

# Hampshire Avon Catchment Flood Management Plan

Summary Report June 2012



managing  
flood risk

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# Introduction

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I am pleased to introduce our summary of the Hampshire Avon Catchment Flood Management Plan (CFMP). This CFMP gives an overview of the flood risk in the Hampshire Avon catchment and sets out our preferred plan for sustainable flood risk management over the next 50 to 100 years.

The Hampshire Avon CFMP is one of 77 CFMPs for England and Wales. Through the CFMPs, we have assessed inland flood risk across all of England and Wales for the first time. The CFMP considers all types of inland flooding, from rivers, ground water, surface water and tidal flooding, but not flooding directly from the sea (coastal flooding), which is covered by Shoreline Management Plans (SMPs). Our coverage of surface and ground water is however limited due to a lack of available information.

The role of CFMPs is to establish flood risk management policies which will deliver sustainable flood risk management for the long term. This is essential if we are to make the right investment decisions for the future and to help prepare ourselves effectively for the impact of climate change. We will use CFMPs to help us target our limited resources where the risks are greatest.

This CFMP identifies flood risk management policies to assist all key decision makers in the catchment. It was produced through a wide consultation and appraisal process, however it is only the first step towards an integrated approach to Flood Risk Management. As we all work together to achieve our objectives, we must monitor and listen to each others progress, discuss what has been achieved and consider where we may need to review parts of the CFMP.

The Hampshire Avon catchment has a history of flood risk. Over the last 30 years numerous engineering schemes have been implemented to reduce flood risk in the catchment. At present 5,450 properties are at risk in the catchment in a 1% event. This is expected to increase to over 6,800 properties in the future.

We cannot reduce flood risk on our own, we will therefore work closely with all our partners to improve the co-ordination of flood risk activities and agree the most effective way to manage flood risk in the future. We have worked with others including: Dorset County Council, Salisbury District Council, Christchurch Borough Council, West Wiltshire District Council, Kennet District Council, New Forest District Council, and Natural England to develop this plan.

This is a summary of the main CFMP document, if you need to see the full document an electronic version can be obtained by emailing [enquiries@environment-agency.gov.uk](mailto:enquiries@environment-agency.gov.uk) or alternatively paper copies can be viewed at any of our offices in South West Region.

A handwritten signature in black ink that reads "R. Cresswell". The signature is written in a cursive style.

Richard Cresswell  
South West Regional Director



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# The purpose of a CFMP in managing flood risk

CFMPs help us to understand the scale and extent of flooding now and in the future, and set policies for managing flood risk within the catchment. CFMPs should be used to inform planning and decision making by key stakeholders such as:

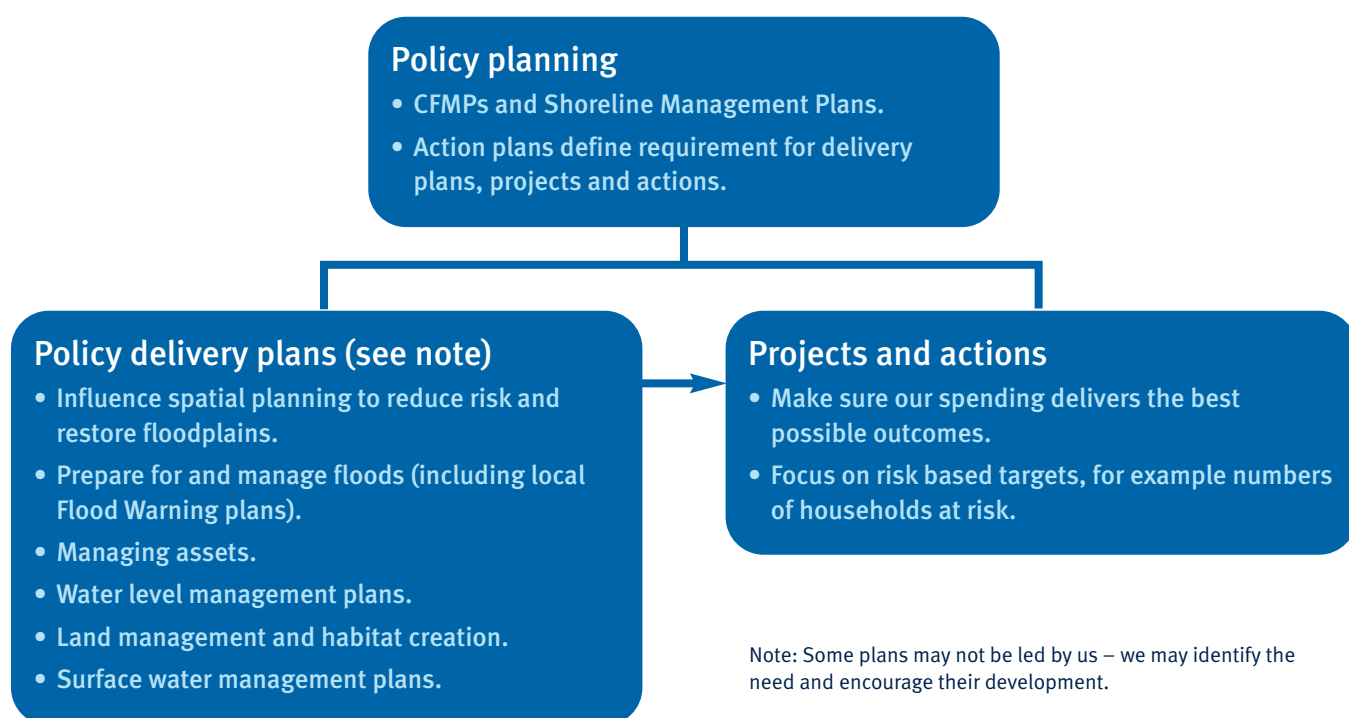
- the Environment Agency, who will use the plan to guide decisions on investment in further plans, projects or actions;
- Regional Assemblies and local authorities who can use the plan to inform spatial planning activities and emergency planning;

