-assessed
[25] https://www.gov.uk/preparation-and-planning-for-emergencies-the-capabilities-programme
[26] https://www.gov.uk/browse/citizenship/government/emergencies-preparation-response-and-recovery
[27] https://www.gov.uk/government/policies/improving-the-uks-ability-to-absorb-respond-to-and-recover-from-emergencies/supporting-pages/building-a-resilient-society

# Other tools: ResilienceDirect

ResilienceDirect is a secure web-based platform which enables emergency planners and responders to work together – across geographical and organisational boundaries – during the preparation, response and/or recovery phases of an event or emergency. It is available to Category 1 and 2 Responders, government departments and Agencies, and other key organisations in the UK resilience community.

ResilienceDirect is capable of hosting information classified up to OFFICIAL – SENSITIVE, enabling users to collaborate, share information and coordinate activities in confidence and in adherence with government information handling requirements. It can be used for a variety of information-sharing purposes including the issue of the latest top-line briefs and updates, revised storm assessments and ResCG meeting arrangements. The mapping functionality within ResilienceDirect enables the drawing of cordons for evacuation and displays both national and local data sets, for example, overlaying weather information, flood alerts, pipelines, schools, nursing homes, chemical and nuclear facilities[28].

[28] For more information about Resilience Direct, please contact the Civil Contingencies Secretariat ResilienceDirect@cabinet-office.x.gsi.gov.uk.

# Part two: Being Prepared

**EA putting up temporary flood barriers in Caversham, November 2012. Photo courtesy of the Environment Agency**

# Section 6: The importance of multi-agency planning

## Planning for all

The government would like to see all organisations have effective, well-practised emergency plans in place – plans to reduce the risk of emergencies occurring; and plans to reduce, control or mitigate the effects of the emergency.

## Emergency planning at the UK government level

The National Resilience Capability Programme (NRCP) aims to build, co-ordinate and maintain the capability of the United Kingdom to respond to and recover from civil emergencies. It does this by building capability to deal with the consequences that are common to most types of emergency, regardless of whether those emergencies are caused by accidents, natural hazards or man-made threats. It includes capability to respond to large numbers of fatalities and casualties, to deal with chemical, biological, radiological or nuclear incidents, and means to maintain resilient telecommunications.

## Emergency planning at the local level

Emergency planning is at the heart of the civil protection duty on Category 1 responders under the Civil Contingencies Act 2004. The Act requires Category 1 responders to maintain plans for preventing emergencies; reducing, controlling or mitigating the effects of emergencies; and taking other action in the event of emergencies. These should draw on risk assessments and should have regard for the arrangements to warn, inform and advise the public at the time of an emergency.

Plans must contain a procedure for determining whether an emergency has occurred; provision for training key staff; and provision for exercising the plan to ensure it is effective. Procedures should also be put in place to ensure that the plan is reviewed periodically and kept up to date.

Category 1 responders should involve Category 2 responders - and organisations which are not subject to the Act's requirements - as appropriate throughout the planning process. Category 1 responders are required to have regard to the activities of relevant voluntary organisations when developing plans.

Category 1 responders also have a statutory duty to publish their emergency plans, to the extent necessary or desirable for the purpose of dealing with an emergency.

## Help with your multi-agency planning

Government has drawn up guidance for multi-agency flood planning, based on good practice from a range of existing plans, guidance and documents and lessons learned from real flooding events and exercises.

This guidance should be used by LRFs to undertake flood response planning, including recovery planning where it relates to flooding. It contains examples of how to set out the

various components of a flood plan, all of which have been drawn from current good practice in the UK. The guidance is provided to aid the preparation of a multi-agency flood plan, but should be a good source of information, advice and guidance for any individual business or agency looking to complete a flood plan.

The guidance is aimed at LRFs and the emergency plans that flow from it are normally designed specifically for LRF member organisations. But with removal of any sensitive and/or confidential information, those plans could be made suitable for wider or general publication, where LRFs wish to provide such public information.

The existing multi-agency flood planning guidance is currently under review by Defra, DCLG and the Environment Agency. The existing guidance is available in a separate document[29].

## Why have specific flood plans?

The Civil Contingencies Act 2004 requires Category 1 responders to have plans in place to respond to all emergencies. Emergency plans may take the form of either generic plans that describe a response to a wide range of possible scenarios (e.g. Local Resilience Forum (LRF) Incident Plan) or specific plans that deal with a particular kind of emergency (e.g. animal disease or Evacuation and Sheltering). Many LRFs will probably have both types depending on how emergency planning has evolved in the area. There may also be area-wide plans (e.g. at county-level) or site/local area specific plans (e.g. district, ward or parish).

For many parts of England and Wales, flooding poses a significant risk and is well-recognised within many Community Risk Registers. LRFs are encouraged to develop a specific flood plan to both complement other plans and to provide more detail to generic Major Incident Plans or Strategic Emergency Response Plans. The reason for having a specific flood plan is because of the complex nature of flooding and the consequences that arise, requiring a comprehensive and often sustained response from a wide range of organisations. The guidance is therefore geared toward helping LRFs to collectively develop a Multi-Agency Flood Plan.

## Focus your planning

Plans should focus on at least three key groupings of people: the vulnerable; victims (including survivors, family and friends) and responder personnel. The health sector, including local social care organisations, will be an integral part of ensuring that any plans take into account the needs of these groups.

Vulnerable people may be less able to help themselves in an emergency than self-reliant people. Those who are vulnerable will vary depending on the nature of the emergency, but plans should consider: those with mobility difficulties (e.g. those with physical disabilities or

[29] https://www.gov.uk/government/publications/the-national-flood-emergency-framework-for-england

pregnant women); those with mental health difficulties; those in receipt of social and/or medical care in their own homes and others who are dependent, such as children.

Victims of an emergency include not only those directly affected but also those who, as family and friends, suffer bereavement or the anxiety of not knowing what has happened.

Responder personnel should also be considered. Plans sometimes place unrealistic expectations on management and personnel. Organisations should ensure their plans give due consideration to the welfare of their own personnel. For instance, the emergency services have health and safety procedures which determine shift patterns and check for levels of stress.

Organisations should aim to maintain plans for reducing, controlling or mitigating the effects of an emergency. The main bulk of planning should consider how to minimise the effects of an emergency, starting with the impact of the event (e.g. alerting procedures) and looking at remedial actions that can be taken to reduce effects. For example, the emergency services may be able to stem the emergency at source by fighting fires, combating the release of toxic chemicals or the extent of floods. The evacuation of people may be one direct intervention which can mitigate the effects of some emergencies. Recovery plans should also be developed to reduce the effects of the emergency and ensure long term recovery. The **National Recovery Guidance**[30] provides more detail on recovery issues.

Not all actions to be taken in preparing for an emergency are directly concerned with controlling, reducing or mitigating its effects. Emergency planning should look beyond the immediate response and long term recovery issues and look also at secondary impacts. For example, the wave of reaction to an emergency can be quite overwhelming in terms of media attention and public response. Plans may need to consider how to handle this increased interest.

As obvious as it sounds, emergency plans should include procedures for determining whether an emergency has occurred, and when to activate the plan in response to an emergency. This should include identifying an appropriately trained person who will take the decision, in consultation with others, on when an emergency has occurred.

The maintenance of plans involves more than just their preparation. Once a plan has been prepared, it must be maintained systematically to ensure it remains up-to-date and fit for purpose at any time if an emergency occurs.

It may be that multiple organisations can develop a joint emergency plan where the partners agree that, for a successful combined response, they need a formal set of procedures governing them all. For example, in the event that evacuation is required, the police would need carefully pre-planned co-operation from various other organisations such as fire and ambulance services and the Local Authority, as well as involvement of others such as transport organisations.

[30] https://www.gov.uk/national-recovery-guidance

# Section 7: Good communications: planning how you will communicate during an incident

## The importance of communications

Communicating with the public about emergencies is essential. A well-informed public is better able to respond to an emergency and to minimise the impact of the emergency on the community. By informing the public as best they can, all organisations will build their trust. Part of this is also avoiding unnecessary alarm.

Communications arrangements between all agencies responding to a flood need to be planned for, as flooding often causes failure of telecommunications systems. These plans should be included in Local Resilience Forum telecommunications plans, where they exist, or otherwise in the Multi-Agency Flood Plan. All agencies should assume that telecommunications may be compromised during flood events and include provision for dealing with failure.

## It's your duty to communicate!

The Civil Contingencies Act 2004 places a duty on Category 1 responders to communicate with the public. This is based on the belief that a well-informed public is better able to respond to an emergency and to minimise the impact of the emergency on the community. The Act includes public awareness and warning and informing as two distinct legal duties – advising the public of risks before an emergency; and warning and keeping them informed in the event of an emergency.

The Statutory guidance **Emergency Preparedness**[31] details the requirements of the legislation and gives good practice guidance on how on how responders can carry out their duties to comply with the legislation.

## What information is needed when?

Organisations engaged in warning and informing will need to think carefully about what information different audiences will want, and when, in an emergency. A Communications Guide can be found in Annex E.

## Communicating via the media at a national level

An accurate, timely and consistent flow of information to the public and other key stakeholders is essential to maintaining confidence in the response to an emergency and for influencing public behaviour. The Lead Government Department's press office will lead on public presentation in support of the lead Minister and government. However, when an emergency has wide ranging impacts or gives rise to considerable public and media interest, a News Co-ordination Centre (NCC) may be activated. This is always in place whenever COBR is activated, but may also be stood up in support of the

[31] https://www.gov.uk/government/publications/emergency-preparedness

Lead Government Department in response to a level 1 emergency (see Section 2 for details on levels of emergency).

The NCC can be activated at various levels depending on the nature and demands of the emergency. The duties can include:

- advising the Lead Department on media handling;
- compiling and maintaining a 'top lines brief' summarising the key facts and messages for distribution to ministers and others involved in the response at a national and local level;
- briefing COBR meetings on media handling;
- developing in conjunction with local responders and government departments a coherent public information strategy for consideration by COBR; and
- establishing a fully functioning cross-government media centre under the leadership of the Lead Department and supporting the policy direction from COBR.

When established the NCC will handle all requests to government for information on the emergency and co-ordinate requests for interviews with Ministers.

Decisions on the level of support required from the media co-ordination role, including activation of the NCC, will be taken by the Cabinet Office in consultation with the Lead Government Department and the Prime Minister. Where there is a significant devolved dimension, an information officer from the relevant devolved administration will also normally join the NCC. The devolved administrations will provide 24/7 cover at their Emergency Co-ordination Centres, where necessary, and link into the press teams at a local Strategic Coordinating Group and the NCC.

## Working with the media at a local level

All organisations should be familiar with the media organisations and outlets in their own areas, and should aim to develop good relations with them. There is a considerable amount of advice on how to achieve this in the **BBC's - Connecting in a Crisis**[32] initiative.

