

## Version control and comments tracker

Version number	Date	Summary of changes	Contributor / reviewer
Draft v03	11/06/12		Paul Cobbing (NFF)
Draft v03			Jo Allchurch (LGA)
Extract draft v03	11/06/12		Jean Venables (ADA)
Draft v04	15/05/12	General comments	Wendy Brooks
Draft v05	15/06/12	General comments	Craig Woolhouse
Draft v04	15/06/12	Revised EDW numbers	Chris Strong
Draft v04	15/06/12	Update to capacity section	Jon Naylor / Celia McNally
Draft v04	15/06/12	Revision to funding information	Stuart Elks
Draft v05	28/06/12	Plan English rough edit and LGA comments	Abigail Whittaker / Jo Allchurch
Draft v06	28/06/12	Revisions following DLT comments	FCRM DLT
Draft v07	29/06/12	General comments	Phil Rothwell
Draft v08	20/07/12	Updated statistics	Various internal
Draft v09	01/08/12	Various	Various comments from Defra and Ken Allison
Draft v10	07/08/12	Various	Comments from Pete Fox
Draft v11	10/08/12	Updated data	Various
Draft v12	17/09/12	Various	David Rooke and Paul Leinster
Draft v13	22/09/12	Updated data including financial figures and properties flooded	Comments from EMcK and MD and Phil Winrow
Draft v14	10/09/12	Re-order of sections, shortening report	MA
Draft v15	11/09/12	Minor text	Wendy Brooks
Draft v16	21/09/12	Internal EA review	various



# Managing flood and coastal erosion risks in England:

1 April 2011 to 31 March 2012

Report by the Environment Agency

PLEASE NOTE THIS IS ONLY A DRAFT REPORT

We are the Environment Agency. We protect and improve the environment and make it a better place for people and wildlife.

We operate at the place where environmental change has its greatest impact on people's lives. We reduce the risks to people and properties from flooding; make sure there is enough water for people and wildlife; protect and improve air, land and water quality and apply the environmental standards within which industry can operate.

Acting to reduce climate change and helping people and wildlife adapt to its consequences are at the heart of all that we do.

We cannot do this alone. We work closely with a wide range of partners including government, business, local authorities, other agencies, civil society groups and the communities we serve.

**Published by:**

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# Foreword

**Comment [m1]:**

Draft Foreword - author still to be confirmed. Potentially Environment Agency Chief Executive or Chairman

This is the first report about flood and coastal risk management that provides key decisions makers, those working to manage these risks and people at risk with an update of what has changed and what has been delivered during the year.

This report highlights the achievements of across all risk management authorities working in partnership to manage the risks to people and properties. This have been achieved by flood and coastal erosion risk management schemes that have reduced the risk to properties and households, considering the risk to flooding when making decisions about where to build new homes and improving and developing innovative flood forecasting and warning approaches.

The report also shows that by actively considering the opportunities to enhance our natural environment our flood and coastal erosion risk management schemes have also provided benefits to our environment.

This year we have also seen the introduction and implementation of new polices and legislation that provide a clearer and more efficient framework for the management of these risks. The report highlights these key developments including the publications of the first national strategy for flood and coastal erosion risk management that sets out this framework and promotes all risk management authorities working in partnership to deliver benefits for people and the environment.

The progress made in this year will need to be built upon in the coming years. I hope to see the benefits of the new Partnership Funding approach bringing in more money overall to benefit more people.

I also look forward to seeing the continued progress of Lead Local Flood Authorities as they tackle the challenges of local flood risks from surface water and groundwater whilst working in partnership with others.

It is important that we continue to work I partnership across the administrative boundaries and promote a catchment and coastal cell approach. Alongside this we must all work together to achieve greater benefits for the environment through our flood and coastal erosion risk management activities as we strive to achieve the requirements of the Water Framework Directive.

# Executive summary

The flooding during the summer of 2007 caused substantial damage impacting the lives of thousands of people. The Flood and Water Management Act 2010 implemented many of the recommendations from Sir Michael Pitts's review into these floods. The Act provides clarity on the roles and responsibilities for the management of flooding and introduces some new duties.

This report is produced to fulfil one of these new duties placed on the Environment Agency. It summaries the progress made by all authorities on managing flood risk and coastal erosion during the year 1 April 2011 to 31 March 2012.

Notable achievements during this year include:

- The reduction in flood risk to 41,500 households and reducing the risk of loss from coastal erosion to 700 households
- 1,000 properties benefitting from schemes addressing known surface water and groundwater flooding issues.
- Improving services to forecast and warn for flooding including the new Shothill Facebook Application improving the access to flood warning information.
- The publication of the first statutory national Flood and Coastal Erosion Risk Management Strategy
- The introduction of Flood and Coastal Erosion Resilience Partnership Funding.
- The completion of one-hundred and fifty-two Preliminary Flood Risk Assessments by all Lead Local Flood Authorises required under the Flood Risk Regulations implementing the EU Floods Directive.
- One hundred and forty-nine LLFAs progressing tor consulting on their local strategies required under the Flood and Water Management Act 2010.

**Comment [m2]:** Suggested key highlights - to be confirmed - comments welcome

This report has been developed with information from a range of sources. Direct contributors include:

- all one hundred and fifty-two Lead Local Flood Authorities in England and the Local Government Association
- the Association of Drainage Authorities
- the National Flood Forum
- the ten water and sewerage companies operating in England - Anglian Water, Northumbrian Water, Severn Trent, South West Water, Southern Water, Thames Water, United Utilities, Dŵr Cymru Welsh Water, Wessex Water and Yorkshire Water
- the Regional Flood and Coastal Committees of England
- the Department for Environment, Food and Rural Affairs (Defra)
- the Environment Agency collating information on its activities and those of other risk management authorities including local authorities, Coastal Groups and Internal Drainage Boards.