- Internal Drainage Boards (IDB), water companies and other utilities to help plan their activities in the wider context of the catchment;
- transportation planners;
- land owners, farmers and land managers that manage and operate land for agriculture, conservation and amenity purposes;
- the public and businesses to enhance their understanding of flood risk and how it will be managed.

CFMPs aim to promote more sustainable approaches to managing flood risk. The policies identified in the CFMP will be delivered through a combination of different approaches. Together with our partners, we will implement these approaches through a range of delivery plans, projects and actions.

The relationship between the CFMP, delivery plans, strategies, projects and actions is shown in Figure 1.

Figure 1. The relationship between CFMPs, delivery plans, projects and actions



# Catchment overview

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The catchment of the Hampshire Avon is located in the south of England.

The Hampshire Avon rises in the Vale of Pewsey to the north of Salisbury. The watercourses here receive significant flows from the chalk aquifers underlying Salisbury Plain, and then flow in a southerly direction towards Christchurch Harbour and Christchurch Bay on the south coast. Map 1 shows the location and extent of the River Avon CFMP area.

At Salisbury, the Avon is joined by two of its major tributaries - the River Bourne and the River Nadder (including the River Wylde), and a short distance downstream by the River Ebble.

The downstream limit of the CFMP area meets with the upstream boundary of the Poole and Christchurch Bay Shoreline

Management Plan (SMP) boundary at Christchurch. The Poole and Christchurch Bay SMP deals with coastal flood management, while the CFMP considers the risk from tidal flooding.

The overall catchment area is about 1,750 square kilometres, and has a population of around 230,000. Only two per cent of the catchment is urbanised. As well as Salisbury and Christchurch, its main urban areas include Warminster.

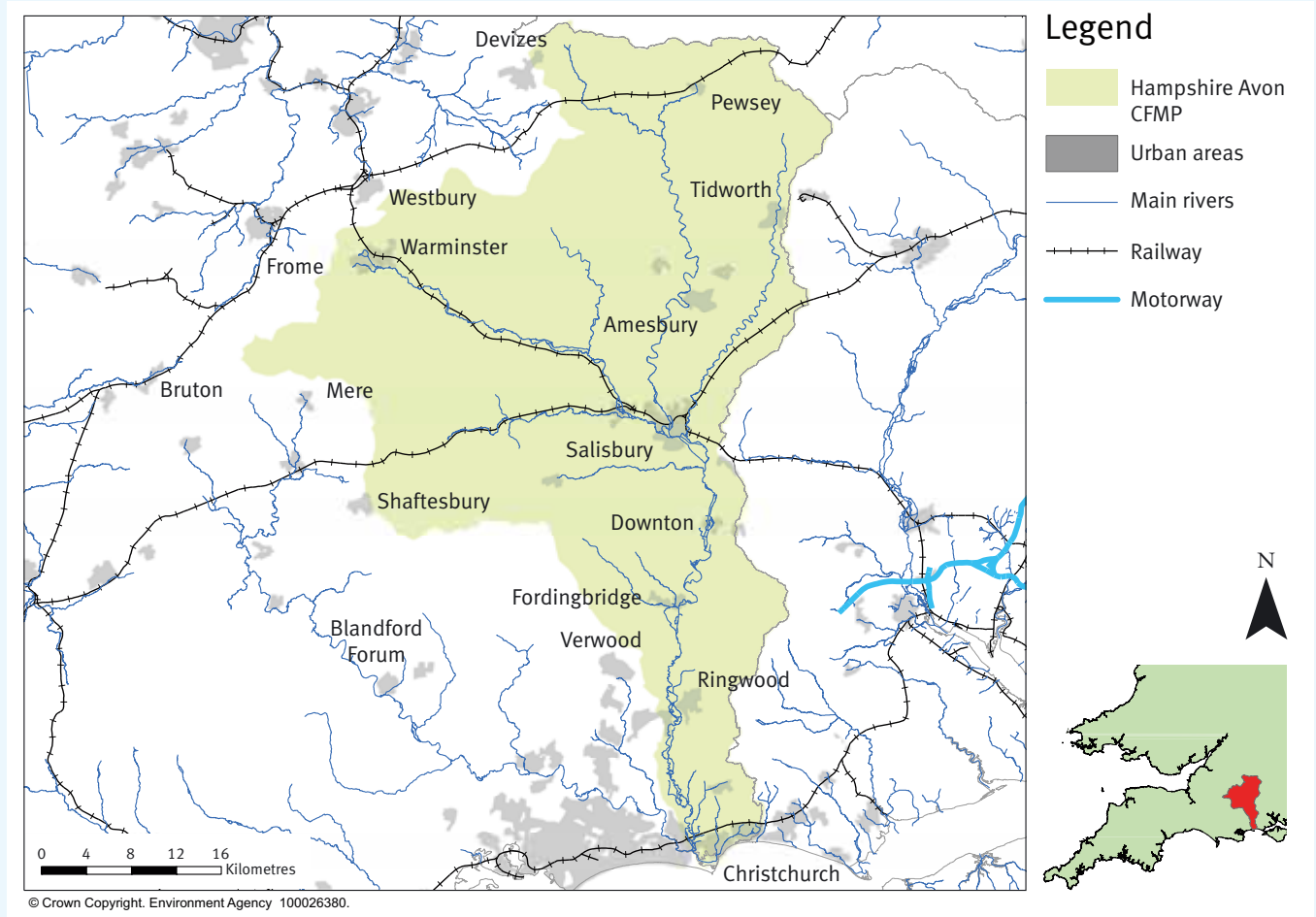
The Hampshire Avon catchment is characterised by open chalk downland with steep scarp slopes, sheltered valleys, chalk hills, ridges and limestone plateaux. These significant variations in the topography have a strong influence on the rivers' response to rainfall.