It is clear that poor communications can be damaging. The damage done to public confidence by the release of inconsistent and contradictory messages can be hard to repair. Similarly, great damage can be done by speculation about causes or future developments. It is better to say when something is not known than to guess, particularly if this is going to raise the hopes of the affected public - for example, about when they can return to their homes.

The key to effective communication via the media is getting the message right for the right audience. How information and advice are delivered can greatly affect how they are received. Organisations should give careful thought ahead of any emergency about who may act as their official spokespeople and undertake media interviews and ensure those

[32] http://www.bbc.co.uk/news/uk-15250977

people have suitable training. Other public-facing people in the organisation should have a basic level of information so that they can handle enquiries confidently.

## Use of Social Media

Along with conventional methods for disseminating messages on flooding, in recent years frontline responders have started to use social media. Further information on how this is used is available in Annex F.

## Planning to communicate with the public

In some circumstances, it will be central government that first provides warning that an emergency is about to occur or is occurring. There are well established processes to warn and inform the public about the whole range of possible emergencies.

The Environment Agency organises public awareness campaigns, arrange for the broadcasting of messages and provides advice of what to do before during and after a flood event, and increasingly social media plays a part in this. There is a lot of flooding information on the Environment Agency's pages on the .GOV.UK website including a search facility on postcodes to see if properties are in a flood risk area. Nevertheless, it is important that other emergency planners and responders have collectively agreed plans on how they will raise the public's awareness prior to an incident about the risk of flooding and how they may be affected by floods. Such plans need to include arrangements to communicate with certain vulnerable people who are dependent upon their telephone lines (e.g. dialysis patients) and how they are dealt with if the network fails.

No single communications system will be the solution to all situations or achieve an absolutely resilient alerting capability. A variety of methods will always be necessary to alert the largest proportion of the target audience or assess their needs. Using different methods will also help to alert vulnerable groups (e.g. hard of hearing, elderly, transient population etc). Local responders need to assess which methods are most suitable in a given situation, taking into account local circumstances and this should feature in emergency plans, including flood emergency plans, prepared by Local Resilience Forums.

## Warning the public directly

The methods available to deliver urgent information to members of the public are extremely varied. Options that should be considered, depending on the circumstances, include:

- using the Environment Agency's Floodline Warnings Direct system which allows text messages to be sent to over 3 500 separate groups of at risk homes and businesses
- mobilising officers to go round on foot and knock on doors;
- from car or helicopter, by loudhailer or other amplified means;
- media announcements;

- electronic/variable message boards, e.g. at the roadside;
- announcements in public buildings, shopping centres, sports venues, transport systems, etc;
- automated telephone/fax/e-mail/text messages to subscribers;
- use of social media; and
- site sirens.

Door–knocking and similar low technology methods will be the most resilient to disruption to telecommunications and power. Organisations such as Police giving direct instructions to the public, or building managers communicating with their tenants, allows the public to receive messages from a known (and generally trusted) source. At the same time, Category 1 responders need to be aware that door-knocking may require large numbers of personnel for it to be effective, which may be difficult to sustain for anything other than short periods. They also need to have regard to health and safety implications to ensure that any door knocking takes place well before flooding is expected. Further details on informing and warning the public are available at Annex E.

# Section 8: Important aspects of flood preparedness

# Think, especially, about vulnerable people

The guidance on developing a Multi-Agency Flood Plan, which is currently being updated, provides detailed recommendations for sharing information about vulnerable people in various facilities. The existing guidance, which is under review, is available separately[33].

More generally, the Cabinet Office has published a booklet on **Identifying People Who Are Vulnerable in a Crisis: Guidance for Emergency Planners and Responders**[34]. The guidance is intended for the development of local action plans for identifying groups of people who may be vulnerable in an emergency. It is primarily intended for those who are involved in local emergency planning for vulnerable groups, particularly those within a Local Resilience Forum (LRF).

The guidance is based around four key stages of establishing an emergency plan for identifying people who are vulnerable in a crisis:

- Building networks - The most effective way to identify vulnerable people is to work with those who are best placed to have up-to-date records of individuals and who will be aware of their needs. This may range from care homes (older people) to the local hotel industry (tourists).
- Creating lists of lists - It would be impossible to maintain a central up-to-date list of vulnerable people. Therefore it is recommended that lists of organisations and establishments are made, who can then be contacted in the event of an emergency to provide relevant information.
- Agreeing data sharing protocols and activation triggers - Once relevant agencies have been identified and networks developed, agreed data sharing procedures can be put in place, which should have the flexibility to adjust to changing circumstances with clear agreed triggers between responders.
- Determining the scale and requirements - By building networks and agreeing data sharing protocols, the potential scale of requirements of vulnerable people can be estimated in advance of an emergency, without divulging information about individuals. This information can then feed into emergency planning in terms of resources and equipment.

## Other things to consider

- Sandbags - Local plans should take account of the potential use of sandbags. Although they can be less effective than taking other actions to protect individual properties and personal possessions from flood water, they can be a useful and flexible method of boosting defences at short notice. It is up to individual local authorities to set their policies for sandbag distribution and allocation. Local decisions on providing sandbags or other protection to households and businesses during floods would normally be taken collectively by the emergency services and a local authority.

[33] https://www.gov.uk/government/publications/the-national-flood-emergency-framework-for-england
[34] https://www.gov.uk/government/uploads/system/uploads/attachment_data/file/61228/vulnerable_guidance.pdf

Local authorities and the Environment Agency strongly encourage people to plan in advance of flooding by investing in purpose made flood protection products, such as flood boards, non-return valves for plumbing and air brick covers.
- Local Authorities should communicate to residents the policy they have for distributing sandbags in their area.

Link to EA sandbag advice:
https://www.gov.uk/government/publications/sandbags-how-to-use-them-to-prepare-for-a-flood

- Sewage and Sewerage systems. It is recommended that, during the emergency planning phase, LRFs work with water companies to decide on the provisions that will be put in place should there be an interruption to sewerage facilities. The different agencies can then work better together should an emergency occur. Local Authorities are responsible for co-ordinating welfare support for their communities and ensuring that welfare needs are met. Water and sewerage companies are legally obliged to plan for emergencies, but not obliged to undertake specific activities or supply specific items to support their customers in the event that their toilets are not working; it should be noted however that water companies are judged on their customer service and, in meeting that requirement, they may elect to employ one or more of a range of potential contingencies including provision of portable toilets, waste water tankering and overpumping to relieve pressure on the waste water network. LRFs are also advised to make plans for recovery including reaching local agreement on who should lead on the clear up of sewage.

## It's your duty

The statutory guidance Emergency Preparedness sets out the responsibilities on Category 1 responders (with the cooperation of Category 2 responders) to plan for and meet the needs of those who may be vulnerable in emergencies. In this context, by vulnerable people we mean those who are less able to help themselves in an emergency:

- Making and maintaining plans for reducing, controlling or mitigating the effects of an emergency.
- Warning & Informing - Chapter 7 of the Cabinet Office guidance shows how the needs of vulnerable persons, including those who may have difficulty understanding warning and informing messages, need to be taken into consideration by those Category 1 responders with lead responsibility for communicating with the public, both in public awareness programmes and in a crisis. Arrangements will need to address how information and assistance can be managed by Local Authorities and health authorities who are in regular contact with vulnerable individuals.
- Business continuity - Chapter 8 of the Cabinet Office guidance sets out the responsibility of Local Authorities to provide advice and assistance to those undertaking commercial activities and to voluntary organisations in their areas, in relation to business continuity management in an emergency. This is a 'light-touch' duty but responders may consider including advice on the identification of persons who may be vulnerable in an emergency. Building community resilience through good

business continuity planning will help reduce reliance on public sector bodies in the event of an emergency, enabling Category 1 and 2 responders to focus their resources on the most vulnerable.

The emphasis falls significantly upon Local Authority Departments (most notably emergency planning and social care) and their partner health authorities to meet the planning and response need of these statutory responsibilities, most of which apply to information dissemination or warning and informing campaigns.

Other legislation may interact with responsibilities under the Civil Contingencies Act, in particular the **Equalities Act 2010**[35].

Full detail of Local Authority responsibilities can be found in the Flood and Water Management Act 2010

http://www.legislation.gov.uk/ukpga/2010/29/pdfs/ukpga_20100029_en.pdf

## Identifying vulnerability and communicating through other organisations

The following table will help you think about who might be categorised as vulnerable, for the purposes of your emergency planning.

**Figure 8.1: Potentially vulnerable people/groups**

| Potentially Vulnerable Individual/Group | Examples and Notes | Target through the following organisations/agencies |
|---|---|---|
| **Children** | Where children are concerned, whilst at school the school authorities have duty of care responsibilities. Certain schools may require more attention than others. | Schools through Local Authorities and through their governing body or proprietor.<br>Crèches/playgroups/nurseries |
| **Older People** | Certain sections of the elderly community including those of ill health requiring regular medication and/or medical support equipment | Residential Care Homes<br>Help the Aged<br>Adult Social Care<br>Nursing Homes |
| **Mobility impaired** | Wheel chair users; leg injuries (e.g. on crutches); bedridden/non movers; slow movers; bariatric patients. | Residential Care Homes<br>Charities<br>Health service providers<br>Local Health Authorities |
| **Mental/cognitive** | Developmental disabilities; | |

[35] http://www.legislation.gov.uk/ukpga/2010/15/contents

| | | |
|---|---|---|
| **function impaired** | clinical psychiatric needs; learning disabilities. | |
| **Sensory impaired** | Blind or reduced sight; deaf; speech and other communication impaired. | Charities e.g. the Deaf Council<br>Local groups |
| **Temporarily or permanently ill** | Potentially a large group encompassing not only those that need regular medical attention (e.g. dialysis, oxygen or a continuous supply of drugs), but those with chronic illnesses that may be exacerbated or destabilised in the event of evacuation, or because prescription drugs were left behind. | NHS England local area teams, GP surgeries<br>Other health providers (public, private or charitable hospitals etc.)<br>Community nurses |
| **Individuals supported by health or Local Authorities** | | Adult's Social Services<br>Children's Social services<br>GP surgeries |
| **Individuals cared for by relatives** | | GP surgeries<br>Carers groups |
| **Homeless** | | Shelters, soup kitchens |
| **Pregnant women** | | GP surgeries |
| **Minority language speakers** | | Community Groups<br>Job Centre Plus |
| **Tourists** | | Transport and travel companies<br>Hoteliers |
| **Travelling community** | | Local Authority traveller services<br>Police liaison officer |

## Infrastructure and flooding

The Cabinet Office cross-sector programme to improve the resilience of critical infrastructure and essential services to severe disruption by natural hazards is intended to establish a shared, consistent, proportionate and risk-based approach to delivering reductions in vulnerability over a number of years. One of the early products of that work - **The Strategic Framework and Policy Statement on Improving the Resilience of**

**Critical Infrastructure to Disruption from Natural Hazards**[36] - sets out the proposed policy intent, scope, aims, timescales and work streams of the programme.