**Comment [m3]:** Welsh Water included as it extends into / provides services in England

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# Introduction

The effective management of flood and coastal erosion risks requires many organisations to work together in partnership. This includes the following risk management authorities:

- Environment Agency;
- Lead Local Flood Authorities (LLFAs);
- District authorities;
- Internal Drainage Boards;
- Water companies;
- Highway authorities.

The Environment Agency has a duty to report to the Minister on progress in this area in England under the Flood and Water Management Act 2010 (the Act). This report describes how we are all working together to deliver the National Flood and Coastal Erosion Risk Management (FCERM) Strategy and it will inform government's policy and funding decisions. It will be shared with all risk management authorities, local communities and interested parties.

This report covers the year 1 April 2011 to 31 March 2012 and includes all risk management authorities. The Environment Agency will produce a similar report every year with a more detailed report every six years to reflect on how flood and coastal risks are changing.

The Environment Agency's biennial report on reservoir safety provides further detail on the management of the flood risk from reservoirs. The latest [biennial report on reservoir safety](#) covers the period 1 April 2009 - 31 March 2011.

## Scale and impacts of flood and coastal erosion risks

The Environment Agency estimates that 2.5 million properties are at risk of flooding from rivers and the sea (source: National Flood Risk Assessment, Oct 2011, England only. Environment Agency). 3.8 million properties are estimated to be susceptible to surface water flooding, this includes around one million that are also at risk of flooding from rivers or the sea (source: [Investing for the future – flood and coastal risk management in England, a long term investment strategy, 2009, England only](#)). The Environment Agency is working with LLFAs to update the national scale assessment of surface water flood risk. It is estimated that nearly 1.2 million hectares of agricultural land is at flood risk from rivers or the sea or from both. This covers 74 per cent of the total area of the floodplain (source: [Developing the Evidence Base to Describe the Flood and Coastal Erosion Risk to Agricultural Land Use in England and Wales - FD2634](#)).

Coastal erosion and landslides on the coast affect smaller areas of land than floods but cause permanent loss to property and infrastructure. Such losses can have significant impacts on the local economy outside the area directly affected. Approximately 700 properties are vulnerable to coastal erosion over the next 20 years and a further 2,000 may become vulnerable over the next 50 years (source: Assessment of Properties at Risk, National Coastal Erosion Risk Mapping. Environment Agency 2012).

## Climate change and flood risk

On 25 January Government published the [UK Climate Change Risk Assessment](#) (CCRA), the first assessment of its kind for the UK and the first in a five year cycle. This assessment is intended to provide information to policy makers on the risks and opportunities from climate change and the vulnerability of the UK.

The CCRA highlighted flood risk as the number one natural hazard facing the country and indicated that it will increase significantly. Increases in the frequency of flooding will affect people's homes and wellbeing, especially for vulnerable groups and the operation of businesses and critical infrastructure systems.

For England, annual average damage to properties due to flooding from rivers and the sea is projected to rise from about £1.0 billion today to between £1.8 billion and £10.7 billion by the 2080s, based on future population growth and if no additional action is taken.

## Flood events

The Environment Agency has collated records on property flooding during the year 1 April 2011 – 31 March 2012 (Table 1). It is likely that instances of surface water flooding are not fully reflected within these figures. The Department for Communities and Local Government are working with the Environment Agency and local authorities that have a role to play in collecting and collating information on property flooding to enable a more comprehensive picture to actual flooding to be available for future years.

**Table 1: Properties flooded (commercial and residential) (1 April 2011 - 31 March 2012)**

Environment Agency Region	Properties flooded
Anglian	5
Midlands	22
North West	32
South East	7
South West	350
Yorkshire and North East	101

The reported property flooding in South West is predominately due to surface water flooding in the Bournemouth and Poole area that occurred following heavy rainfall in August 2011.

So far during the summer of 2012 flooding has occurred across England. Provisional figures indicate approximately 2,400 properties flooded up to end August 2012. These figures are subject to change based on further information received from the Department for Communities and Local Government. Further details of these flood events will be included in the report for 2012/13.

# Progress in managing flood and coastal erosion risks

The Act took forward many of the actions from Sir Michael Pitt's review into the flooding during the summer of 2007. One of the fundamental achievements of the Act was to set out new responsibilities for the management of local flood risks i.e. from surface water, groundwater and smaller watercourses. The Act gave LLFAs responsibility for the management of these risks and promotes partnership working and cooperation between all bodies with a role to play in the management of flood and coastal erosion risks.

## Managing flood and coastal risks

### *Spatial planning*

Inappropriate development can increase the risk of flooding. By planning new development and making building more resilient to flooding, we can reduce the risks for existing communities.

The Environment Agency works in partnership with Local Planning Authorities (LPAs) by advising on planning consultations in high risk areas. Evidence from 2011/12 shows that Environment Agency advice continues to be taken into account.

Across all development types, [2011/12 is the sixth year in succession](#) in which 96 per cent of planning applications were decided in line with Environment Agency flood risk advice. In 2011/12 over 99 per cent of the 47,652 proposed new residential units were decided in line with Environment Agency flood risk advice.

In 2011/12 all planning appeals where flood risk was an issue were either dismissed or allowed with conditions which fully addressed flood risk concerns.

### *River and sea flood risk management schemes*

Building defences is one way to reduce flood risk to households. Schemes must be technically, environmentally and economically viable. During 2011/12, we reduced the risk of flooding to 41,500 households. Of these, 15,650 were at very significant or significant risk and 1,195 were in the most deprived areas.



**Figure 1 - Deptford Creek Frontages**

Major schemes completed during the last year include the Altmouth Pumping Station in Merseyside (9,983 households) and Deptford Creek Frontages in London (8,094 households).

Individual property adaptation measures, such as flood boards or air brick covers, can reduce the flood risk. During 2011/12 the Environment Agency provided grants with funding from Defra which will provide individual protection to 1,135 households.

