

Flood risk management plan

Thames river basin district summary

March 2016

What are flood risk management plans?

Flood risk management plans (FRMPs) explain the risk of flooding from rivers, the sea, surface water, groundwater and reservoirs. FRMPs set out how risk management authorities will work with communities to manage flood and coastal risk over the next 6 years. Risk management authorities include the Environment Agency, local councils, internal drainage boards, Highways England and lead local flood authorities (LLFAs).

Each EU member country must produce FRMPs as set out in the EU Floods Directive 2007. Each FRMP covers a specific river basin district. There are 11 river basin districts in England and Wales, as defined in the legislation. A river basin district is an area of land covering one or more river catchments. A river catchment is the area of land from which rainfall drains to a specific river.

Each river basin district also has a river basin management plan, which looks at how to protect and improve water quality, and use water in a sustainable way. FRMPs and river basin management plans work to a 6-year planning cycle. The current cycle is from 2015 to 2021. We have developed the Thames FRMP alongside the Thames river basin management plan so that flood defence schemes can provide wider environmental benefits.

Both flood risk management and river basin planning form an important part of a collaborative and integrated approach to catchment planning for water. Building on this essential work, and in the context of the Governments 25-year environment plan, we aim to move towards more integrated planning for the environment over the next cycle. This will be done on a catchment basis and will draw together and integrate objectives for flood risk management, water management, and biodiversity, with the aim of maximising the multiple benefits that can be achieved.

Flood risk in the Thames river basin district

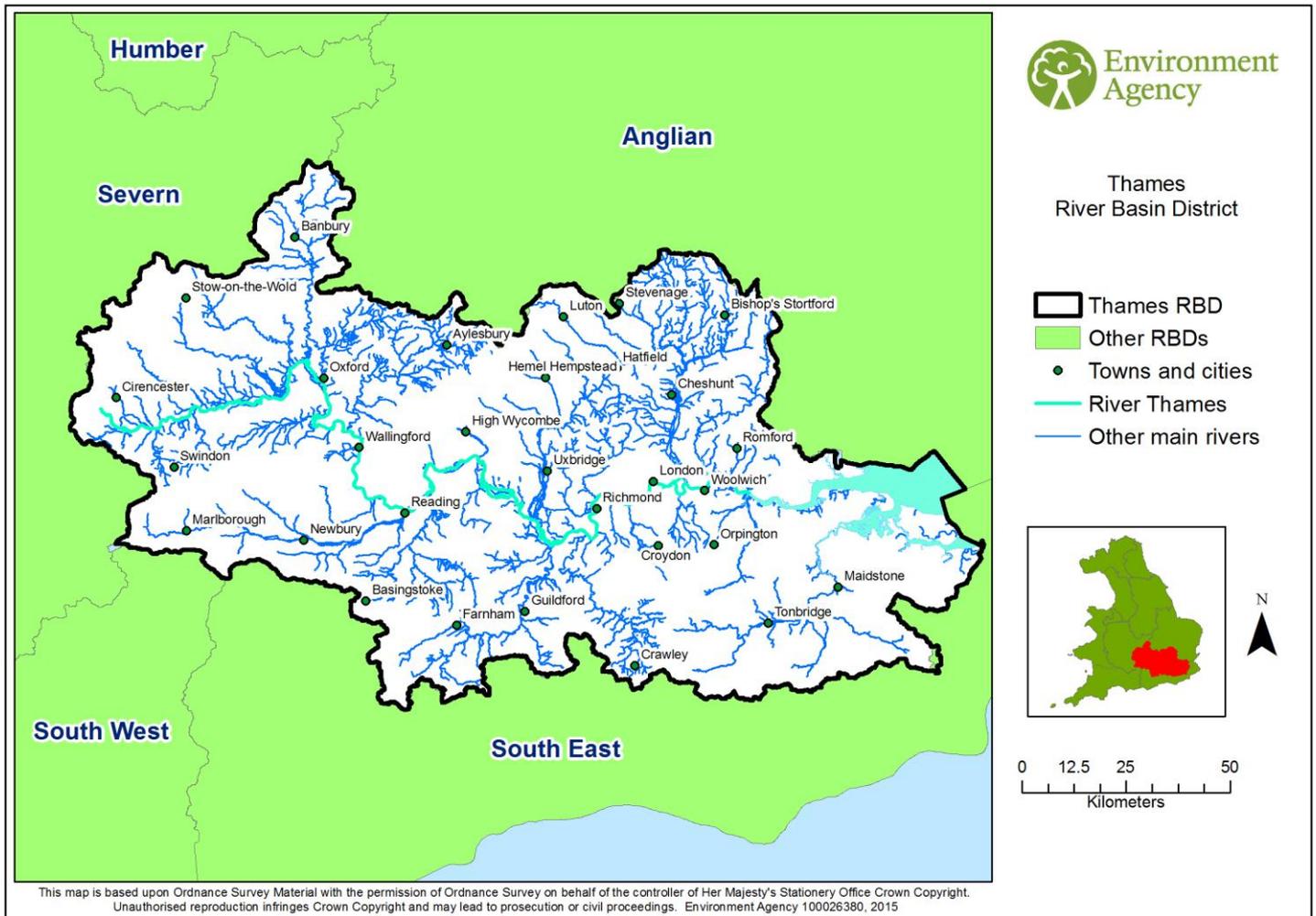
The Thames river basin district covers 16,190km² with London at the heart of the district. The River Thames flows through it from its source in the rural limestone hills of the Cotswolds to the international shipping gateway of the Thames estuary (see Figure 1).