At present, the framework doesn't include practical help for emergency planners in this area. The advice is that they may wish to engage with asset owners in their area to discuss the proposed resilience standards within the framework. There are a number of policies being developed that should be of direct assistance in the future - for example on information sharing to clarify LRFs' access to information on critical sites and expectations of what should be done with the information.

Flood Warning services are available for infrastructure owners and operators. Further information is available in Annex B.

## Evacuation and Sheltering of People

The purpose of evacuation is to move people, and where appropriate other living creatures, away from an actual or potential danger to a safer place.

Evacuation planning should be bespoke to local risks and circumstances and will require the involvement of many different organisations. It is therefore primarily an issue for local response organisations and Local Resilience Forums, who may have an evacuation sub-group organised to manage this planning.

**Evacuation and Shelter Guidance**[37] has been written by the Cabinet Office to assist organisations in developing their evacuation plans. This guidance is intended to help responders scope the issues and develop their own evacuation and shelter plans that can be used to respond to a wide range of scenarios proportionate to the risks their particular communities face.

## Mutual aid

Successful response to emergencies in the UK has demonstrated that joint working and support can resolve very difficult problems that fall across organisational boundaries. Large scale events have shown that single organisations acting alone cannot resolve the myriad of problems caused by what might, at first sight, appear to be relatively simple emergencies caused by a single source.

Mutual aid can be defined as an arrangement between Category 1 and 2 responders and other organisations within the same sector or across sectors and across boundaries, to provide assistance with additional resource during an emergency, which may overwhelm the resources of an individual organisation. Although the Civil Contingencies Act 2004 lays down duties regarding bi-lateral co-operation, that should not be seen to restrict responders working closely.

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[36] https://www.gov.uk/government/uploads/system/uploads/attachment_data/file/62504/strategic-framework.pdf
[37] https://www.gov.uk/government/uploads/system/uploads/attachment_data/file/61073/evac_shelter_guidance.pdf

While there is no UK wide policy specifically relating directly to mutual aid, many areas such as police, fire, NHS and Local Authorities have inter (and intra) agency mutual aid protocols in place. Some of these are formal, but many are informal.

Formal protocols detail how each partner will undertake or allocate responsibilities to deliver tasks. Protocols may cover matters of broad agreement or details for working together, including how to hand over tasks or obtain additional resources. Protocols may or may not be legally binding depending upon the nature of the agreement between the parties.

## Local Authority mutual aid guidance

The Civil Contingencies Secretariat in collaboration with the Local Government Association (LGA) and the Society of Local Authority Chief Executives and Senior Managers (SOLACE) has produced a short guide to support Local Authorities in developing effective mutual aid arrangements. **Mutual Aid: a short guide for Local Authorities**[38] offers advice on a range of practical considerations and provides a general framework that can be developed by authorities to satisfy local requirements.

## Co-ordinate offers of material help

A significant part can be played by the voluntary sector and others. For example, the British Red Cross may work with Local Authority social services to open rest centres and deal with the needs of displaced people. And local businesses might work with the emergency services regarding evacuation plans for industrial estates, shopping centre etc. The Voluntary Sector Civil Protection Forum, in partnership with the Civil Contingencies Secretariat, has produced a **Voluntary Sector Engagement Guidance Note**[39] which provides some suggestions to support Category 1 responders and their voluntary sector partners when considering collaborative arrangements.

More generally, it is likely that many offers of help will arrive from the general public, businesses, charities, voluntary agencies and others both during the response and recovery phase. Some will be of practical assistance. Others will be of physical goods for those directly affected.

Consideration should be given to:

- procedures to register and co-ordinate offers of help;
- forming a panel to assess needs and the distribution of donated help;
- identifying storage areas; and
- a disposal mechanism for unused donations.

[38] https://www.gov.uk/government/uploads/system/uploads/attachment_data/file/62347/mutual_aid.pdf
[39] https://www.gov.uk/government/uploads/system/uploads/attachment_data/file/86102/engaging_voluntarysector.pdf

### Roles and responsibilities

Local Resilience Forums (LRFs) are well placed to facilitate the provision of formal mutual aid agreements between its members. The DCLG Resilience Emergencies Division can also help in the facilitation of wider mutual aid agreements, e.g. between a number of Local Authorities across a wide area.

Mutual Aid arrangements exist within and between many of the voluntary sector organisations. In the event of a major emergency, voluntary sector support may be accessed through the head offices of the relevant voluntary organisations or through the Voluntary Sector Civil Protection Forum or the National Voluntary Aid Societies' Emergency Committee (NVASEC).

Links with the voluntary sector will normally be co-ordinated through the Local Authorities in an area - often through a sub-group of the Local Resilience Forum – and activation and co-ordination arrangements for voluntary sector involvement in both response and recovery phases should be formalised as part of emergency planning work.

## Working with the voluntary sector

The voluntary sector has an important role to play in supporting the statutory services in response to many emergencies. Experience shows that active engagement of the voluntary sector in emergency preparedness work such as planning, training, and exercising, will enable them to be more effective in the event of an emergency.

Planning for and responding to emergencies is primarily delivered at the local level. Therefore, the engagement of the voluntary sector in civil protection is most effectively managed at the local level, within a national policy framework.

The Civil Contingencies Act 2004 establishes a statutory framework for civil protection at the local level, setting out a clear set of roles and responsibilities for local responders. The Act's supporting Regulations require that Category 1 responders "have regard" to the activities of certain voluntary organisations in the course of carrying out their emergency and business continuity planning duties (further details can be found in Chapter 14 of Emergency Preparedness).

This has created an expectation that Category 1 responders will make the most of the resources and expertise that the voluntary sector can offer, putting this relationship on a more robust and long-term footing.

### Recognition of collaborative arrangements

By establishing the most appropriate organisational framework, the voluntary sector can be properly factored into the planning process. Sound co-operation through the Local Resilience Forum (LRF) processes and directly with individual Category 1 responders should be based on an agreed framework that can lead to an effective structure. This structure needs to suit local circumstances, be understood by all concerned and have

clearly identified points of contact. Arrangements must be kept up to date by regular formal and informal contact.

Effective engagement of the voluntary sector at a local level will also facilitate a more effective engagement and response in the event of regional, national and international emergencies.

In order to ensure that arrangements are fully understood and recognised by all the organisations involved in partnerships between the Category 1 responders and voluntary organisations, it may be worth considering how to organise these arrangements in a way that best suits the nature of the partnership. This could be done in a number of ways:

- Service level agreements;
- Memoranda of understanding;
- Establishing protocols; and/or
- Formally reflecting arrangements within actual plans.

## Issues for consideration

There are a number of elements that partnerships may wish to consider for inclusion in supporting documentation in order to ensure that the expectations of each organisation are understood fully and met effectively. The following elements and issues for consideration are suggested, but please note this list is not exhaustive:

**Figure 8.2: Considerations when working with the voluntary sector**

| Element | Issues for consideration |
|---|---|
| **Existing arrangements** | • What existing arrangements has the voluntary organisation entered into?<br>• What priority will the new partnership be given?<br>• Will the other arrangements have any impact on the level of support the voluntary organisation is able to provide i.e. if there are duplicate demands?<br>• Are existing arrangements formal e.g. MOU, contract?<br>Is the contribution of the organisation included in existing local plans? |
| **Personnel** | • What is the personnel capacity of the voluntary organisation i.e. numbers, skills?<br>• Is the estimate of the emergency response realistic?<br>• Would the capacity be impacted by time of day, day of week, nature of emergency?<br>Is the organisation able to call on a mutual aid facility? |
| **Services and activities** | • What types of services and/or activities does the organisation provide?<br>• Do these services and/or activities respond to a likely |

| | |
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| | need in an emergency?<br>• Do these services and/or activities complement or supplement similar services and/or activities provided by another organisation?<br>Is there flexibility in the organisation's emergency response capability? |
| **Payment of Costs** | • Will the Category 1 responder be expected to meet or contribute to costs incurred by the voluntary organisation during:<br>• The planning phase e.g. volunteers' involvement in training and exercising.<br>• The response phase e.g. if the emergency is a protracted one.<br>The recovery stage e.g. aftercare – Humanitarian Assistance Centre. |
| **Insurance** | • Does the voluntary organisation provide insurance for its volunteers on a daily basis? Does it provide insurance for its volunteers in an emergency response; if so is the cover appropriate/adequate?<br>Does the Category 1 responder's insurance cover include volunteers undertaking tasks on its behalf? |
| **Training and Exercising** | • What training programmes does the voluntary organisation have in place?<br>• What additional joint-training would the voluntary organisation and/or Category 1 responders want to undertake?<br>• Could voluntary organisations contribute to the delivery of training?<br>• To what extent would the voluntary organisation be involved in exercise programmes i.e. planning, operation, review and evaluation?<br>• Will there be assistance with funding for the costs of training and inclusion in exercises?<br>Is there any opportunity for internal/external accreditation of standards in training? |
| **Provision of Equipment/Resources** | • What equipment/resources does the voluntary organisation have?<br>• What additional equipment will the Category 1 responder provide?<br>• Who is responsible for replacing equipment damaged during an exercise or live event?<br>• Does the equipment/resource comply with legislation and regulations?<br>Is the equipment/resource compatible with that used by |

| | |
|---|---|
| | other organisations part of a response? |
| **Notification Procedures** | • Does the plan include robust notification procedures agreed by the voluntary organisation<br>Are other LRF partners aware of these arrangements? |
| **Command and Control Issues** | • Who is responsible for tasking of individual volunteers?<br>Does the organisation have a capability to support its personnel during and after the response? |
| **Role in Lessons Learned Process** | • What mechanisms will be put in place to involve the voluntary organisation in debriefs/lessons learned process? |

## Community Resilience

All communities, but especially those at risk of flooding and those that have been flooded before, should be encouraged to prepare themselves for a (flooding) emergency. Community preparedness needn't be expensive, or time consuming, but can pay great dividends when a flood happens. Many communities have benefitted from setting up a Community Emergency Volunteers Group or Flood Action Group. These are generally groups of people who have an interest in increasing their own or their community's resilience to flooding through planning and response, The Environment Agency works with over 400 of these community groups across England. They can help to raise awareness about the potential impacts of a flood and get other members of their community thinking about simple things they could do to prepare, such as having a telephone cascade system ready to let residents and local businesses know a flood may be on its way; knowing the vulnerable people in their community who may need additional support; or identifying and agreeing arrangements to use local building(s) as evacuation points / rest centres. Other well-established groups have developed specific flood volunteer training and undertake regular flood prevention and preparation activities in their local area, such as clearing drains and culverts or installing flood protection equipment on properties at risk. Local Authorities and other responders have also worked with communities to make them more resilient across a range of emergencies, including flooding. Community resilience case studies[40] have been developed to share useful practice on community resilience, or you can contact the Civil Contingencies Secretariat for further information.