### *Local flood risk management schemes*

In March 2010 Defra announced £5 million for 49 local authorities to reduce the risk of surface water and groundwater flooding. Up to March 2012, fifty-two schemes have been completed benefiting over 1,000 properties. The schemes include attenuating run-off before it enters a watercourse or drain system and diverting flows away from properties. Sustainable drainage systems (SUDS) have been used to manage flooding and provide improvements to water quality and create habitat.

Following the introduction of the new Flood and Coastal Erosion Resilience Partnership Funding approach, risk management authorities are now able to apply for capital funding through Grant-in-Aid for schemes to reduce the risk from surface water and groundwater flooding.

### *Coastal erosion schemes*



**Figure 2 - Selsey West Beach scheme, West Sussex**

The Environment Agency, working with other risk management authorities, reduced the risk of loss from coastal erosion for 700 households during 2011/12. Of these, 550 will be protected for more than 20 years.

Major coastal erosion schemes include Hythe to Folkestone Beach Management in Kent (438 households) and Selsey West Beach, West Sussex - Beach Recharge (116 households).

### *Maintaining flood risk assets*

The Environment Agency and other risk management authorities maintain and operate assets to reduce the risk of flooding. Activities include closing flood gates and barriers, operating pumps, clearing channels and trash screens and carrying out regular exercises to ensure a quick response to flooding.

'High consequence assets' are defences where there would be a high impact on people, property or land if they did not work as designed. At the end of 2011/12, 98 per cent of these high consequence assets were at the required condition.

The Environment Agency published an updated FCRM [asset maintenance protocol](#) in December 2011. The protocol describes how the Environment Agency is adopting a consistent approach to the maintenance of assets. It set out how the Environment Agency will work with others to manage any change.

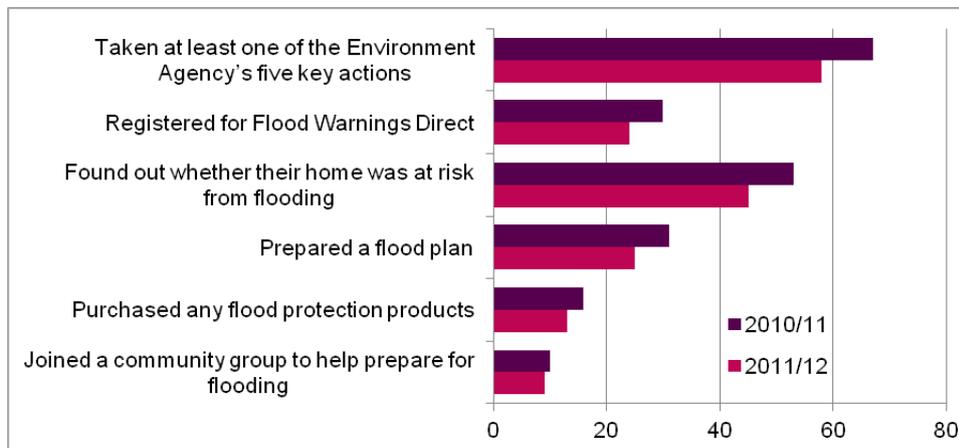
As of 31 March 2012, 17 per cent of LLFAs have a register of structures and features which are likely to have a significant effect on flood risk in their area. A further 78 per cent of LLFAs are currently developing their registers. This register is required under Section 21 of the Act.

## Preparing for and responding to flooding

### *Public awareness and preparedness*

All risk management authorities and community groups, including the National Flood Forum, want to make people more aware of flood risk. Their campaigns and events are designed to make the public better prepared and able to take action during a flood.

Improving the awareness of flood risk will continue to be an important part of FCERM because the majority of people living in areas at risk from flooding continue to underestimate the risk to their property (Figure 1).



**Figure 1: Actions taken by the public (source: Flood Incident Management Survey, 2012. Environment Agency)**

### *Providing flood forecasting and warning services*

The Environment Agency, Met Office, Flood Forecasting Centre (FFC) and other partners continue to develop and provide flood forecasting and warning services.

Accurate and reliable warnings of flooding from rivers and the sea require good information. This year, the [UK Coastal Monitoring and Forecasting \(UKCMF\) service](#), completed a three year programme of upgrades for the national Tidal Gauge Network. This will improve the reliability and quality of our data from this network.

Rainfall information is required to support forecasting of river flooding. This year the Environment Agency and Met Office started [a three year programme to install new weather radars](#) and established a new radar site in East Anglia.

Further improvements have also been made to forecasting tools and products. The UKCMF service has introduced a new technique to improve forecasting of storm surges, so that alerts can be issued earlier. The FFC has created a surface water

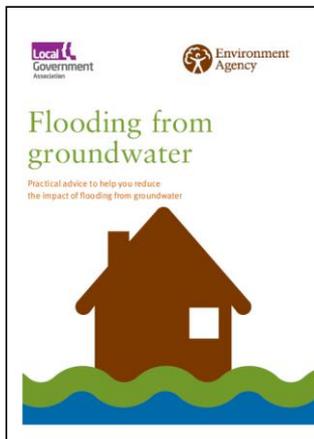
decision-making tool to improve the quality of flood forecasts for surface water. They also have a new country-wide fluvial forecasting tool (The Centre for Ecology and Hydrology's "Grid 2 Grid" model) to complement local forecasting models.

### Warnings and alerts

In 2011/12 nearly 60 per cent of households and businesses at the highest risk of flooding were offered a direct warning service. In 2009/10 the Environment Agency introduced an opt-out sign up method to the flood warning service, Extended Direct Warnings (EDW). This has resulted in the number of high risk properties being able to receive a direct warning via Floodline Warnings Direct rising from 14 per cent in 2008/09 to 46 per cent in 2009/10 and 56 per cent in 2010/11. This has been achieved by using EDW to add over 650,000 extra properties at the highest risk onto the flood warning system.

In 2011/12 nearly 83 per cent of homes and businesses in the floodplain were offered a flood warning service, this compares with 68 per cent in 2008/09.