The river basin district comprises 17 catchments and 2 flood risk areas. Flood risk areas are areas with a high risk of surface water flooding (flooding which happens when drainage systems become overloaded with high volumes of rainfall). There is one strategic area, which considers flood risk management across more than one sub-area or catchment, so that organisations can work together in a co-ordinated way. The strategic area is along the tidal Thames from Teddington in the west to Sheerness and Shoeburyness in the east.

Of the 14.8 million people living in the river basin district, there are:

- over 227,000 people at high risk of surface water flooding (more than a 1 in 30 (3.3%) chance of being flooded in any year)
- over 107,000 people are at high risk of flooding from rivers and the sea (more than a 1 in 30 (3.3%) chance of being flooded in any year)

Figure 1: Map of the Thames river basin district



During December 2015, Storms Desmond, Eva and Frank brought record breaking levels of rainfall and significant flooding to some parts of the country. On 5 and 6 December the highest ever river flows were registered in several large catchments including the Eden, Lune and Tyne. On 25 and 26 December further record river levels were registered for many large rivers draining the Pennines. The Met Office confirmed that December 2015 was the wettest on record in parts of the UK.

Across the country over 19,000 properties were flooded, with thousands more affected by loss of power supply and travel disruption. Existing flood defences played an essential part in protecting thousands of homes during December with 12,500 benefitting during Storm Desmond and 10,900 during Storm Eva. Support to affected communities, business and the agricultural sector is in place, along with a programme of inspections and repairs to damaged defences.

It is essential to ensure that we have the very best possible plans in place for flood management across the whole country. In response to the December floods the Government has put in place a National Flood Resilience Review pinpoint where our defences and modelling need strengthening. The Local Flood Partnerships in Cumbria and Yorkshire, also set up in response to the December floods, will bring together a wide range of organisations and communities to develop Flood Action Plans. These actions will complement the measures in the FRMP and the learning from this approach will be shared across the country.

Characteristics of the Thames river basin district

Part B of the FRMP gives a more detailed description of the catchment, including the factors affecting flood risk and statistics for the river basin district.