## Business continuity

One way that organisations can protect their 'Mission Critical' activities during a disruptive challenge is to adopt a Business Continuity Management (BCM) approach. BCM is a holistic management process that identifies potential threats to an organisation and the impacts to business operations that those threats, if realised, might cause. It provides a framework for building organisational resilience with the capability for an effective

[40] https://www.gov.uk/government/publications/community-resilience-case-study-library

response that safeguards the interests of key stakeholders, reputation, brand and value-creating activities.

The objective is to continue the critical activities of an organization and facilitate the return to pre-incident levels of lost position or information within the defined maximum tolerable period of disruption.

**Standards of Business Continuity**

For organisations looking to raise their business continuity planning activities to a recognised standard, the British Standards Institute has an international standard (ISO 22301) for exactly this purpose. This Standard – which your company can be accredited to - brings together expert opinions on how to make your business as resilient to disruptive events as possible.

There is lots of information about Business Continuity (much of it free) available on the internet, including some from Manchester City Council[41].

**Expert Advice**

The Business Continuity Institute[42] has a wealth of information and advice available to its membership and some for non-members too. They produce annual Good Practice Guidelines aimed at Business Continuity community.

**National Risk Register**

The National Risk Register or NRR sets out the Cabinet Office assessment of the likelihood and potential impact of a range of different risks that may directly affect the UK.

**Emergency Planning College / Business Continuity Training Pages**

These pages offer details on training and courses open to all sectors to build and develop skills within Business Continuity Management.

[41] http://www.manchester.gov.uk/downloads/914/civil_emergencies-business_continuity_advice
[42] http://www.thebci.org/

# Section 9: The health consequences of flooding

# Flooding can seriously affect health

Flooding has extensive and significant impacts on health. Public Health England and the World Health Organization have recently published a comprehensive literature review on the health impacts of flooding in Europe. In the last 10 years more than 3.4 million people have been affected by floods in the European region and there have been 1,000 reported deaths due to drowning, physical trauma, heart attacks, electrocution, carbon monoxide poisoning and fire[43]. With respect to morbidity, flooding is frequently associated with acute and long term effects on mental health and wellbeing. Floods may also cause injuries, infections and chemical hazards.

Often, only the immediate traumatic deaths from flooding are recorded. It is not always easy to identify the longer-term health effects associated with flooding, such as effects caused by displacement, destruction of homes, delayed recovery, power outages, water shortages and disruption of access to health services. Qualitative evidence suggests that the negative effects on wellbeing may persist for months or even years after a flood incident and those at risk of repeated flooding may be particularly susceptible.

# Mortality and Morbidity associated with flooding

**Direct: effects on people exposed to flood water**

- Drowning;
- Physical trauma from concealed or displaced objects;
- Water shortages and contamination due to loss of water treatment works;
- Chemical contamination of flood water;
- Heart attacks, electrocution, fire; and
- Infectious diseases from contaminated flood water as well as vector-borne and rodent-borne diseases.

**Indirect: effects of flood water on other health determinants**

- Carbon monoxide poisoning when petrol or diesel generators or other similar fuel-driven equipment is used indoors for drying or pumping out flood water;
- Effects on mental health and wellbeing, both acute and long-term, including the impacts of displacement, destruction of property, lengthy insurance claims, fear of recurrence;
- Illness associated with disruption and reduced access to healthcare services; and
- Disruption of livelihoods and income.

During flooding, sewerage systems may become inundated by flood water. Consequently, flood water in the UK is likely to be contaminated by disease producing bacteria and viruses, but not high-risk enteric infectious diseases (e.g. cholera, typhoid) which are not naturally endemic in the human population of the UK. The relative risks to people from bacterial contamination of flood water is, therefore, low, especially if public health advice is

[43] WHO 2013. Floods in the WHO European Region: health effects and their prevention. http://www.euro.who.int/__data/assets/pdf_file/0020/189020/e96853.pdf

followed (e.g. hand washing and wearing of rubber boots and gloves). Where there is any raw sewage entering flood water, the diluting and dispersing of potential sources of infection further significantly reduces any risk. Microbiological testing of the flood water is likely to find disease causing micro-organisms, but very unlikely to require a change in public health advice, so for this reason PHE does not recommend routinely carrying out microbiological testing on flood water.

## Risk Factors Associated with Flooding

The following flood risks are known to impact health and mental wellbeing:

**Nature of the flood waters and other hazards**

- Fast flowing water;
- Water of unknown depth;
- Hidden hazards in flood water causing injury;
- Flood-water contamination (e.g. chemicals, sewage, residual mud);
- Fallen power lines and trees; and
- Carbon monoxide poisoning when petrol or diesel generators or other similar fuel-driven equipment is used indoors for drying or pumping out flood water.

**Individual factors**

- Driving and walking through flood water;
- Walking on sea defenses or riverbanks, driving over bridges when water levels are high;
- Exposure to electrical hazards during recovery and cleaning; and
- Incomplete routine hygiene (e.g. hand washing).

**Damage to property and infrastructure**

- Damage to homes and infrastructure;
- Population displacement;
- Lack of access to health services;
- Disrupted food, water and power supplies;
- Unsafe drinking water, food shortages and contamination; and
- Delayed recovery.

While all populations are at risk of the health effects associated with flooding, certain groups may be more vulnerable. Vulnerability to the health effects of flooding is due to a complex interaction of factors: severity and rapidity of the flooding; health status and need for regular medical treatment; access and availability of warning; rapidity of response measures; and being located in high-risk areas and high-risk built environments[44] (e.g. basement flats).

The following characteristics of individuals and communities place them at greater risk of experiencing negative health and wellbeing impacts from flooding:

[44] WHO 2013. Floods in the WHO European Region: health effects and their prevention. Menne and Murray eds. http://www.euro.who.int/__data/assets/pdf_file/0020/189020/e96853.pdf

- Children;
- Pregnant women;
- The elderly;
- People with physical, sensory and cognitive impairments;
- People with chronic illnesses;
- Those receiving care at home (e.g. home oxygen, dialysis);
- People who are homeless;
- People with language and cultural-based vulnerabilities; and
- Tourists.

## Planning and Prevention for Health

Implementation of a multi-agency all-hazards approach to emergency preparedness, translated into local plans that include public health and primary care, is the most important measure to minimise the health impacts of flooding[45]. Too often only short-term health effects of floods are considered in emergency plans. However longer term health problems, such as mental illness, have longer latency periods and need to be planned for, monitored and acted upon in the longer term. In addition, long-term planning such as avoiding building on flood-plains, especially of critical infrastructure such as health care facilities, is also important to minimise health impacts from flooding.

Preventing the health effects of flooding can be considered in three stages: primary, secondary and tertiary prevention.

- **Primary Prevention**: These measures are planned far in advance and can be structural (e.g. engineering) or non-structural (policy and organisation). E.g. emergency plans, land use management, tree planting, control of water sources and flow, flood defences and barriers, design and architectural strategies and flood insurance.
- **Secondary Prevention**: These measures can be taken either just before or during a flood to mitigate the health effects of the flood. E.g. identification of vulnerable or high-risk populations before floods occur (accounting for difficulties in communication and mobility and the needs of people with chronic diseases), early warning systems, evacuation plans including communication and information strategies, and planned refuge areas.
- **Tertiary Prevention**: These measures can be taken during and after a flood to minimise health impacts. E.g. moving belongings to safe areas, ensuring the provision of clean drinking water, surveillance and monitoring of health impacts, treating ill people, and recovery and rehabilitation of flooded houses.

Emergency responders should be aware of the 'recovery gap,' the period after which an emergency response has ended and people must rely on other sources of support for continued recovery. During this time a number of health, social and economic stressors

[45] WHO 2013. Floods in the WHO European Region: health effects and their prevention http://www.euro.who.int/__data/assets/pdf_file/0020/189020/e96853.pdf

may arise. Social care services should recognise that restoring communications and keeping families together are key measures to reducing suffering and promoting recovery after a flood. Healthcare providers should be aware of the long-term distress that flooding may cause for people who are affected.

Public Health England and other websites include a wealth of important health information for the public, but flood planners and responders should also be familiar with this advice and able to access it quickly. Key reference materials include:

- Public Health England advice on flooding and health, including guidance on the mental health effects of flooding, guidance for public health professionals and frontline responders on recovery, and Frequently Asked Health Questions[46]. NHS Choices page on cleaning up and food hygiene after a flood[47].
- Food Standards Agency page on food safety advice for people affected by flooding[48].

## Casualties and fatalities

The short-term health consequences of flooding as set out above could result in an increase in the number of people seeking medical treatment in a particular area. NHS organisations would need to be aware of this, but it is expected that such increase would be covered by organisations' surge plans and/or mass casualty plans.

It is unlikely that the number of fatalities that would occur during a flooding related incident would exceed normal local arrangements. However, if it did organisations would need to draw upon mass fatality plans.

Any plan for dealing with casualties and fatalities needs to be integrated with all aspects of the response and recovery from such situations and incidents. It is likely that your multi-agency flood plan will be separate from, but complementary to, your mass casualty plan and your plan for dealing with mass fatalities.

## Health and Safety considerations

All responding organisations, including voluntary agencies, should be aware of the risks associated with working in or nearby to flood water.

As part of their multi-agency flood planning Local Resilience Forum members should decide whether any specific health and safety issues relating to flood risk in the area should be included in their plans. In all cases, people/staff who are expected to play a role in flood response and recovery should receive appropriate training in relevant health and safety policies and procedures of their organisation.

[46] https://www.gov.uk/government/collections/flooding-health-guidance-and-advice
[47] http://www.nhs.uk/Livewell/weather/Pages/flood-safety.aspx
[48] http://www.food.gov.uk/policy-advice/microbiology/flood

# Section 10: Flood Rescue

# Introduction

Flooding and subsequent flood rescue operations can pose significant risks for members of the public and rescuers alike. These risks can be controlled through the use of competent rescuers who have the training and the rescue and personal protective equipment to enable them to work safely in the flood environment.

From 2009, Defra lead the Flood Rescue National Enhancement Project (FRNEP), a national project to improve flood rescue capability across England (and Wales). The aim of the project was to ensure that a comprehensive emergency response can be deployed and co-ordinated between all flood rescue service providers, including public, private and voluntary organisations, making best use of existing and future flood rescue assets.

As part of the FRNEP, a National Asset Register of known, flood rescue resources that could be called upon to support major or national flood events was established. The register contains contact information of competent flood rescue teams from both statutory agencies and the voluntary sector, along with experienced strategic and tactical advisers who can provide specialist advice and support to impacted areas. The register was used successfully in recent floods, allowing the successful deployment of rescue boats, alongside high volume pumps to areas where they were urgently required. This is a live document.