The FFC has improved its service to customers by updating the daily Flood Guidance Statement to cover all sources of flooding.



Between November 2011 and February 2012 the Environment Agency introduced a new service for those at the highest risk of groundwater flooding. For the first time, people who have been flooded by groundwater in the past can receive direct warnings and monitor warnings in force on our website.

Two applications to give people better access to warning information were launched this year. The first is a free ['widget'](#) for web sites, that allows people to monitor the flood warnings in force and link to these on the Environment Agency website. The second is a [Facebook application](#), developed by Shoothill, which allows people to monitor any location and get alerts to their profile page and by e-mail.



New technologies have also been used to provide more targeted warnings to commercial users and other organisations. In summer 2011 the Environment Agency gave third parties direct access to the Environment Agency's live flood warning information under licence. This has allowed free-market commercial services to develop bespoke flood warning services to businesses, agencies and infrastructure operators at no cost to the Environment Agency.

Building on this success, the Environment Agency launched a new service for all Category 1 and 2 organisations under the Civil Contingencies Act in the autumn of

2011. This new service allows subscribers to receive flood warning information for specific areas.

### *Flood response and recovery*

Since April 2011, eighteen LLFAs report that they have investigated flooding incidents and published their findings in line with their new duty under Section 19 of the Act. A number of LLFA investigations are still underway and are yet to be published at the time of this report. When flooding occurs the LLFA has a duty to determine whether or not an investigation is necessary.

The Environment Agency and National Flood Forum share a Flood Recovery Trailer and a Flood Information Trailer. The National Flood Forum travels to flooded areas and use the trailers as a base to advise people who have been flooded and need help and support.

### **Benefits for the environment**

The way in which the risks posed by flooding and coastal erosion are managed directly impacts upon the natural environment of our rivers, wetlands and coast. Managing the risk of flooding and coastal erosion can provide opportunities to improve the natural environment.

The Environment Agency manages habitat creation programmes across England to meet legal obligations in the EU Habitats and Birds Directives.

As part of flood and coastal erosion management activities, 4,433 hectares of water dependent habitats were created or improved. A further 25 hectares of intertidal habitat were created, and 8.7 km of protected rivers improved. 87 hectares of biodiversity habitat were also created.

The improvement of water dependant habitat is mainly due to actions of the Parrett and Axe Brue Internal Drainage Boards and the Environment Agency on the Somerset Levels and Moors which created 4,116 hectares of water dependent habitat.

Other notable schemes included Rye Harbour Farm managed realignment and River Wensum (East Sussex) restoration. The Rye Harbour Nature Reserve is now managed as a partnership led by Sussex Wildlife Trust (SWT) and includes the Environment Agency, the Friends of Rye Harbour Nature Reserve and private landowners.



**Figure 3 - Rye Harbour Farm, East Sussex**

with a further £37.4 million of grant payments made to local authorities and internal drainage boards.

### *Funding and value for money*

During 2011/12 Environment Agency flood defence grant in aid expenditure on FCERM activities totalled £529.2 million. £229.3 million of this was capital and £299.9 million revenue,

The Environment Agency also managed £27.4 million for schemes funded by local levy, where regional flood defence committees agreed local priorities.

During 2011/12 the Environment Agency received £8.9 million in contributions towards capital projects; £5.4 million was received via public or private contributions towards schemes funded at least in part by flood defence grant in aid. An additional £3.5 million of local levy funding was also used as contributions towards capital projects.

The large capital schemes completed during 2011/12 will create £13.25 billion of benefits compared with their costs of £824 million. This is a benefit cost ratio of 16 to 1. When other Environment Agency capital expenditure during 2011/12 is taken into account, the benefit-cost ratio of the programme is around 8 to 1. This includes expenditure on schemes not supporting outcome measures.

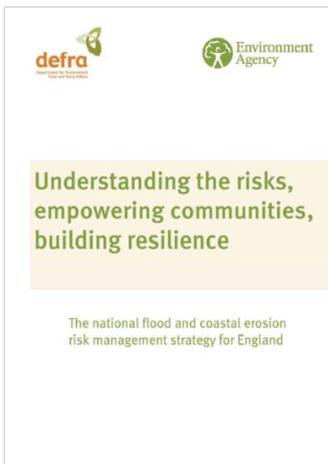
During 2011/12 the Environment Agency's national capital programme management service and procurement saved £6.1 million through efficiencies in FCERM schemes.

This includes £0.31 million on the River Trent project in Nottingham. The scheme was re-designed to use only the materials that could be generated on site avoiding the purchase of additional materials. The elements of the scheme delivered in 2011/12 protected 3000 properties to a 1 in 100 year standard of protection. By the time the whole scheme is completed it will protect a further 13,382 properties.

## Legal and policy developments

**Comment [m4]:** Reference to insurance required - lines to be agreed with Defra

The new legal framework to support the effective management of flood and coastal risks continues to be implemented by government alongside their supporting policies. This section describes the legal and policy developments related to the management of flood and coastal erosion risks during 1 April 2011 to 31 March 2012.



### *Flood and Water Management Act*

The Environment Agency and Defra produced the first [National Flood and Coastal Erosion Risk Management Strategy](#) for England, required under the Act, in May 2011.