The management of flood risk is influenced by the diverse physical features of Thames river basin. Flooding can occur from rivers, the sea, surface water, groundwater, storm water drainage (including from roads), sewer systems, and failure or overflowing of water control structures. These different types of flooding rarely happen in isolation.

Extensive river flooding in the Thames river basin district can happen when heavy and prolonged rainfall occurs when the ground is either frozen or saturated (already full of water). Water levels in the River Thames rise slowly after rainfall. But the response of the smaller rivers that flow into the Thames (tributaries) varies depending on the size of the catchment area, the underlying rock, slope and land use. Because of the size of the river basin district, flooding is sometimes confined to sub-catchments as a result of localised storms.

Towards the west, in Gloucestershire, Oxfordshire and Berkshire, the Thames and its tributaries flow through a rural landscape with rolling hills and wide, flat flood plains. The rivers generally flow in natural earth channels and there are extensive areas of rich flood plain habitat.

In contrast, towards the east, the region is more urban in character. Outside of London through Hertfordshire, Buckinghamshire and Surrey most of the rivers are still in a largely natural state. In London, the majority of rivers have been highly modified to carry water efficiently through artificial and straightened channels. There are 9 major tributaries of the River Thames in London.

The Thames river basin district has a mixed geology, consisting of chalk, limestone, gravel, sand and clay. In the chalk areas (for example the Chilterns and Berkshire Downs) and limestone areas (such as the Cotswolds) water soaks into the ground and is released at a slow rate into the rivers. The areas with underlying clay catchments (for example in London) respond much quicker. This is because clay is impermeable and more rainfall runs directly into the rivers, causing water levels to rise quickly.

Urban drainage, which includes surface water drainage, sewer networks and run-off from roads, can be a major contributor to flood risk. Risk management authorities must work together to understand and deal with these sources of flooding.

Localised storms can lead to flash flooding, particularly in urban areas, which have a faster rate and greater percentage of run-off. Local impacts can be significant and there is a very short time between the start of the rainfall and the onset of flooding. Urban catchments across the Thames river basin district, especially in London, are particularly vulnerable to river flooding as a result of increased surface water run-off from impermeable surfaces. Surface water flooding also occurs as drainage systems become overloaded with high volumes of rainfall. In these urban areas, the complex network of rivers and the concentration of population living next to them brings many challenges and opportunities for flood risk management. Flooding in these areas not only affects the population that live and work there, but can also have a major impact on our economy.



Rural River Thames in Oxfordshire



Straightened channel of the River Brent in London

Existing flood risk management in the Thames river basin district

The tidal Thames flood plain forms a corridor which passes through London and eastwards through north Kent and south Essex towards the North Sea. Managing floods on the Thames estuary is not a recent activity. There were tidal defences on the Thames estuary more than 1,500 years ago, which protected Anglo-Saxon settlements in Kent and Essex. More recently, the major tidal floods in 1928 and 1953 were the catalyst for the construction of the Thames Barrier and associated defence improvements in the 1980s. This has provided a high level of protection from tidal flooding to London and the Thames estuary communities for more than 30 years.



Thames Barrier

The Environment Agency operates a flood warning service for flood risk areas. Risk management authorities also work closely with local communities to help them prepare for and recover from floods.

Thousands of properties at risk of flooding from rivers across the area already benefit from river flood defence schemes at various locations. Several major schemes are currently being developed to manage the risk into the future.

Across the country Government is investing £2.3bn on 1,500 flood defence schemes between 2015 -2021. Thousands of properties in the Thames river basin district benefit from river flood risk management schemes, including homes and businesses in London, Maidenhead, Windsor and Eton, and in Surrey. Several further schemes are ongoing or planned. The National Flood Resilience Review will look at temporary and flexible responses as well as hard flood defences beyond the measures included in the Flood Risk Management Plan. The Local Flood Partnerships in Cumbria and Yorkshire, set up in response to the December floods will bring together a wide range of organisations and communities to develop Flood Action Plans. These actions will complement the measures in the FRMP and the learning from this approach will be shared across the country.