The upper Avon catchment is typified by the undulating, chalk downlands of Salisbury Plain, which are cut by

steep combs and river valleys. The lower catchment is characterised by rolling farmland and the New Forest. The main watercourses have wide floodplains and flow through farmland, woodland, scrub and open heathland.

Within the Hampshire Avon catchment there are a number of sites designated for their environmental importance including part of the New Forest National Park and the World Heritage Site of Stonehenge. Important environmental sites in the catchment include two Areas of Outstanding Natural Beauty, two Environmentally Sensitive Areas, nine Special Areas of Conservation (SAC), six National Nature Reserves, 71 Sites of Special Scientific Interest (SSSIs) and 1,061 Scheduled Monuments.

**Map 1. Location and extent of the Hampshire Avon CFMP area**



← The River Avon spills on to the floodplain close to Salisbury Cathedral



# Current and future flood risk

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## Overview of the current flood risk

Flood risk has two components: the chance (probability) of a particular flood and the impact (or consequence) that the flood would have if it happened. The probability of a flood relates to the likelihood of a flood of that size occurring within a one year period. It is expressed as a percentage. For example, a 1% flood has a 1% chance or 0.01 probability of occurring in any one year, and a 0.5% flood has a 0.5% chance or 0.005 probability of occurring in any one year. The flood risks quoted in this report are those that take account of flood defences already in place.

The assessment was based on the use of existing river models, our Flood Zone maps and historical records.

This catchment has a long history of flooding. The most significant event in recent years occurred in Salisbury, Downton, Fordingbridge and

Ringwood in December 2000 when 132 properties were affected by river flooding after a period of heavy rainfall on an elevated water table.

Currently the main sources of flood risk for people, property, infrastructure and the land are:

- river flooding from the River Avon at Downton, Fordingbridge and Ringwood, from the Avon and Nadder at Salisbury, from the Nadder and Wylde at Wilton and the Bourne at Tidworth;
- tidal flooding at Christchurch;
- surface water drainage flooding, which has occurred in Warminster and Enford.

Groundwater flooding has occurred in Netherhampton, and groundwater has added to river flooding downstream.