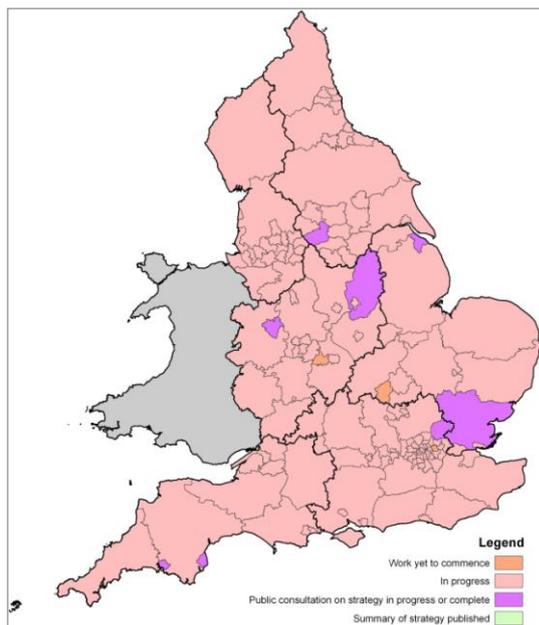
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The strategy describes the roles and responsibilities of the different risk management authorities involved in flood and coastal erosion risk management (FCERM) and the principles we should all follow when managing the likelihood and consequences of flooding and coastal erosion.

The strategy received Parliamentary approval on July 2011 and provides the first statutory framework for how communities, the public sector and other organisations will work together in England to manage flood and coastal erosion risk.

Under the Act, Lead Local Flood Authorities are responsible for developing, maintaining, applying and monitoring a strategy for local flood risk management (local strategy) in their area.

Local strategies describe the local flood risk in an area and set out the actions that will be taken to manage it. Local strategies will help prioritise investment decisions and provide information on how flood risk will be managed. They provide a starting point for LLFAs to engage with communities. Funding for the LLFA role has been available since April 2011.



The Local Government Association, working with representatives of Defra, the Environment Agency and other risk management authorities, produced guidance to help LLFAs develop their local strategies. The first version was published in February 2011, and updated in November 2011.

The guidance, agreed with Defra, states that local strategies are expected to take 12 to 18 months to develop.

Feedback from all 152 LLFAs in England shows that, as of the 31 March 2012, seven LLFAs have consulted or are consulting on their local strategies. 142 local strategies are in progress and 3 have not yet started on their strategies (figure 2).

**Figure 4: LLFA Progress developing local strategies**

Throughout this reporting year the Act has continued to be introduced in stages. The main Sections introduced were:

- April 2011 (and October 2010) Section 17 - Levies. Enables the Environment Agency to issue a levy to a LLFA for FCERM functions.
- April 2011 Section 19 - Local authorities: investigations. Places a duty on LLFAs to investigate flooding.
- July 2011 Section 11 - Effect of national and local strategies: England. Requires authorities to act consistently with them.
- July 2011 Section 18 - Environment Agency: reports. Requires the Environment Agency to report on FCERM.

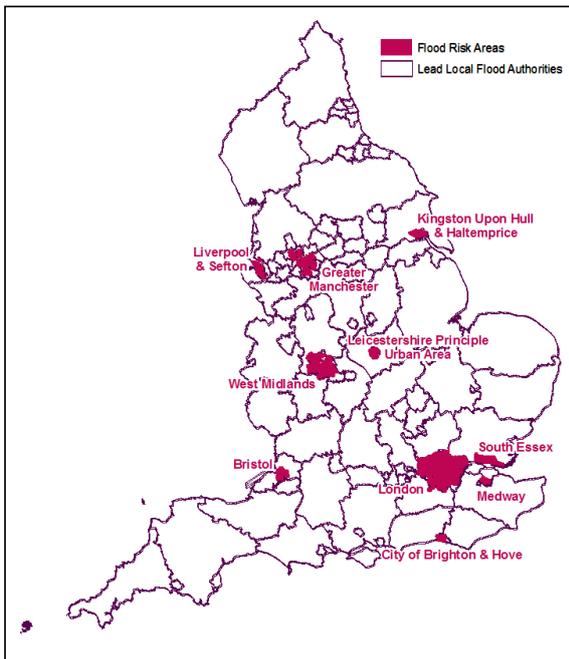
- October 2011 Section 27 - Sustainable development. Requires LLFAs, district councils, internal drainage boards and highways authorities to aim to make a contribution towards sustainable development when exercising their FCERM functions. Supporting [guidance](#) published by Defra.
- December 2011 Section 38 (Environment Agency) and 39 (local authorities including internal drainage boards): Incidental flooding or coastal erosion. Gives new powers to carry out works that cause flooding and coastal erosion for environmental purposes.

### *Flood Risk Regulations (2009) implementing the EU Floods Directive*

The Flood Risk Regulations 2009 (the Regulations) implement the requirements of the European Floods Directive. The Directive aims to provide a consistent approach to managing flood risk across Europe. The Regulations put in place a six year cycle of assessing, mapping and developing plans to manage flood risk.

To meet the requirements of the Regulations, all one hundred and fifty-two LLFAs completed a Preliminary Flood Risk Assessment (PFRA) of local flood risks. This is the first national risk assessment of local flood risks and forms the basis of information for local strategies. The Environment Agency reviewed and published the PFRAs ahead of the 22 December 2011 deadline and reported to the European Commission by 22 March 2012.

As part of the PFRA process LLFAs could identify Flood Risk Areas, defined as areas of significant local flood risk, as described in government guidance. The next stages of producing maps and plans only have to be prepared and reported to the European Commission for the Flood Risk Areas. Ten areas (figure 2) have been identified in England for the first cycle. The Environment Agency is currently reviewing three additional proposed areas.



Outside of these areas, LLFAs can manage local flood risks through their local strategies under the Act. The Environment Agency was exempt from preparing a PFRA and will be using existing maps and plans to apply the Directive requirements for rivers and the sea to the whole of England.

The Environment Agency is working with other risk management authorities, particularly LLFAs to progress the next stages of the Regulations. Together we will publish flood hazard and risk maps by December 2013 and flood risk management plans by December 2015.



### *Regional Flood and Coastal Committees*

In October 2011, eleven Regional Flood & Coastal Committees (RFCCs) replaced the Regional Flood Defence Committees. RFCCs are approved by the Minister and established by the Environment Agency under the Flood and Water Management Act 2010. They bring together members appointed by LLFAs and independent members with relevant experience to:

- ensure there are coherent plans for managing flood and coastal erosion risks across catchments and shorelines;
- promote efficient, targeted and risk-based investment in FCERM that optimises value for money and benefits for local communities;
- provide a link between risk management authorities and other relevant bodies to engender mutual understanding of flood and coastal erosion risks.