Risk management authorities carry out maintenance work on defences and rivers to manage flood risk. Maintenance involves bank clearance and in-channel work to remove weed growth, as well as non-routine maintenance such as removing blockages in rivers.

The Environment Agency and local councils also manage and reduce flood risk through the planning system. Planning officers use advice from the Environment Agency to assess new developments to make they are appropriate and safe, and will not increase the risk of flooding elsewhere.

Surface water flooding is an important consideration in the Thames river basin district, especially in London. Surface water flooding can happen at any time of year, but particularly in the summer, following intense thunder storms. The Herne Hill and Dulwich flood alleviation scheme is an example of a project to deal with this type of flooding. It will protect over 200 homes and businesses from surface water flooding and another 80 from sewer flooding. It is an innovative project that has been completed by Southwark Council and Thames Water with the support of the Environment Agency. It also provides environmental improvements for the 3 local parks within which the scheme is located and provides areas for the local community to enjoy.



Construction of the Herne Hill and Dulwich Flood Alleviation Scheme

Roles and responsibilities

Managing flood and coastal risks, and particularly local flood risks, requires risk management authorities to work together. In the Thames river basin district, the Environment Agency works with 56 LLFAs, local councils, Highways England and Thames Water to manage flood risk.

Table 1: risk management authorities by risk source

Risk from:	Environment Agency	Lead Local Flood Authority	District /Borough council	Water company	Highway authority	Internal drainage board
Main river	✓					
The sea	✓					
Surface water		✓				✓
Surface water (from highway)					✓	
Sewer flooding				✓		
Ordinary watercourse		✓	✓			✓
Groundwater		✓				
Reservoirs	✓*	✓*	✓*	✓*	✓*	✓*
Coastal Erosion	✓		✓			
Strategic overview of all sources of flood risk (and the coast)	✓					

*Please note RMAs have different responsibilities for reservoirs such as regulation, asset management and flood incident response

Objectives of the FRMP

The risk management authorities have agreed social, economic and environmental objectives for 2015 to 2021 following discussion and consultation with other organisations and communities. You can see the objectives for the whole river basin district in section 8 of Part A of the FRMP. There are more detailed objectives for individual catchments, which you can see in section 2 of Part B of the FRMP.

The FRMP objectives build on the aims and objectives in the [‘National flood and coastal erosion strategy for England’](http://www.gov.uk/government/publications/national-flood-and-coastal-erosion-risk-management-strategy-for-england) (www.gov.uk/government/publications/national-flood-and-coastal-erosion-risk-management-strategy-for-england).

Measures for 2015 to 2021

The actions in FRMPs are known as ‘measures’. These are specific projects or investigations to work towards achieving the objectives. They explain where and how risk management authorities will focus effort and investment to reduce flood risk.

The measures in FRMPs are grouped under 4 categories: preventing risk, preparing for risk, protecting from risk, and recovery and review. You can read more about the categories in Section 4 of [Part A](#) of the FRMP.

Preventing risk

Measures in the Thames river basin district to prevent flood risk include:

- working with local planning authorities to ensure new housing developments take place in the areas with the lowest risk of flooding
- maintaining existing flood defences so that they continue to protect properties in future
- carrying out a prioritised programme of mapping and modelling to ensure flood risk information remains up to date and fit for purpose

Preparing for risk

As well as reducing flood risk by schemes and maintenance, risk management authorities will continue to work with communities to help them understand their risk and how to prepare effectively.

It is still a priority for all risk management authorities to warn and inform communities and businesses about flooding, and to work together to improve emergency response. The Environment Agency will continue to invest in improving real-time rainfall and river level data to provide a quality flood warning service.

Protecting from risk

These measures are to reduce the likelihood of flooding affecting people and property in specific locations or in locations that have flooded in the past.