**Gloucester FRS launching their hovercraft in Sandhurst, November 2012. Photo courtesy of Dave Throup, Environment Agency.**

## Flood rescue concept of operations

A key objective of the Flood Rescue National Enhancement Project was the production of a **Flood Rescue Concept of Operations (FRCO)**[49]. This document sets out the framework for enhancing the capability and national co-ordination of flood rescue and provides greater clarity for flood rescue, especially in major flooding events, through such measures as:

- the setting of national standards for equipment and training;
- the use of standard operating procedures and defined command and control structures;
- a framework for how agencies involved will respond to flooding incidents; and
- processes for management and engagement of national assets and team types.

This FRCO serves as a basis for co-ordination with other government departments, the blue-light services, and other agencies, in meeting the country's requirements for flood rescue. First published in 2010, this document will be updated and reviewed regularly, to ensure it reflects flood rescue requirements and emerging best practice.

Articulation of a Concept of Operations affords the following benefits:

- greater clarity and certainty in respect of roles and responsibilities for specialist flood rescue operations during a major flood event;

[49] https://www.gov.uk/government/uploads/system/uploads/attachment_data/file/69437/pb13676-frco.pdf

- greater clarity and certainty in respect of roles and responsibilities of supporting flood rescue operations such as medical support (air ambulances etc), animal rescue (e.g. RSPCA), dive-teams, vehicle retrieval (e.g. the AA Special Operations Response Team, SORT) and other flood response efforts operating simultaneously in flooded areas;
- improved visibility of the capabilities and capacity of flood rescue resources available to Strategic Co-ordination Group and individual agency Gold Commands during flood events, achieving greater utilisation of available resources;
- assurance for the public, requesting authorities and incident commanders that rescue teams responding to mutual aid requests are capable of carrying out the tasks required of them safely and effectively;
- improvements in the co-ordination of resources on the ground and with air Search and Rescue operations, the provision of logistical support, the decontamination of equipment and the return of specialist resources to normal duties at the end of the incident;
- reduced costs by taking a national multi-agency approach to strategic resilience and making best use of existing assets; and
- standardisation of approach and equipment across all agencies with a common procurement framework which will also drive down costs and enhance resilience through greater interoperability.

## Responses to minor or localised flooding

Rescue responses to minor or localised flooding will continue to be managed at a local level by emergency services, usually under direction of the police. The decision to deploy specialist flood rescue teams rests with emergency service organisations and it is their responsibility to assure themselves that any teams they deploy are competent to operate safely in the flood environment.

However, when considering whether to deploy external resources, it can be difficult for emergency services to judge the competence and capabilities of the flood rescue teams offering assistance.

Whilst it is a matter for the Police and emergency services to decide whether to deploy rescue teams who are not on the FRNE national asset register, reference to the register can provide assurance that the teams to be deployed have been assessed as competent to work in the flood environment. Various reviews have suggested that, in advance of an event during multi-agency flood planning, it is useful for LRFs to identify who will co-ordinate flood rescue during an incident.

## Responses to major or wide area flooding events

For the purpose of flood rescue, a major or wide area event may be defined as any flood event requiring mutual aid for specialist flood rescue teams from outside the Local Resilience Forum (LRF) area, or an event requiring extensive flood rescue operations

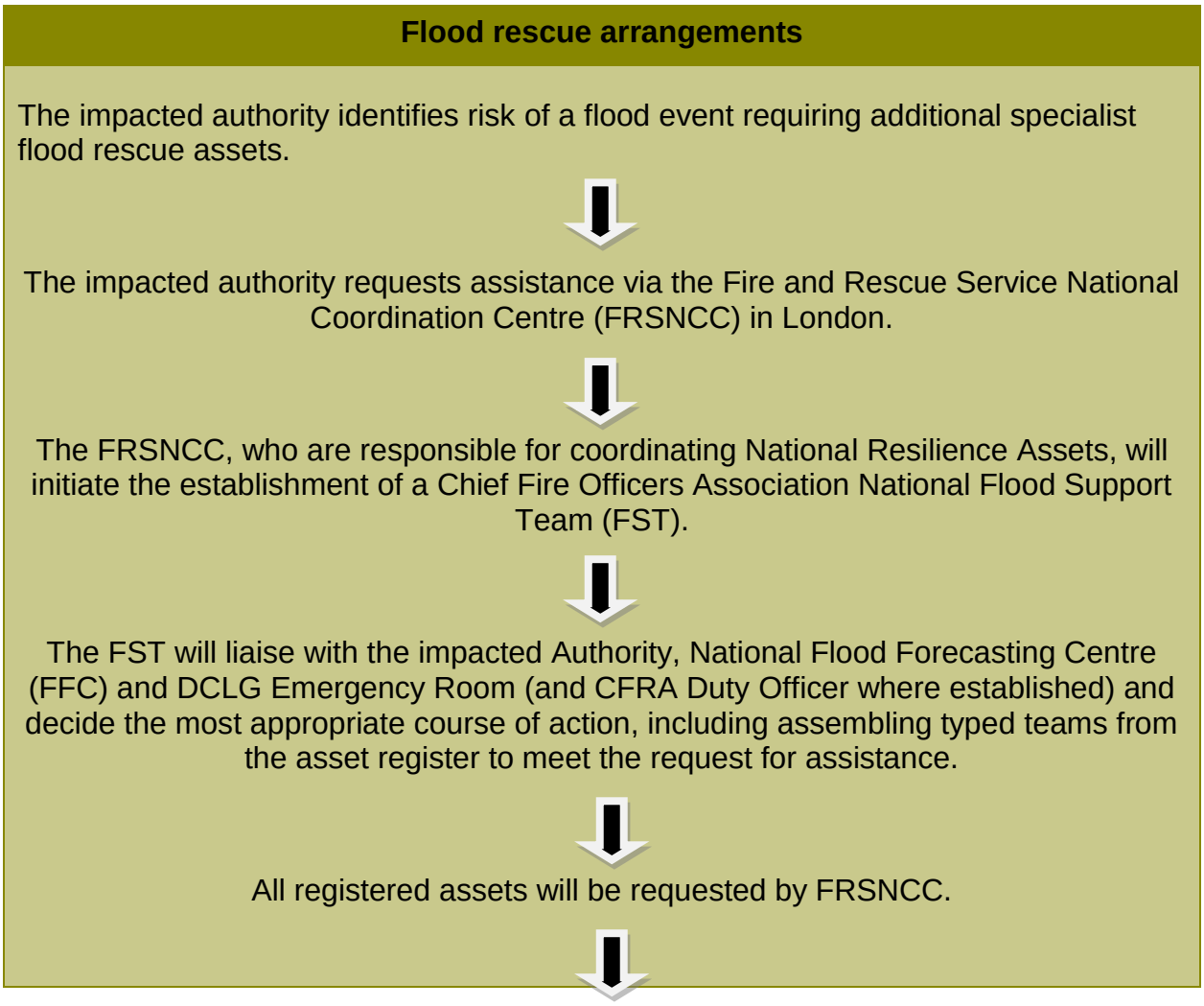
simultaneously impacting more than one LRF area. During major or wide area flooding events emergency services requesting mutual aid should bear in mind that the specialist teams from neighbouring areas and the voluntary sector that they might normally call upon may be registered in more than one LRF area.

Whilst flash flooding can occur with little warning, in many circumstances early warnings of a major flood will enable the establishment of robust command and control frameworks before the event impacts the local area. This early warning can also be used to provide an opportunity for specialist mutual aid teams to be requested early and pre-deployed to the area. Effective use of early warning has a number of significant operational advantages, reducing risk for communities and responders alike.

## Guidance for specialist flood rescue –arrangements for accessing mutual aid

Government has introduced substantive arrangements for the coordination of multi-agency flood rescue assets. These arrangements are based on those drawn up by the Fire and Rescue Service in response to the 2007 floods and have been used in the event of wide-area, severe flooding.

**Figure 11.1: Flood rescue arrangements**



The FST will maintain a national overview of all flood rescue assets on the FRNE database and will provide a function 24/7 to provide any strategic or tactical advice that might be necessary and will maintain communications with all flood rescue organisations on the national register during the emergency.

FST will maintain a forward looking strategic overview of likely rescue requirements in consultation with the Flood Forecasting Centre and any other strategic coordination functions that have been established, e.g. DCLG Emergency Room.

When formally "stood down", FST will communicate with all teams on the FRNE database.

## Information required from requesting authorities

Affected authorities who request assistance should contact the FRSNCC passing the following information as a minimum:

- location of incident or expected time/location of impact;
- nature of incident and any specific hazards, i.e. known chemical contamination;
- prevailing weather and (where known) water conditions;
- estimated number of persons requiring rescue;
- local resources already in attendance/available;
- estimate of mutual aid resources required; and
- location (grid reference / name and address) of rendezvous point. Including local access issues created by the flooding.

## Air asset support for water rescue operations

All of the above refers to land/water based specialist rescue teams only. During a major flood event, air assets could also form an invaluable part of the overall rescue effort.

The Aeronautical Rescue Co-ordination Centre (ARCC) will respond to all requests from the emergency services for helicopter assistance in an emergency. The potential contribution offered by air assets to a flooding event is considerable. The ARCC provides a common tasking procedure for all UK SAR helicopters.

ARCC has the following air assets available:

- Royal Air Force Sea King helicopters with winching; Infra-red and Night Vision Goggle (NVG) search capability; and NHS equivalent qualified and equipped paramedic (when available);
- Royal Navy Sea King helicopters with winching, infra-red and NVG search capability and NHS equivalent qualified and equipped paramedic (when available);
- Coastguard AW139 and S-92 helicopters with very similar capabilities; and

In the event of an operational incident where the affected FRS/Incident Commander believes the use of air assets may be appropriate, they should contact the Duty Officer at the ARCC, with the following information:

- location of incident (grid reference);
- description of incident;
- nature of tasking (e.g. rescue, reconnaissance, transport);
- number and position of casualties;
- hazards (overhead power lines etc.);
- weather/environmental conditions; and
- other resources on scene.

# Annexes

# Annex A - Some recent examples of flooding

## Winter 2013-14

Winter 2013-14 was exceptionally stormy across the UK and brought the wettest winter to England in 250 years. Communities faced every type of flooding as a series of twelve major storms from December through to February crossed the country. Record levels of rainfall, river flows, sea levels, wave heights and groundwater were recorded across the country. Almost 11,000 properties were flooded from December 2013 to May 2014. 155 Severe Flood Warnings were issued and the Thames Barrier saw an unprecedented 42 closures over the winter.