To better represent local interests, the Severn-Trent RFCC split into two committees on 18 April 2012 following Ministerial approval.

### *Partnership working between risk management authorities*

Throughout the year LLFAs have continued to develop relationships to help manage local flood risk. These groups vary in membership to meet local needs, with some crossing local government boundaries. These partnerships include local authorities, Environment Agency, water and sewerage companies, internal drainage boards and others.

Water and sewerage companies have supported these partnerships to perform their duties under the Act and national FCERM strategy. Their work is varied, with some action covering whole RFCC areas and others more local LLFA areas. Some examples include:

- engaging with risk management authorities, particularly LLFAs and the Environment Agency and establishing active links with RFCCs;
- establishing data sharing agreements with the Environment Agency and other risk management authorities such as LLFAs;
- developing catchment scale plans, piloting new techniques and approaches and working in partnership with others to jointly fund schemes;
- improving the resilience of water infrastructure and reducing sewer flooding.

### Case Study: Transfer of flood risk management powers

During 2011/12 a pilot project to de-main eight watercourses in the River Lugg catchment in Herefordshire was successfully completed.

All the watercourses are part of an asset management system where the potential consequences of failure are low and the Environment Agency was no longer able to justify continuing investment.

Potential land drainage benefits were identified that could be more appropriately managed locally by the River Lugg Internal Drainage Board.

Following a public consultation permissive powers to carry out works on 38 km of rivers have been transferred from the Environment Agency to the River Lugg Internal Drainage Board.

*This is an excellent example of Risk management authorities working together to deliver a more efficient and effective flood risk management service by transferring powers and responsibilities back to local communities.*

**Dr Anne Wheeler, Chair English Severn and Wye Regional Flood and Coastal Committee FCC**

### *Examples of partnership working*

Coastal Groups include coastal local authorities, the Environment Agency, Natural England and other organisations with coastal management responsibilities. These groups work in partnership to manage coastal risks. They are a forum for strategic coastal management, principally by developing Shoreline Management Plans (SMPs), and for showcasing local initiatives.

The Environment Agency and the Association of Drainage Authorities jointly developed guidance on the establishment of new Internal Drainage Boards. This was piloted through consultations in Cumbria and published in March 2012.

Local authorities, the police, fire service, Environment Agency and other organisations continue to work together through 38 Local Resilience Forums to prepare for incidents and emergencies. Many Local Resilience Forums establishing flood sub-groups.

### *Working with communities*

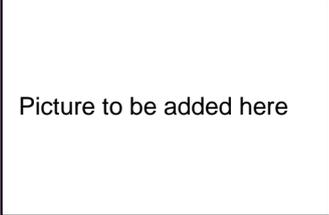
Collectively we can achieve more for communities if we work with them and with the community groups that are established.

The Environment Agency is working in partnership with the Women's Royal Volunteer Service (WRVS), to help older people at risk of flooding in the East of England.

The WRVS volunteers from across the East of England were trained to help 250 older people make personal flood plans.

### Case Study: Cornwall Floods - the response

During 2011/12 Cornwall Council, the Environment Agency and South West Water have been working closely with local communities to increase resilience following the flooding in towns and villages in Cornwall in November 2010.



Picture to be added here

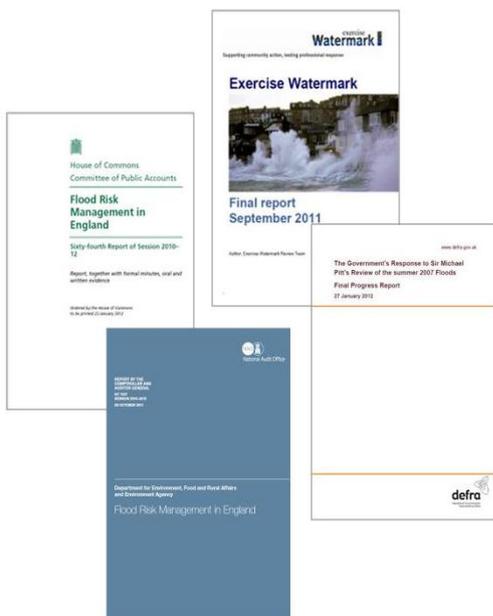
This close working has seen community flood recovery groups formed, with many settlements, such as St Blazey/Par, Mevagissey and Lostwithiel putting together Community Flood Plans. Cornwall Council, with support from the Environment Agency, has been successful in bidding for funds to deliver a Household Level Flood Protection Scheme, which, among various options, provided flood doors (picture above).

In St Blazey and Mevagissey, pilot services have been set up to warn of flash flooding, with rainfall intensity alarms and heavy rainfall alerts triggering actions, which involve local flood wardens from within the communities.

South West Water has carried out upgrades to a surface water pumping station at St Blazey.

## Reviews and enquiries

During the year there have been several notable FCERM reviews and enquiries specifically on funding and how flood incidents are managed.



On 28 October 2011 the National Audit Office (NAO) published its [Review of Flood Risk Management in England](#). This review was an independent evaluation of how public money has been, and is going to be, spent to better manage flood and coastal erosion risk. The NAO recognised the importance of flood and coastal erosion risk management, and recommends how to get better value for money in the future.

The Public Accounts Committee held hearings on the basis of the NAO report, and [published](#) its findings in January 2012. The Committee highlighted two main challenges; long term funding and defining who is responsible for value for money, decision making and overall

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accountability. The Environment Agency, along with other risk management authorities, is responding to these challenges.

The final report from [Exercise Watermark](#) was published in November 2011. This national exercise, carried out in March 2011, tested emergency flood plans from government, emergency responders and communities. It used scenarios based on severe weather conditions including flooding from the sea, rivers, surface water and reservoirs. The final report contained 36 recommendations which the Environment Agency and other incident response partners are now acting on. This means we will be better prepared for flooding and other emergencies in the future.