The Environment Agency and local councils will also continue to maintain watercourses that pose the most significant flood risk to people, responding quickly to incidents and clearing obstructions from screens and culverts during heavy rainfall.

Recovery and review

Over the next 6 years, risk management authorities will continue to carry out investigations after flooding, produce recommendation reports and help communities to recover from floods more quickly. The National Flood Resilience Review and Local Flood Action Plans may also give rise to actions that support the recovery of communities.

Further information on measures in the Thames river basin district

For a brief description of the types of measures in each catchment see [Part B](#) of the Thames FRMP. You can also see a full list of all measures and the categories they relate to in [Part C](#) of the FRMP.

Monitoring progress

There is no guarantee that every measure in the FRMP will be completed. This is because priorities and funding change and new data may become available, which may mean the programme changes.

Over the 6-year cycle, the Environment Agency will monitor the measures and report on progress. All the risk management authorities involved will work together to achieve the objectives and reduce costs.

How we listened to your comments

We consulted on the FRMP from 10 October 2014 to 31 January 2015. As a result of feedback from the consultation we have improved the information on existing flood risk management and made clearer links between the FRMP and river basin management plans. We've also shown more clearly how flood management actions help to improve the environment.

We've split the FRMP into 4 sections to make it easier to understand. The sections are as follows:

Section	Who is it for?
Summary document	For people who want a high level overview of the plan.
Part A: background and river basin district-wide information	For people who want some legislative background and river basin district-wide information.
Part B: catchment summaries	For people who want the detail of each of the catchments, flood risk areas and other strategic areas, and flooding statistics for the river basin district.
Part C: appendices	For people who want to see the measures for implementation across the river basin district and the measures for individual communities.

Further information

[Check your current risk of flooding on our live flood warning service](http://www.gov.uk/check-if-youre-at-risk-of-flooding) (www.gov.uk/check-if-youre-at-risk-of-flooding)

[Check your risk of flooding from different sources on our interactive maps](http://www.gov.uk/prepare-for-a-flood/find-out-if-youre-at-risk) (www.gov.uk/prepare-for-a-flood/find-out-if-youre-at-risk)

[Find FRMPs for other river basin districts](https://www.gov.uk/government/collections/flood-risk-management-plans-frmps-2015-to-2021) (https://www.gov.uk/government/collections/flood-risk-management-plans-frmps-2015-to-2021)

[Look at the river basin management plan for your area](https://www.gov.uk/government/collections/river-basin-management-plans-2015) (https://www.gov.uk/government/collections/river-basin-management-plans-2015)

Partners

This is a joint plan prepared in partnership with the following risk management authorities:

- London Borough of Barking and Dagenham
- London Borough of Barnet
- London Borough of Bexley
- London Borough of Brent
- London Borough of Bromley
- London Borough of Camden
- City of London Corporation
- London Borough of Croydon
- London Borough of Ealing
- London Borough of Enfield
- Essex County Council
- London Borough of Greenwich
- London Borough of Hackney
- London Borough of Hammersmith and Fulham
- London Borough of Haringey

customer service line
03708 506 506

incident hotline
0800 80 70 60

floodline
0345 988 1188

www.gov.uk/environment-agency

- London Borough of Harrow
- London Borough of Havering
- London Borough of Hillingdon
- London Borough of Hounslow
- London Borough of Islington
- Royal Borough of Kensington and Chelsea
- Kent County Council
- Royal Borough of Kingston upon Thames
- London Borough of Lambeth
- London Borough of Lewisham
- Medway Council
- London Borough of Merton
- London Borough of Newham
- Northamptonshire County Council
- London Borough of Redbridge
- London Borough of Richmond upon Thames
- London Borough of Southwark
- Surrey County Council
- London Borough of Sutton
- Thurrock Council
- London Borough of Tower Hamlets
- London Borough of Waltham Forest
- London Borough of Wandsworth
- Westminster City Council
- West Sussex Council