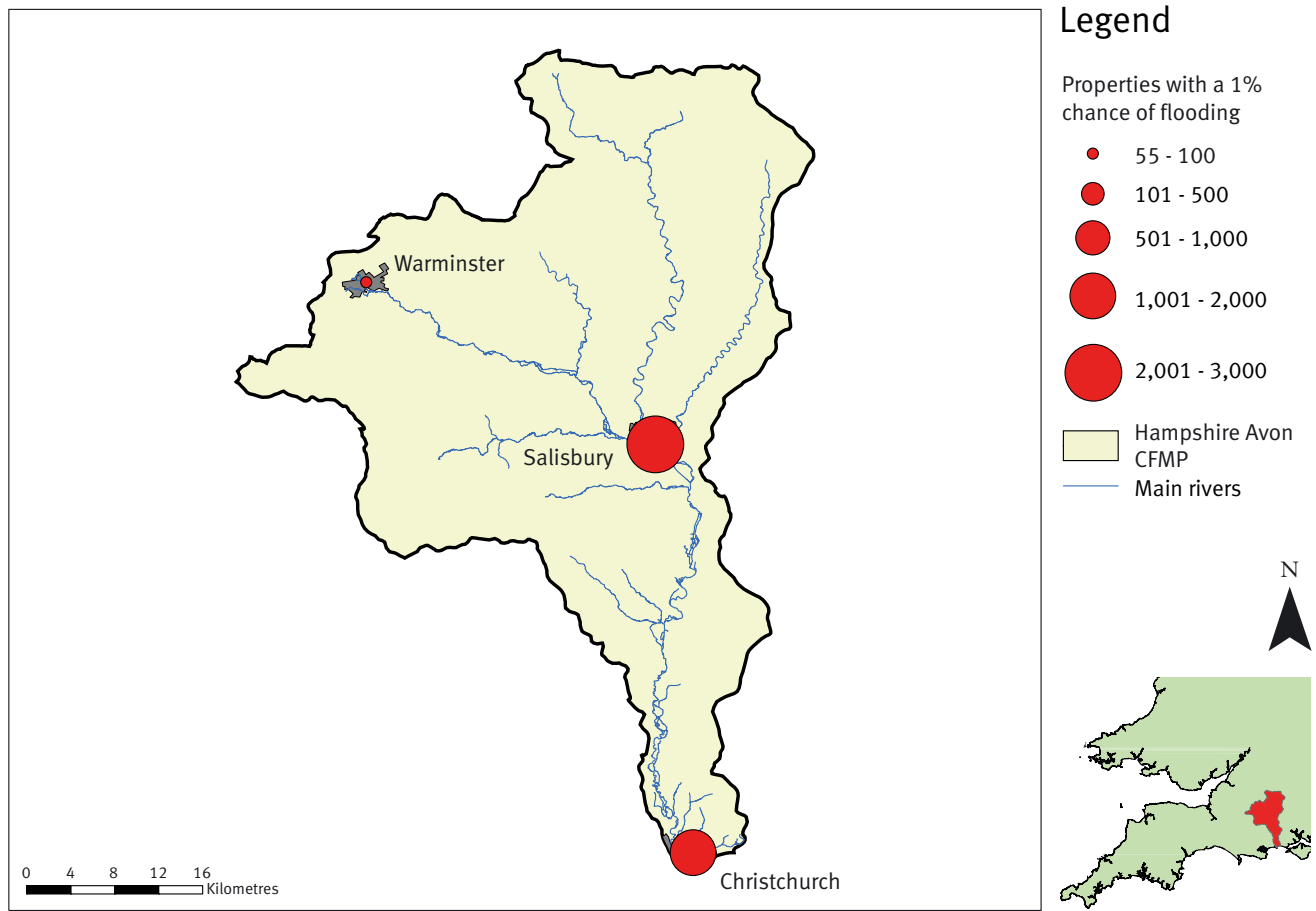
## What is at risk?

At present there are around 10,700 people and 5,400 commercial and residential properties at risk in the whole catchment from a 1% annual probability river flood, taking into account current flood defences. This means that 1% of the total population living in the catchment are currently at risk from flooding.

It is difficult to assess the current impact of flooding to environmental features. Most designated sites at risk would not actually be damaged by the inundation, although prolonged deep flooding can have a negative impact on the Avon Valley Site of Special Scientific Interest. 42 Scheduled Monuments are at risk of flooding. The actual risk of damage from flooding is limited.



**Map 2. Flood risk to property in a 1% annual probability river flood, taking into account current flood defences**



**Table 1. Locations of towns and villages with 25 or more properties at risk in a 1% annual probability river flood**

Number of properties at risk	Locations
>1,000	Salisbury, Christchurch
500 to 1,000	None
100 to 500	Warminster
50 to 100	None
25 to 50	Ringwood, Fordingbridge, Downton, Shrewton, Shipton, Bellinger

**Table 2. Critical infrastructure at risk:**

20 electricity substations, 4 water treatment works, 2 care homes, 18 main roads, 5 mainline railways, 1 fire station, 3 police stations, and 3 schools

## Where is the risk?

Around 40% of the people and properties that are at risk within the catchment from a 1% annual probability river flood, are located in Salisbury. A further 22% are located in Christchurch.

The distribution of properties at risk from a 1% annual probability river flood, is illustrated in Map 2. Table 1 summarises where there is flood risk to more than 25 properties. We recognise that there is also a potential risk from surface water and groundwater flooding. However, further studies following on from the CFMP are needed by us and our partners to quantify this potential risk.

## How we currently manage the risk

The catchment has a history of flood risk, generally due to the high rainfall that can lead to extensive flooding of the river valleys, and prolonged wet periods that can lead to groundwater flooding.

Over the last 25 years, engineering schemes have been implemented to reduce flood risk in the catchment, including at Tisbury, Downton, Fordingbridge, Ringwood and Christchurch. Various structures have also been constructed around Salisbury and Wilton.

These measures have all reduced flood risk.

In addition to these engineering schemes, other flood risk management activities are carried out in the catchment. These include activities which help to reduce the probability of flooding and those that address the consequences of flooding.

Activities that reduce the probability of flooding include:

- maintaining and improving existing flood defences and structures, including pumping stations;
- maintaining river channels;
- maintenance of road drainage and sewers;

Activities that reduce the consequences of flooding include:

- understanding where flooding is likely by using flood risk mapping;
- providing flood forecasting and warning services;
- promoting awareness of flooding so that organisations, communities and individuals are aware of the risk and are prepared in case they need to take action in time of flood;
- promoting resilience and resistance measures for those properties already in the floodplain.
- working with local authorities to influence the location, layout and design of new and redeveloped property and ensuring that only appropriate development is allowed on the floodplain through the application of Planning Policy Statement 25 (PPS25).



← Misty conditions at Picket Post in the New Forest looking across to the Avon Valley. This is an area where opportunities to manage land in a different way could lead to a reduction in flood risk downstream

## The impact of climate change and future flood risk

In the future, flooding will be influenced by climate change, changes in land use (for example urban development) and rural land management. In the Hampshire Avon catchment, climate change will have the greatest impact on flood risk. The following future scenario for climate change was used in the CFMP:

- 20% increase in peak flow in all watercourses. This will increase the probability of large-scale flood events;
- a total sea level rise of 500 mm by the year 2100. This will increase the probability of tidal flooding on the lower reaches at Christchurch.