The major flood incident over this time included:

- 5/6 December - a storm surge coincided with spring tides to produce many record coastal water levels, exceeding some of those recorded during the East Coast Surge of 1953. Every month through the winter saw surge activity around our coasts.
- 24 December - the lowest barometric pressure recorded in the UK since 1886. This storm was accompanied by very high rainfall intensities, especially in the south-east during the Christmas period, of the type normally associated with summer thunderstorms.
- 5 January - the highest ever recorded water levels and largest waves in a 50 year record on the west coast.
- February- prolonged and widespread inland flooding for communities notably on Somerset Moors and Levels, throughout the Thames Valley and along the River Severn

**Somerset Levels 2014. Photo courtesy of the Daily Mail.**

## 2012

2012 began with a drought but turned out to be the wettest year on record for England and the second wettest for the UK as a whole. There were 11 major flood events, lasting a cumulative total of 72 days and England received 1,126mm of rain which amounts to 132% of the average. Flooding from a range of sources (rivers, surface water and groundwater) affected both urban and rural areas, with over 6,000 flood warnings and alerts issued. Around 7,950 properties were flooded, with some of the worst affected areas in the north east and the south west. Whilst the estimated total cost of the May to July floods was in the region of £320m, around £1.3bn of economic damage was prevented by flood risk management assets between April and September alone. Several areas in England experienced impacts on the transport infrastructure both national and local.

**Somerset Levels 2012. Photo courtesy of the Environment Agency.**

## Cornwall 2010

Flooding in Cornwall in November 2010 was caused by very heavy rainfall, with 38.8mm falling in one hour in Mevagissey. This resulted in significant surface water and river flooding, causing widespread travel difficulties and damage to around 400 properties. Affected areas included St Austell, Par, Pentewan, Bodmin, Luxulyan, Lostwithiel, St Blazey, St Blazey Gate, Polgooth, Launceston, and Mevagissey.

## Cumbria 2009

Serious flooding affected many parts of Cumbria in November 2009. This followed heavy and sustained rainfall of over 312 mm in 24 hours, which is the highest ever in the United Kingdom. Around 1,800 properties were flooded with the worst affected areas being Cockermouth, Keswick, Workington, Kendal and Ulverston. Around 1,500 people needed

to be evacuated from their homes or businesses. Infrastructure was badly affected with 6 bridges lost in the Cumbria area, and a number of road and footbridges closed because of concerns about their stability. PC Bill Barker was swept to his death while on duty. The picture below gives an aerial view of the extent of flooding in Cockermouth, Cumbria.

**Cockermouth, Cumbria in November 2009. Photo courtesy of the Environment Agency.**

## Summer 2007

Flooding affected many parts of England in the summer of 2007. The wettest summer since records began, with extreme levels of rainfall compressed into relatively short periods of time, caused 55,000 properties to be flooded. Around 7,000 people were rescued from the flood waters by the emergency services and 13 people died.

The floods also saw the largest loss of essential services since World War II, with almost half a million people without mains water or electricity. Transport networks failed, a dam breach was narrowly averted and emergency facilities were put out of action. Tens of thousands of people were rendered homeless, and some businesses were put out of action for months on end.

**Tewkesbury Abbey July 2007. Photo courtesy of the Environment Agency**

## Other serious flooding events

Since 2000 these have included the following:

- An extreme event took place in January 2005, when 100mm of rain fell around Carlisle in Cumbria. The rain was so intense that surface water drainage could not cope and flooding occurred. The flood caused local power cuts and interrupted both the landline and mobile phone systems.
- The same year, 2005, saw a similar event in a rapid responding catchment, on the North Yorkshire moors. After a weekend heat wave, on the night of Sunday 19 June North Yorkshire had the best part of a month's worth of rain in 3 hours. One fast flowing flood that went through the villages of Thirlby, Helmsley and Hawnby was caused by 27mm of rain that fell in just 15 minutes. The flood was 2 metres deep in places and it carried cars along with it.
- In September 2008 flooding in Morpeth was caused by 150mm of rain – 3 months' worth – falling onto saturated ground and full river catchments. Around 1,000 homes and businesses were affected by the flooding and nearly 250 families took advantage of rescue centres and temporary accommodation.


**River Coquet flood in Morpeth September 2008, Courtesy of the Environment Agency**

# Annex B – Flood Warnings

## Public Flood Warnings

The Flood Alert stage is used to warn people of the possibility of flooding and encourage them to be alert, stay vigilant and make early / low impact preparations for flooding.

It is issued earlier than a flood warning, to give customers advance notice of the possibility of flooding, but before the Environment Agency is fully confident that flooding in Flood Warning Areas is expected.

A Flood Alert area will be formed for the following geographical areas:

- a catchment, sub catchment or group of catchments;
- a stretch of coastline;
- a community.

Flood Warnings are used to warn customers that flooding is expected and they should take immediate action to protect themselves and/or their property. These are issued to a specific community at risk.

Severe Flood Warnings are used to warn customers of significant risk to life or significant disruption to the community caused by widespread or prolonged flooding.

Significant risk to life means that death or serious injury is a likely risk for people in the area, rather than just a possible risk, as is always present with flooding.

Significant disruption to communities means that people are without essential services which could result in harm to their health, or people are put at risk by the extent of flooding and the inability of emergency services and the authorities to cope with it. Significant disruption to communities will often be a result of flooding being widespread.

Customers may have already received a Flood Warning or they may receive a Severe Flood Warning as their first warning of expected flooding.

Severe Flood Warnings are reserved for exceptional flooding situations where there is significant risk to life or disruption to communities. They are not used when flooding of property is expected, even if evacuation may be necessary, unless at least one of the following criteria are met:

- **Significant risk to life** caused by:
  - deep and fast flowing water (e.g. caused by significant overtopping of defences or sudden onset flooding from dam/defence failure);
  - presence of debris in the water that could cause death or injury;
  - potential/observed collapse of buildings/structures;
  - the vulnerability of the population or their surroundings (e.g. deep/fast flowing water through a caravan park).
- **Significant disruption to communities** such as:
  - community isolated by flood waters with no obvious means of escape;

- critical resources/infrastructure for communities disabled (e.g. no access to food, water, electricity);
- emergency services and authorities unable to cope with large volumes of evacuees and rest centres at full capacity;
- mutual aid/military support necessary or called upon.

As of November 2014 there are 1.7 million properties in flood warning area in England and 1.03 million properties signed up to receive EA warnings.

Flood planners and responders are able to receive automated email summaries of the flood warnings in force tailored to their local area. These summaries are in addition to individual flood warnings and will only be sent when there are flood warnings in force for the local area. Your local Environment Agency office can provide details of how to sign-up for this service

## Floodline Warnings Direct

The Environment Agency operates a flood warning service in areas at risk of flooding from rivers and the sea and in certain location from groundwater. Floodline Warnings Direct (FWD) is the main flood warning messaging service the EA uses. It allows the public and business to register for flood warnings for their property in England and Wales. It provides a direct message via phone or fax. Additional channels such as email, text message and XML are also available. You can sign up to the service online (https://fwd.environment-agency.gov.uk/app/olr/home) or by calling Floodline on 0345 9881188. This service is most suited to individuals or organisations who wish to receive flood warnings for a small number of properties. If flooding is forecast, warnings are issued using a set of three easily recognisable codes.

## Flood Alert


**What it means**

Flooding is possible. Be prepared.

**What to do**

- Monitor local news and weather forecasts.
- Be aware of water levels near you.
- Be prepared to act on your flood plan.
- Check on the safety of pets and livestock.
- Charge your mobile phone.
- Encourage the instigation of simple / low impact preparations for flooding.

## Flood Warning


### What it means

Flooding is expected. Immediate action is required

### What to do

- Move cars, pets, food, valuables and important documents to safety.
- Get flood protection equipment in place.
- Turn off gas, electricity and water supplies if safe to do so.
- Be prepared to evacuate your home.
- Protect yourself, your family and help others.
- Act on your flood plan.

## Severe Flood Warning


### What it means

Severe flooding.  Danger to life.

### What to do

- Collect things you need for evacuation;
- Turn off gas, electricity and water supplies if safe to do so;
- Stay in a high place with a means of escape;
- Avoid electricity sources;
- Avoid walking or driving through flood water;
- In danger call 999 immediately;
- Listen to emergency services; and
- Act on your flood plan.

The Environment Agency's codes form part of its staged flood warning service. Flood alerts, warnings and severe flood warnings are issued directly from Floodline Warnings Direct. They are targeted to specific areas and advise people on what to do People can choose whether or not to receive this information. All properties in flood warning areas are encouraged to sign up for this service. Floodline and EA's pages on the .GOV.UK website contain up to date information on the situation.  Since 2010 the EA have been able to significantly increase the reach of the warning service by providing an opt-out service – Extended Direct Warning (EDW).  EDW contacts are created by combining at risk unregistered addresses with the associated phone numbers fromBT's emergency services database (including ex-directory numbers). In order to meet data protection constraints the phone numbers are not associated with either the occupier name or the address of the property.  The EA do not hold details of the property that receive a message, nor the contact's name. EDW contacts only receive Flood Warnings and Severe Flood Warning messages on the landline telephone of properties at risk.

**Floodline**

Floodline (0345 9881188) was established in 1999 to provide a 24-hour telephone helpline through which the public can access up-to-date information about flooding in their area or talk to trained staff for more detailed enquiries.

## Flood Warnings for Infrastructure service

The **Targeted Flood Warning Service (TFWS)** was developed in response to the Pitt Review following the 2007 floods in England and Wales. The service enables Category 1 and 2 Responders (Civil Contingencies Act 2004) to register locations without addresses for flood alerts and flood warnings. Category 1 responders include blue light services and Local Authorities. Category 2 responders include utilities providing water, electricity and gas supplies as well as transport infrastructure operators. The TFWS is an online application which enables subscribers to manage and control their assets registered to the service. The TFWS is most appropriate for organisations with a large operational area and a large number of assets. As of November 2014 there are 75 Category 1 and 2 responders across England and Wales signed up as customers. For more information or to register please contact your local Environment Agency Area office.

TFWS works by matching assets at risk of flooding with Environment Agency flood warning areas. An asset could be any site specific equipment or development such as sewage treatment works, telephone exchange, an office or depot. The service also applies to transport networks such as motorway, road and rail infrastructure.

The status of all Environment Agency flood warnings is updated every 15 minutes. The TFWS system automatically updates the flood warning status of each registered asset within the flood warning areas. The infrastructure operator can then log into TFWS and view the flood warning status for their registered assets. This approach allows users to concentrate on the flood response required specifically for their own assets.

Any number of staff designated by the asset owner or operator can access the system using their email and password. As well as providing the latest flood warning status at each asset, the system can give users information about the asset, location maps and details of the Environment Agency Area and Incident Rooms that issued the alert or warning.

When the first asset reaches flood alert or flood warning status, an e-mail alert is sent to staff designated by the registrant. The alert prompts staff to log in to the system and take the relevant action. When staff log in, they see a list of their assets with the flood warning status clearly shown. The assets at highest risk of flooding always appear at the top of this list. Users can add as much detail to these assets as they wish - such as location, unique identification references, and descriptions.