In January 2012 Defra published its final [Pitt Review Progress Report](#). The report showed that 91 per cent of the recommendations made by Sir Michael Pitt have been addressed, with most of the rest due to be completed by December 2014.

## Taking a strategic approach

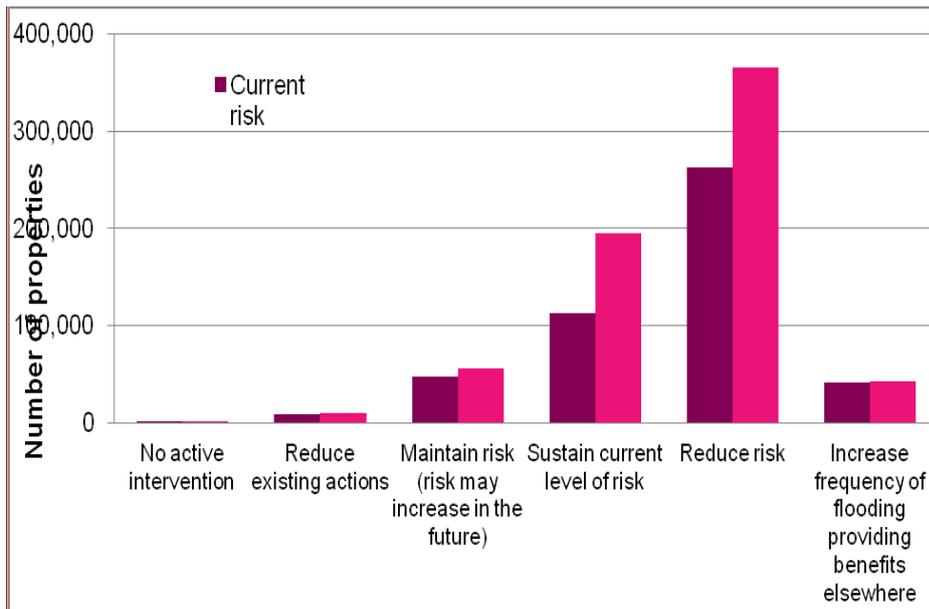
Managing flood and coastal erosion risks requires organisations with different priorities to work together in partnership. The national FCERM strategy provides a common framework and guiding principles for all partners. Plans at the catchments and coastal cell scale translate these guiding principles into approaches for managing the risks and provide a source of information for local strategies.

### *Strategic plans for catchments and coastal cells*

Understanding and managing flood and coastal erosion risks in a catchment or coastal sediment cell is a key principle of the national FCERM strategy. [Catchment flood management plans \(CFMPs\)](#) and [shoreline management plans \(SMPs\)](#) help organisations including LLFAs work across administrative boundaries.

The Environment Agency works with other organisations managing inland flood risks to produce CFMPs. They help us to plan how we can all manage flood risk in a more sustainable way across a catchment in the long term (50 to 100 years). Sixty-eight plans have been developed across England. The plan covering the Severn catchment also extends into Wales. The plans for the Wye and Dee catchments in Wales also cover parts of England.

Depending on the level of flood risk now and in the future, areas within the catchment are assigned one of six management approaches. The number of properties covered by each management option is shown in figure 3.



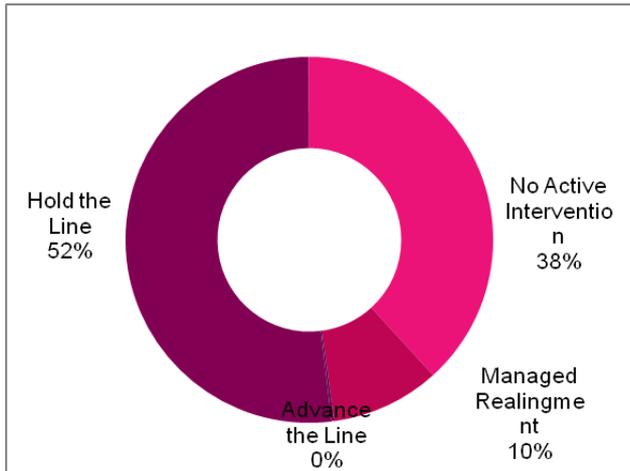
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**Figure 6 - Assigned management policy by number of properties taken from CFMPs**

Shoreline management plans (SMPs) provide a long-term framework for dealing with coastal flooding and erosion in a coastal cell. There are eighteen SMPs covering the coastline in England and a further two SMPs that also cross the border into Wales.

Coastal Groups help to develop and implement these plans. In England (including those SMPs that cross the border into Wales), local authorities lead on 16 SMPs, where coastal erosion is the dominant issue, and the Environment Agency leads 4, where sea flooding is the main issue. These plans were originally produced between 1995 and 1999. Seven of these plans have been reviewed and approved this reporting year.

Using evidence of how the coastal risks may change, SMPs identify a sustainable management approach for each stretch of coastline. The management approach split across the coastline of England is shown in figure 7.



**Figure 7- Management approaches for the coast from SMPs**

The management approaches agreed in CFMPs and SMPs will be reviewed as new evidence and information becomes available. In future national FCRM reports any significant changes in these approaches will be reported.

## Our capacity to deliver flood and coastal erosion risk management

To manage flood and coastal erosion risk effectively organisations need specific skills and resources.

### *Skills and capacity within the Environment Agency*

Throughout this year the Environment Agency has been reviewing the size and structure of its FCERM functions. The structural changes are being implemented from June 2012 and include a greater proportion of staff working at a local level.

The Environment Agency has continued to develop the skills of its FCERM staff. Many of these skills are technical and include engineering, hydrology, modelling, mapping and community engagement.

The Environment Agency and Met Office, through the Flood Forecasting Centre, have continued a programme to support hydro-meteorologists develop their skills. They are seeking professional chartered status for this discipline.