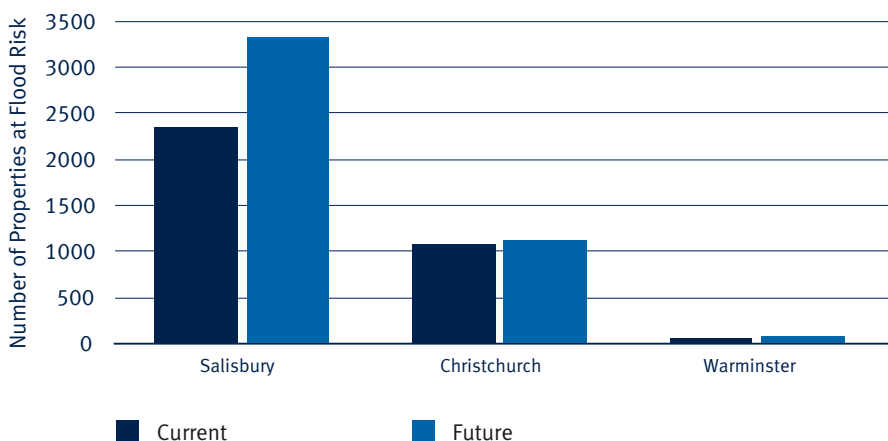
Using river models we estimate that by 2100, around 13,250 people and 6,800 properties across the catchment may be at risk from a 1% annual probability flood. Flood risk from rivers increases mainly in Salisbury, but significant increases also occur in the towns of Downton, Fordingbridge and Ringwood.

The sensitivity testing undertaken showed that the effects on flood risk of land use and land management change are likely to be relatively small, and from urban development very limited, at a catchment-wide scale. There are potential effects at a local scale to be managed. The greatest effect on future flood risk is climate change.

Figure 2 shows the difference between current and future flood risks from a 1% annual probability river flood at key locations in the catchment. Following on from the CFMP, organisations need to work together to investigate flood risk from other sources (e.g. surface water and ground water flooding) in more detail.

In general, it is unlikely that the impact of flooding on environmental sites will change significantly in the future.

**Figure 2. Current and future (2100) flood risk to property from a 1% annual probability river flood, taking into account current flood defences**



# Future direction for flood risk management

## Approaches in each sub-area

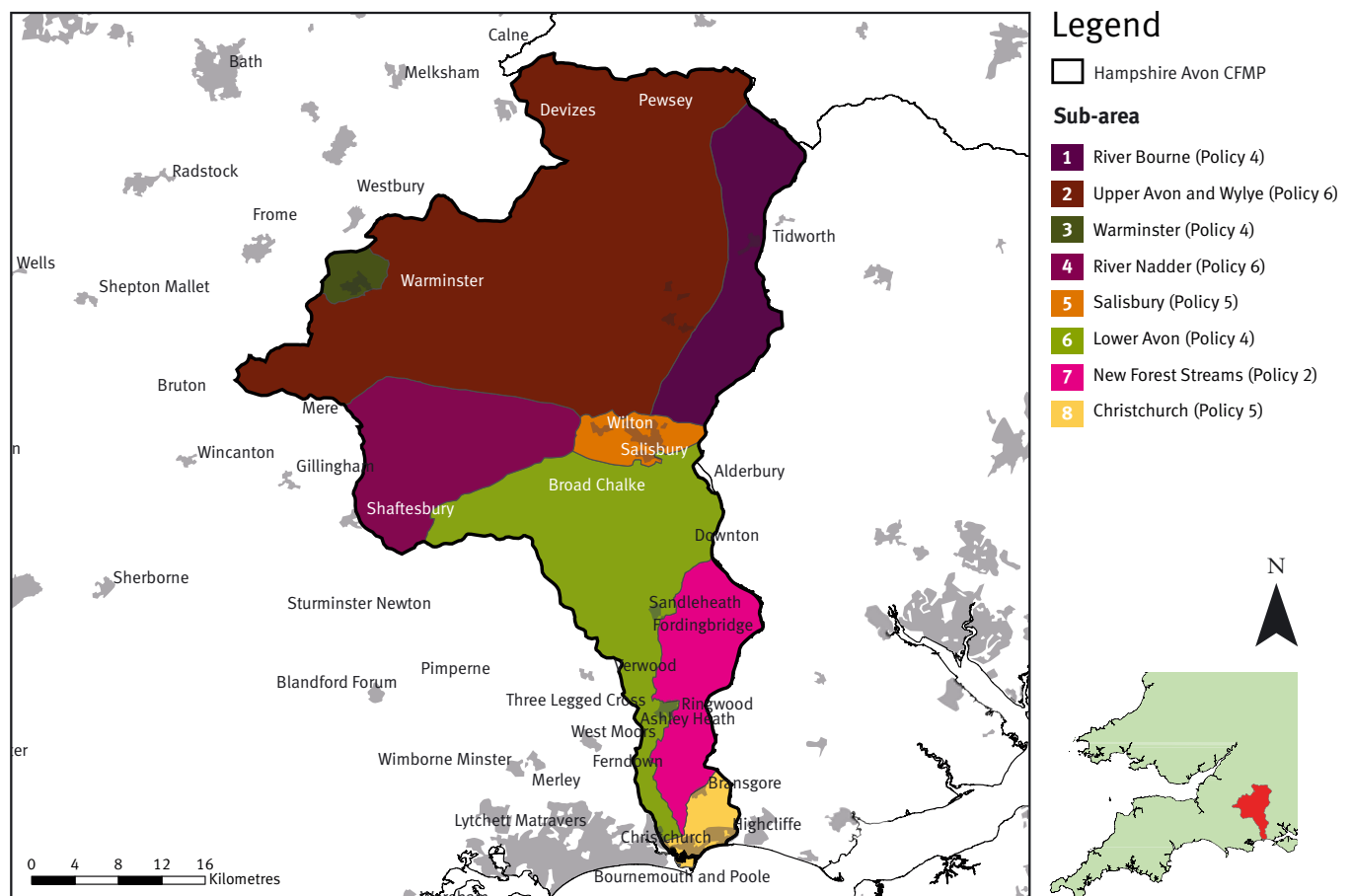
We have divided the Hampshire Avon catchment into eight distinct sub-areas which have similar physical characteristics, sources of flooding and level of risk. We have identified the most appropriate approach to managing flood risk for each of the sub-areas and allocated one of six generic flood risk management policies, shown in Table 3.