Any operator with site specific assets or an infrastructure network can sign up to the TFWS and benefit from a more tailored flood warning service. The service is chargeable for Category 2 responders.

# Annex C – Met Office National Severe Weather Warning Service (NSWWS)

The Met Office NSWWS is a risk based warning service, where the forecast likelihood and level of impact are assessed to provide an assessment of the risk brought by severe weather.

There are two types of warning:

- **warnings** — issued up to 24 hours ahead;
- **alerts** — issued more than 24 hours ahead.

Warnings and alerts are issued and updated as necessary; 24/7/365.

Fig C.1 highlights the types of disruption associated with all weather types for each impact level.

Category 1 and 2 responders can sign-up to receive NSWWS by email through Hazard Manager. Responders will then receive all medium and high impact warnings directly. All Met Office alerts and warnings appear on Hazard Manager and the Met Office web site.

More information about NSWWS warnings is available on the Met Office website http://www.metoffice.gov.uk/guide/weatherwarnings

**Figure C.1. NSWWS, examples of the kind of disruption that might be experienced for each impact level (high, medium, low, very low)**

| | Very Low | Low | Medium | High |
|---|---|---|---|---|
| **Impact and advice applying to ALL SEVERE WEATHER** | The weather is not expected to have any noticeable impacts but there may be some minor issues e.g. when travelling, some extra care may be needed on occasions and there may be some disruption to outdoor events. | **BE AWARE** and ensure you access the latest weather forecast for up to date weather information.<br>Expect some minor delays due to slower traffic. Outdoor events may be disrupted or cancelled. | **BE PREPARED.** Take precautions where possible and ensure you access the latest weather forecast.<br>**BE PREPARED** for some disruption to normal daily routines.<br>Travel only if well prepared and **BE** | **TAKE** precautionary **ACTION** and remain extra vigilant. Follow orders and any advice given by authorities under all circumstances.<br>Ensure you access the latest weather forecast. **EXPECT** significant disruption to normal daily routines.<br>Avoid all non-essential journeys.<br>If you must make a journey carry emergency food/clothing/blanket etc. |

| | | | | |
|---|---|---|---|---|
| | | | **PREPARED** for longer journey times. | |
| **Impact and advice associated with RAIN** | Some flooding of low lying fields, recreational land and car parks but little or no disruption to travel.<br>Wet road surfaces and possibility of ponding water leading to difficult driving conditions.<br>Take extra care when driving in affected areas. | Localised flooding of low lying fields, recreational land and car parks. Flooding of a small number of homes and businesses. Wet road surfaces and possibility of ponding water, especially in known trouble spots.<br>Local disruption to travel – longer journey times.<br>Water on roads – drive according to the conditions encountered. | Some flooding of homes, businesses and transport links possible.<br>Disruption to travel likely.<br>Disruption to gas, electricity, water supplies and telecoms.<br>Some evacuations may be required. Be prepared to protect yourself and your property. | Widespread flooding of property.<br>Severe disruption to travel.<br>Loss of gas, electricity, water supplies.<br>Significant disruption to communities.<br>Evacuation expected.<br>Significant risk to life.<br>Take action to protect yourself and follow the advice of the emergency services. |

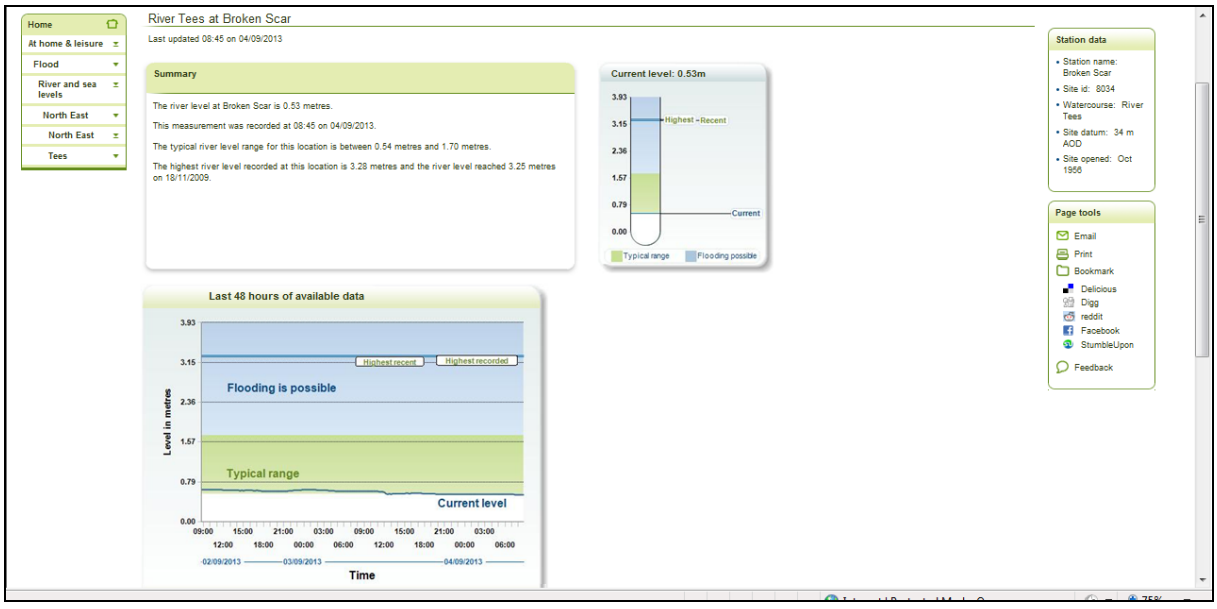
# Annex D – River and sea levels on the internet

The Environment Agency website provides emergency planners and responders with near real time information about river and sea levels.

The Environment Agency has monitoring stations across England that measure the level of rivers, lakes, the sea and groundwater. Most of the measurements are taken electronically and automatically sent to databases used by the Environment Agency's forecasting systems. These water level measurements for rivers and the sea are also sent straight to the EA website and published online. The information is updated daily during 'normal' conditions, and updated every 15 minutes during high flows.

Having up to date information on local water levels helps people living in flood risk areas be better informed about the situation and decide what actions to take as the water levels change. This information also benefits people that use rivers for recreation such as anglers and boaters. It helps Local Authorities identify where raised water levels could result in problems with surface water flooding. It should be an important component of the information set that emergency planners and responders use to help inform decisions and actions when dealing with flooding from rivers and the sea. Users can navigate through to an individual gauging station by clicking on a series of maps, see Figure D.1.

**Figure D.1: River levels station details**




Once a user has clicked on the river level station they are interested in they will be shown the following information for that particular station:

- an image providing a text summary of the situation;
- river level 'thermometer' – which shows the current water level at a particular point and includes information to put this in context (such as the highest level recorded and the level where flooding is possible);
- a hydrograph - showing the recent water levels over the last 48 hours, along with information to help put these in context;

- station data which provides details such as the station name, station identifier, watercourse, and when the site was opened; and
- flood warnings - when there is one or more flood warning in force, a link will appear directing users to the Environment Agency’s online live flood warning information.

# Annex E - Communications guide

Immediately when an emergency occurs, and during the first hour:

**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 including public health information (e.g. stay indoors, symptoms, preparing 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 the scene.

**What should you tell the public?**

The Environment Agency and Public Health England have prepared general public advice, which is summarised here. In short, before flooding happens you may want to ensure that you reinforce these key messages:

**Flood warning key messages**

**Figure E.1: Flood warning key messages**

| Flood warning key messages |
| --- |
| **Think about flooding before it happens**<br>• Your local authority or the Environment Agency can tell you about the dangers of flooding where you live. Do this BEFORE a flood happens.<br>• If available for your neighbourhood, sign up for free flood warning messages from the Environment Agency to receive phone, text or email messages about when flooding is expected.<br>• Know what the levels of flood warning mean:<br>  ○ Flood Alert: Flooding is possible. Be prepared. |

- Flood Warning: Flooding is expected. Immediate action required.
- Severe Flood Warning: Severe flooding. Danger to life.

- Make a personal Flood Plan for what you will do if there is a flood. Advice on how to make a plan and a self-complete template is available from the Environment Agency website.
- Prepare your home in case there is a flood. Advice on how to reduce damage (e.g. flood proofing, flood boards and airbrick covers) is available from the Environment Agency website.
- Buy flood insurance to protect your home and your belongings.

**If a flood has been forecast**

- If flooding has been forecast where you live, listen to local radio or check the Environment Agency's website for updates and news. Phone Floodline 0345 988 1188 or your Local Authority if you have questions.
- Pack a "flood kit" in case you need to leave your home. Remember:
  - Phone numbers, insurance documents, bank cards and money
  - Medicines and medical devices, hearing aid batteries, glasses and contact lenses
  - Clothing, toothbrush and personal items.If you have a baby, pack nappies, clothing and baby food.
- Know how to turn off your gas, electricity and water before flood water enters your home. Phone your local suppliers if you are unsure how to do this.
- Be careful not to hurt yourself when preparing your home and moving important things to a higher place.

**During a flood**

- Accidents happen in fast flowing flood water. Avoid walking or driving in or near flood water. Driving in flood water significantly increases risk of drowning. Do not let children play in flood water
- Stay safe, listen to the advice of the emergency services and evacuate when told to do so.
- Do not touch sources of electricity if you are standing in water.
- Remember that flooding is stressful. It is normal to feel anxious or upset.

- Take care of yourself and your family and check on elderly and vulnerable friends and neighbours.
- Move your family, pets and flood kit to a high place with means of escape.
- Avoid contact with flood water and wash your hands regularly.
- Swallowing flood water or mud can cause diarrhoea, fever or abdominal pain. Mention the flood if you see your GP within 10 days for abdominal complaints.

**After a flood**

- Take care if you must go into flood water. There could be hidden dangers like sharp objects, raised manhole covers and pollution;
- Ensure good ventilation if using portable indoor heating appliances to dry out indoor spaces. Do not use petrol or diesel generators or other similar fuel- driven equipment indoors: the exhaust gases contain carbon monoxide which can kill;
- Do not turn on gas or electrics if they may have got wet. Only turn them on when they have been checked by a qualified technician;
- Feeling tired, anxious and having difficulty sleeping is normal after you have been flooded. Contact friends and family for support as it can take a long time for life to return to normal;
- If you notice a change in water quality, such as a change in the colour, taste or smell of your tap water, ring your water company
- For food safety advice after flooding, including how to make baby food without mains water, consult the Food Standards Agency[50];
- Do not eat food that has touched flood water. If your fridge has not been working for more than four hours it is advisable to throw away the food inside;
- Wash your hands regularly and clean work surfaces before and after preparing food. If water is not available use hand sanitising gel or wet wipes;
- Make sure your family take their medicines and attend scheduled medical appointments. Phone NHS 111 if you have non-urgent health concerns; and
- Stay with friends or family, or ask your Local Authority to help you find alternative accommodation if your home has been damaged by flood water. Only return to your home when essential repairs and cleaning have been completed.