### *Skills and capacity of Lead Local Flood Authorities*

The Local Government Association (LGA) surveyed local authorities between February and April 2012 to find out about FCERM capacity and skills in local authorities (Figure 10). The response rate for LLFAs was 65 per cent and showed that:

- 76 per cent of LLFAs use expertise from external consultants to support them;
- 22 per cent of LLFAs are using secondees from other organisations and 14 per cent using expertise from other local authorities.

The survey also showed that on average, LLFAs have 2.1 full-time equivalents (FTE) directly involved in FCERM activities.

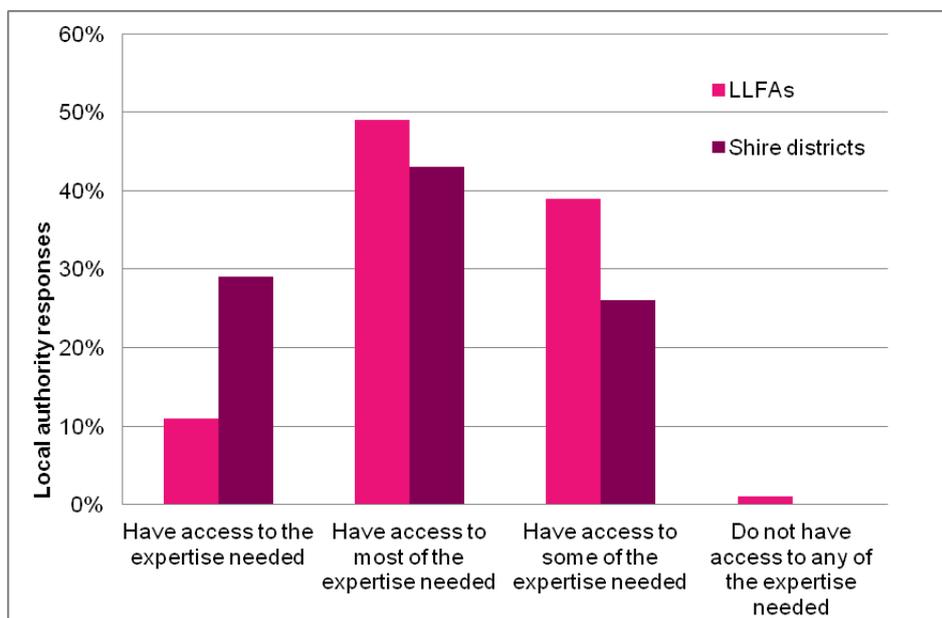


Figure 8: Local authority access to expertise

Defra, the Environment Agency, LGA and others are leading a programme of Capacity Building for local authorities.

During 2011/12, 95 per cent of LLFAs took part in Phase 2 of this programme, with participants from Internal Drainage Boards and water and sewerage companies. Sixty-nine workshops were delivered covering local flood risk strategies, Partnership Funding, consenting and enforcement, project appraisal, medium term planning and sustainable drainage (SuDS). 2,600 days worth of training were delivered, supported by [e-learning](#) packages available to all risk management authorities receiving 10,000 'hits' on the host website.

### *Developing new flood and coastal erosion risk management technicians*

To develop a new generation of technical experts the Environment Agency, working in partnership with academics and learning experts, has created options to improve all levels of knowledge and experience. These include:

- Further education courses in River & Coastal Engineering;
- Civil Engineering Graduate programme.

During 2011/12, on the Foundation degree course, 31 students were enrolled in the programme; 7 in the Environment Agency and 24 in LLFAs.

## Expanding knowledge

The more we all know and understand about flood and coastal erosion risk management, the more new and innovative tools and approaches we can create.

The [Joint Defra / Environment FCERM R&D programme](#) has continued to improve our understanding of flood and coastal erosion risk management and how we can manage these risks. Major scientific developments delivered through this programme and others include:

- The [Living with Environmental Change](#) (LWEC) partnership of 22 public sector organisations delivering the FCERM UK Research Strategy. This strategy outlines principles for research collaboration and identifies priority research areas over the next 20 years.
- The conclusion of the collaborative EPSRC-led [Flood and Coastal Risk Management Research Consortium](#). These two programmes have improved knowledge and given practical help and guidance.
- The conclusion of collaborative research under the European [CRUE](#) partnership. This project has advised on how best to communicate via flood risk maps and developed an appraisal technique for Emergency Plans.

There are also many examples of developments in the form of new tools, data and approaches, including:

- The [National Coastal Erosion Risk Mapping \(NCERM\) project](#) led by the Environment Agency working with coastal local authorities supports a better understanding of coastal erosion risks.
- The [Coastal Pathfinder Reviews](#), which explore new approaches to planning for and managing adaptation to coastal change in partnership with their communities.
- The report on [Greater Working with Natural Processes](#) in FCERM. The report gives a comprehensive insight into the best ways of working with natural processes.
- A National Flood Forum and Defra project to explore the relationship between insurance and property level protection and a project between the National Flood Forum and Environment Agency to explore the market for flood products for property protection.

As part of the Capacity Building Programme for LLFAs, new tools and data sets have been developed. These include:

- Additional [LiDAR data](#) gathered to fill the topographical information gaps in urban areas. This data will support the assessment and mapping of flood risks.
- A [climate change tool](#) to help LLFAs understand the potential medium and long-term impacts of climate change for their flood risk assessments.
- An [updated guide for assessing and managing run-off for developments](#).
- An [advice note on land drainage consenting and enforcement](#) produced by the Environment Agency to support LLFAs in their new ordinary watercourse consenting and enforcement role.

**Comment [m6]:** Need Geoff Gibbs to confirm this can be included - awaiting reports to be uploaded to website

## References

XXX

**Comment [M7]:** Bibliography, List of abbreviations and Glossary deleted.

Type references here and sort alphabetically by author - refer to guidance table for correct formats



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