To select the most appropriate policy, the plan has considered how social, economic and environmental objectives are affected by flood risk management activities under each policy option.



↑ Flooding in The Borough, Downton in December 2000

Map 3. Hampshire Avon sub-areas





**Table 3. Policy options**

### **Policy 1**

#### **Areas of little or no flood risk where we will continue to monitor and advise**

This policy will tend to be applied in those areas where there are very few properties at risk of flooding. It reflects a commitment to work with the natural flood processes as far as possible.

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### **Policy 2**

#### **Areas of low to moderate flood risk where we can generally reduce existing flood risk management actions**

This policy will tend to be applied where the overall level of risk to people and property is low to moderate. It may no longer be value for money to focus on continuing current levels of maintenance of existing defences if we can use resources to reduce risk where there are more people at higher risk. We would therefore review the flood risk management actions being taken so that they are proportionate to the level of risk.

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### **Policy 3**

#### **Areas of low to moderate flood risk where we are generally managing existing flood risk effectively**

This policy will tend to be applied where the risks are currently appropriately managed and where the risk of flooding is not expected to increase significantly in the future. However, we keep our approach under review, looking for improvements and responding to new challenges or information as they emerge. We may review our approach to managing flood defences and other flood risk management actions, to ensure that we are managing efficiently and taking the best approach to managing flood risk in the longer term.

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### **Policy 4**

#### **Areas of low, moderate or high flood risk where we are already managing the flood risk effectively but where we may need to take further actions to keep pace with climate change**

This policy will tend to be applied where the risks are currently deemed to be appropriately-managed, but where the risk of flooding is expected to significantly rise in the future. In this case we would need to do more in the future to contain what would otherwise be increasing risk. Taking further action to reduce risk will require further appraisal to assess whether there are socially and environmentally sustainable, technically viable and economically justified options.

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### **Policy 5**

#### **Areas of moderate to high flood risk where we can generally take further action to reduce flood risk**

This policy will tend to be applied to those areas where the case for further action to reduce flood risk is most compelling, for example where there are many people at high risk, or where changes in the environment have already increased risk. Taking further action to reduce risk will require additional appraisal to assess whether there are socially and environmentally sustainable, technically viable and economically justified options.

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### **Policy 6**

#### **Areas of low to moderate flood risk where we will take action with others to store water or manage run-off in locations that provide overall flood risk reduction or environmental benefits**

This policy will tend to be applied where there may be opportunities in some locations to reduce flood risk locally or more widely in a catchment by storing water or managing run-off. The policy has been applied to an area (where the potential to apply the policy exists), but would only be implemented in specific locations within the area, after more detailed appraisal and consultation.

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# River Bourne

## Our key partners are:

Wiltshire Unitary Authority

Test Valley District Council

Wessex Water

Natural England

## The issues in this sub-area

Flood risk is concentrated in four large town/villages: Tidworth, Collingbourne Ducis, Shipton Bellinger and Newton Tony. Other risk areas include Collingbourne Kingston, Porton and the Winterbournes.

Significant flooding was recorded in Tidworth and a number of villages along the River Bourne, during 2000 and 2003. Much of this flooding was attributed either directly or indirectly to record groundwater levels, although in certain areas (for example Shipton Bellinger) flooding was experienced from three sources simultaneously (groundwater, river and highway drainage).

The current number of properties in the 1% annual probability event is 245. This is expected to increase to 255 in the future 1% annual probability event.

The main future driver of flood risk within the sub-area is considered to be climate change, represented as an assumed increase in peak flow of up to 20%. However, it is acknowledged that the impact of climate change on permeable chalk catchments is uncertain.

## The vision and preferred policy

**Policy Option 4** - we are already managing the flood risk effectively but we may need to take further actions to keep pace with climate change.