[50] http://www.food.gov.uk/policy-advice/microbiology/flood

**Cleaning up after a flood**

- Call your insurance company as soon as possible and follow their advice;
- Take photographs before you start cleaning and ask your insurer before discarding items that cannot be cleaned (e.g. mattresses and carpets);
- Wear rubber boots and gloves to clean up, and be sure to wash hands afterwards;
- Clean all hard surfaces (e.g. walls, floors) with hot water and detergent. Hard surfaces contaminated by sewage need to be cleaned and disinfected;
- Wash soft items (e.g. clothing, bedding and children's toys) on a 60 degree cycle with detergent;
- Place rubbish in hard bins or in rubbish bags away from your home;
- Dispose of dead rodents and pests in a plastic bag, wearing rubber gloves;
- Wash clothes used for cleaning on a separate cycle from your other clothes; and
- Heating, dehumidifiers and good ventilation can help dry out your home. You may notice mould growing on damp walls, this will stop growing as your home dries out but if it persists, contact a specialist cleaner

For further information please visit the websites of the Environment Agency[51], Public Health England[52] and the Food Standards Agency[53].

[51] http://www.environment-agency.gov.uk/homeandleisure/floods/
[52] https://www.gov.uk/government/news/flooding-advice-to-the-public
[53] http://www.food.gov.uk/policy-advice/microbiology/flood

# Annex F – Social Media

The increasing use of social media tools can provide a valuable resource to deliver up to date warnings and information to the public, media and even other responders. If planning to use social media as a means to warn and inform the public a number of points will need to be considered:

- social media is a useful tool and one of a variety used to inform the public. The most frequent way of informing the public is still via 'old media' (TV, radio, newspapers). Maintaining a variety of warning and informing practices as outlined above remains important;
- the physical effects of an emergency can impact the infrastructure required for social media use e.g. storm damage to mobile cell towers, loss of power to networks;
- access to social media can be limited in significant sections of the public; this is especially the case with vulnerable groups such as the elderly. This can be either a technology deficit and/or a lack of the necessary infrastructure in a particular area;
- however, there is now a whole generation for whom social media is the main access to information. The Met Office, PHE, Local Resilience Forums and the Environment Agency all use it extremely effectively to warn and inform; and
- during and after an emergency or flood event, social media can be a useful intelligence gathering tool.

## How Local Resilience Forums uses social media to prepare and respond to flood events

Social media plays an increasing role in emergency planning, driving expectation of its use by responders in emergencies. However, the range of different social media tools/methods used by responders can potentially create obstacles to successful joined-up social media engagement with the public.

**Case Study**

Devon and Cornwall Police, with the help of their LRF partners, have created a framework to support multi-agency social media crisis communication. This is an emerging product and has not yet been fully tested. However, the document provides simple, clear guidance to support LRF members join up their social media communications.

The framework is short and concise, and is therefore easy to navigate under pressure during an incident. The framework sets out what to do in three stages of an incident: when it is first declared, during the incident and when it is over. The framework also provides useful tips for responders on social media issues they may face during an incident. These issues include: notifying the public of an incident, asking the public for information, increasing the impact of messages, dealing with queries from the public, dealing with misinformation and other more general tips.

The framework helps enable consistency across responders in the way they handle these sometimes difficult issues. Advice includes:

- Using 'BREAKING' at the start of a message to highlight it as immediate and important;
- Making clear the main channels and accounts to follow for latest information; and
- Ensuring regular messaging during incidents to reduce rumours filling in gaps.

Vicky Goodwin, External Communications Manager for Devon and Cornwall Police said "*Earlier this year many agencies across Devon and Cornwall came together during a one day social media conference to look at how social media activity could be coordinated more effectively during a critical incident. Feedback from this conference has informed the content of the partnership strategy. The strategy has yet to be tested but it will be used during our next critical incident or planning exercise, whichever comes first. Any learning will then be fed back into the document for future use*".

## How the Environment Agency uses social media to prepare and respond to flood events

Social media is an increasingly important channel in Environment Agency communications during incidents and in engaging with communities at risk of flooding. Along with the conventional methods for disseminating messages on flooding, the Environment Agency uses social media to warn and inform communities at risk of flooding; build trust with communities through engagement and better customer service; engage others to help influence awareness of flooding; and gather intelligence to inform operational responses.

Between April 2013 and March 2014, the Environment Agency sent over 16,900 messages via social media channels. The number of people and organisations following the Environment Agency on Twitter, Facebook, YouTube, LinkedIn and Flickr continues to increase. During 2013/14 the Environment Agency's social media community grew by:

- 144,000 new twitter followers to 260,000 followers
- 9,400 new Facebook fans to over 14,900 fans

In November 2013, the Environment Agency became one of the first organisations in the UK to provide Twitter Alerts, a service which pushes alert notifications to subscribers' mobile devices and highlights vital information within Twitter. In January and February 2014 the Environment Agency sent 34 Twitter Alerts. In total, warning and informing messages sent via Twitter during this time resulted in 14,360 retweets and had a potential reach of over 8 million.

During the 2013/14 winter floods, multiple channels including Facebook, Twitter, YouTube, Flickr, Pinterest, Twibbon, blogs and local forums, were used to engage flood risk communities, flood victims, other emergency responders, MPs and the media.

**Preparing for floods**

During November 2013 the Environment Agency carried out a four-week nationwide flood campaign to encourage people to prepare for flooding and take steps to protect themselves, their families and homes. Zero cost channels were used to get messages out including media, social media and working with other organisations.

Ways that professional partners, businesses, organisations and members of the public supported the campaign included:

- downloading and using the campaign pack from www.gov.uk/floodsdestroy
- tweeting and re-tweeting the campaign messages using #floodaware
- sharing posts from Flood Group UK and the Environment Agency Facebook
- adding the #floodaware Twibbon to their Twitter and/or Facebook account

The campaign resulted in:

- **16,200** visits to the Environment Agency website as a result of social media activity
- **9,476** new followers on Twitter and **317** new likes on Facebook.
- **706** #floodaware Twibbon supporters
- **8,623** total visits to the Environment Agency website as a direct result of the campaign.
- **3,296** visits to the flood maps due to the campaign activity.
- **945** visits to the flood plan pages due to the campaign activity.
- **476** sign-ups to Floodline Warnings Direct (FWD) during the campaign

In November 2014, a similar campaign took place. The Environment Agency asked people to: view the Environment Agency's online flood information, check their flood risk using the Environment Agency's maps, sign up for free flood warnings, and download and complete a personal flood plan. These actions can all be done on GOV.UK

**Responding to floods**

Social media provides the most current public source of information during an incident. Listening and responding to conversations on social media can inform our operational work and help improve customer satisfaction.

During the winter 2013/14 flooding, there was an unprecedented level of conversation about the Environment Agency across social media. Social media drove 980,000 people to the Environment Agency website. Facebook and Twitter were the second and third top referral sites to environment-agency.gov.uk, after BBC online. Social media conversation peaked at 14,575 mentions of the Environment Agency on 10th February 2014 (the equivalent to one mention every 6 seconds when averaged over 24 hours).

Environment Agency flood warnings are picked up by Value Added Resellers (VARs) and distributed to massive audiences through social media – YouTube, Twitter and Facebook.

One example of this is the Shoothill FloodAlerts application which was originally launched as a Facebook app in April 2012 and currently has over 29,800 users. It takes real-time flood warning data from the Environment Agency and displays it on an interactive map, sending notifications to users when a flood alert will affect their monitored location.

## How the Met Office uses social media to prepare and respond to flood events

The Met Office uses social media channels, including Twitter, Facebook, YouTube and our blog in line with our social media strategy and guidelines to:

- Help increase public understanding of weather and climate
- Share our warnings and forecasts and drive traffic to our website
- Monitor conversation about the Met Office and the weather
- Build a community of advocates who share and act on our warnings

During 2012-2013 the Met Office increased their social media following by 114%, from 149,000 to 320,000. As of September 2013 the number of followers across all channels totalled 400,000.

**Case Study: Thundery Breakdown to the heat wave July 23rd 2013**

The Met Office used social media to successfully complement their traditional forecasts and warnings in highlighting the thundery breakdown to the heat wave during the latter half of July 2013. The following releases were made before, during and after the event.

**Before**

Video explanation of the forecast
https://twitter.com/metoffice/status/359327289579810817

Shared links to warnings and explanations
https://twitter.com/metoffice/status/359674983628283904

**During**

Shared lighting observations and rainfall radar links
https://plus.google.com/111306638524934148457/posts/UFnSvLjRAFU

Shared background information on thunderstorm formation
https://twitter.com/metoffice/status/359593279001595904 and
https://twitter.com/metoffice/status/359712312166326272

**After**

Shared video of lightning strikes and rainfall radar
https://twitter.com/metoffice/status/359680768886317056

## How Public Health England uses social media to prepare and respond to flood events

Public Health England endeavours to provide regular and timely health updates through a variety of traditional and online communication methods, including social media channels for any type of major event or national disaster such as a flooding emergency, in support of local multi agency responders. Updates will be issued in association with relevant external stakeholders. These include disseminating messages through website articles, Twitter updates and Facebook posts offering advice, information and links to relevant publications to assist those affected by the event or emergency.

For reference our Twitter account is @PHE_uk, London regional account is @PHE_London and Facebook account is www.facebook.com/publichealthengland

## Applications using Environment Agency open data

The Environment Agency now shares its live flood information as open data on GOV.UK. Data available include feeds of flood warnings in force, river and sea levels and a three day flood risk forecast. The Environment Agency is encouraging developers to take these open data and use them innovatively to communicate flood information to customers. Examples include 'Flood Alerts' on Facebook and 'GaugeMap' provided by Shoothill as well as CH2M Hill's 'Flood Alert' app for iPhone, Android and Blackberry. The Environment Agency also has a 'widget' which allows live flood warning information to be easily presented on websites. The widget can be downloaded from the Environment Agency pages on the .GOV.UK website. It is currently used to show warnings in force on the websites of local radio stations, local authorities, parish councils, community flood groups and water companies.

For access to known VARs products please use the following links:

| Company | Product | Link |
|---|---|---|
| Shoothill | Flood Alert | http://www.shoothill.com/FloodMap/ |
| Halcrow | Flood Alert | http://www.halcrow.com/floodalert |
| Met Office | Flood Widget | http://www.metoffice.gov.uk/public/weather/flood-warnings/ea#?tab=floodwarnings |
| Environment Agency | Flood Widget | http://www.environment-agency.gov.uk/homeandleisure/floods/137543.aspx |

This table will be updated as and when new products enter the market.

Department
for Environment
Food & Rural Affairs

www.gov.uk/defra

Environment Agency

PREPARING FOR EMERGENCIES