This policy will allow present actions to control flood risk to be continued (for example flood warning) and expanded, and for future change in flood risk to be monitored such that appropriate further actions can be carried out. Any structural works may be concentrated in the higher risk urban areas, but an improved understanding of the flood mechanisms, resulting risks and climate change implications will also allow a better response across the sub-area in relation to people, properties and other assets.

## Proposed actions to implement the preferred policy

- Work with the at-risk communities of Collingbourne Kingston, Collingbourne Ducis, Shipton Bellinger, Newton Tony, Porton and the Winterbournes to provide guidance and advice on reducing risk.
- Improve our understanding of groundwater flooding mechanics, to enhance our groundwater flood information service.
- Identify hydraulically critical structures and other pinch points and produce a programme of improvements to maintain current standards.

# Upper Avon and Wylye

## Our key partners are:

Wiltshire Unitary Authority

Natural England

National Farmers Union

Land managers

Salisbury District Flood Steering Group

Wessex Water

Netheravon. The number of properties at risk is expected to increase to 475 in the future 1% annual probability event.

The main future driver of flood risk within the sub-area is considered to be climate change, represented as an assumed increase in peak flow of up to 20%. However, it is acknowledged that the impact of climate change on permeable chalk catchments is extremely uncertain.

managed water levels (for example in ditches to support fen and wet grassland). In the long-term, there is the potential for significant local improvements, for example an increase in extent of wetland habitats (possible local and national Biodiversity Action Plan habitats / species) adjacent to designated sites through controlled inundation, river restoration work and restoration of floodplain meadows. Such works would also be beneficial for wetland bird breeding populations.

## The issues in this sub-area

Flood flows on the Upper Avon, Till and Wylye are dominated by baseflow from the upstream chalk aquifers. As such the frequency of flooding is less than on the lower catchment tributaries, but when flooding does occur it generally results from excessive seasonal rainfall through the autumn and winter and therefore tends to be prolonged. Significant flooding has been recorded in the catchment during 1995 and 2000.

There is in the order of 400 properties currently at flood risk, these being located in Pewsey, Amesbury and Durrington, and also at Codford St Mary, Shrewton and

## The vision and preferred policy

**Policy option 6** - we will take action with others to store water or manage run-off in locations that provide overall flood risk reduction or environmental benefits.

The chosen policy provides improvements downstream in Salisbury and Christchurch. The implementation of the policy will allow present actions to control flood risk to be continued (for example flood warning) and for future changes in flood risk to be monitored such that the need for further actions can be reviewed.

Policy 6 provides vital benefits such as helping to improve the condition of the Sites of Special Scientific Interest and Special Area of Conservation through increased /

## Proposed actions to implement the preferred policy

- Identify areas where wetland storage areas may be created to give benefit to flood risk management downstream.
- Identify sites of critical infrastructure and transport routes and work to prevent these sites suffering flooding in the future.
- Develop Action Plans for the at-risk villages including Codford St Mary, Shrewton and Norton Bavant, including all sources of flooding.

# Warminster

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## Our key partners are:

Wiltshire Unitary Authority

Wessex Water

## The issues in this sub-area

This sub-area covers the urban area of Warminster on the edge of the River Wylde floodplain and includes the tributaries The Were and Cannimore Stream where they flow through the town.

Based on records of flooding incidents we estimate that at least 55 properties are at flood risk in a 1% annual probability event. These records indicate that flooding occurs from watercourses, groundwater and surface run-off. The number of properties at risk is expected to increase to 80 in the future 1% annual probability event.

The main future driver of flood risk within Warminster is considered to be climate change, represented as an assumed increase in peak flows to the main rivers of up to 20%. However, it is acknowledged that the impact of climate change in urban catchments might also lead to more frequent and intense storms, with the potential to increase the risk of surface water flooding.

The flood risk in Warminster is very likely to be extremely sensitive to increasing peak flood flows from climate change (and potentially future development) with probable severe impacts on major road transport links and vital infrastructure in the town centre where the main bottlenecks to river flows are located.

## The vision and preferred policy

**Policy Option 4** - we are already managing the flood risk effectively, but we may need to take further actions to keep pace with climate change.

This policy supports the need to reduce risk in the long term, particularly where they are sensitive to future change and likely to incorporate vulnerable sites and vital infrastructure. The implementation of the policy will allow present actions to manage flood risk to be continued (for example flood warning) and expanded, and for future changes in flood risk to be monitored and reviewed such that appropriate further actions can be carried out.

## Proposed actions to implement the preferred policy

Promote an integrated urban drainage study including future development proposals, and implement improvements.



# River Nadder

## Our key partners are:

Wiltshire Unitary Authority

Test Valley District Council

Wessex Water

Natural England

## The issues in this sub-area

This sub-area covers the floodplain of the River Nadder from the source near the Coombe, to Burcombe at the downstream end, approximately 3km upstream of the confluence with the River Wylde. The sub-area is largely rural in nature, but contains the small town of Tisbury and a few small villages which straddle the floodplain. We estimate that approximately 30 properties are at flood risk in a 1% annual probability event. The number of properties at risk is expected to increase to 45 in the future 1% annual probability event.

Flood hydrographs show the catchment is more responsive to rainfall than the other catchments upstream of Salisbury. This is largely due to the geology in the upper reaches of the catchment being predominantly impermeable clays. As such flooding here is likely to be

more frequent, in the upper reaches at least, it may be more difficult to provide flood warnings with sufficient lead times. Significant flooding was recorded in Tisbury in 2000 and further widespread flooding in late 2002. There is no evidence of groundwater flooding causing significant problems. However, surface water flooding should be recognised as a potential source of flood risk, particularly in Tisbury and Burcombe.

Potentially there is flood risk to significant major road infrastructure, for example, the A30 road, as well as the Salisbury to Yeovil railway line.

## The vision and preferred policy

**Policy Option 6** - we will take action with others to store water or manage run-off in locations that provide overall flood risk reduction or environmental benefits.

Strategic flood storage in the catchment could offer significant benefits towards managing future flood risk in policy units further downstream (in particular Salisbury and Lower Avon). It should be noted that in order to gain downstream benefits, peak flows on the Nadder need to be stored and then released after the peak from the Avon and Wylde has passed downstream.

## Proposed actions to implement the preferred policy

Investigate feasibility of creating flood storage on the upper Nadder to the benefit of flood risk downstream in Salisbury and the lower Avon towns, and carry out feasibility studies for implementation.

# Salisbury

## Our key partners are:

Wiltshire Unitary Authority

Wessex Water

## The issues in this sub-area

This sub-area includes the historic city of Salisbury and the town of Wilton to the west. It covers the floodplains of the lower reaches of the Wylye, Nadder and Bourne, as well as the Lower Avon. Whilst there are some open river corridors through the area, some concentrated areas of development also lie within the floodplain, particularly around the cathedral.

A number of properties were affected by flooding during autumn/winter 2000 and again in December 2002/January 2003. Some of the properties affected are recorded to have been flooded by groundwater, but our analysis has shown these properties would also be at risk during a significant flood event on the river. At present, we estimate that up to 2,350 properties are at risk in a 1% annual probability flood event. The number of properties at risk is expected to increase to 3,330 in the future 1% annual probability flood event.

The existing mechanism of flooding is complicated and is influenced by the fact that Salisbury sees four main rivers coming together, leading to a number of possibilities with regard to the phasing and combination of each of the peaks. Also, permeable tertiary/alluvial deposits and anecdotal evidence suggests that floodwater can pass onto and across the floodplain without first overtopping the river banks (for example in the cathedral area).

## The vision and preferred policy

**Policy Option 5** - we can generally take further action to reduce flood risk.

This policy will allow present actions to manage flood risk to be continued (for example flood warning) and for existing and future risks to be reduced through the implementation of a combination of local and strategic flood risk management responses. Sustainable options will be evaluated

## Proposed actions to implement the preferred policy

- Carry out further studies to provide complete understanding of risk to Salisbury and Wilton. Model asset operations. Use outcomes from studies and urban drainage pilots to evaluate possible improvements, including developing flood warning, and asset operation procedures.
- Identify and survey infrastructure at risk and take measures to increase flood resilience.
- Use results of studies to encourage appropriate future development.

# Lower Avon

## Our key partners are:

Christchurch District Council

East Dorset District Council

New Forest District Council

Wessex Water

## The issues in this sub-area

This sub-area covers the floodplain of the Lower Avon along with three tributaries; the River Ebbles, the Ashford Water and the Sweatford Water. The area is a mix of urban and rural, and contains a number of towns and villages, including Downton, Fordingbridge, Ringwood, Coombe-Bisset, Britford, Bodenham, Charlton-All-Saints, Breamore, Woodgreen, and Burton.

A number of properties were affected by flooding in autumn 2000 and January 2003. Flooding occurred in Downton and Fordingbridge in 1995, 1999, 2000 and to a lesser extent, 2003. Some of this flooding is directly attributable to groundwater, and fluvial flooding is also widely influenced by groundwater levels in upstream sub-areas, with flood events often being prolonged

events. Schemes were put in place in Downton (2004), Fordingbridge (2006) and Ringwood (2006), which protect 190 of the most at risk properties in total.

In some areas, if fluvial flood risk is reduced through defences then groundwater flooding issues can worsen as a result.

We estimate that up to 1,200 properties would be at risk in a 1% annual probability event, affecting in the order of 2,450 people, despite recent flood defence schemes being included in our analysis. The number of properties at risk is expected to increase to 1,440 in the future 1% annual probability flood event.

The main future driver of flood risk within this sub-area is climate change.

## The vision and preferred policy

**Policy Option 4** - we are already managing the flood risk effectively, but we may need to take further actions to keep pace with climate change.

The implementation of this policy will allow present actions to manage flood risk to be continued (for example flood warning) and

expanded, and for future change in flood risk to be monitored such that appropriate further actions can be carried out. Any structural works may be concentrated in the higher risk urban areas, but an improved understanding of the flood mechanisms, resulting risks and climate change implications will also allow a better response from all parties concerned.

## Proposed actions to implement the preferred policy

- Investigate flood risk in Breamore, Ringwood, Woodgreen and Rockbourne and urban drainage flood risk in Britford and implement appropriate flood risk mitigation measures where feasible.
- Identify and survey infrastructure at risk and take measures to increase flood resilience.

# New Forest Streams

## Our key partners are:

Christchurch District Council

New Forest District Council

New Forest National Park

Natural England

National Farmers Union

Farming and Wildlife Advisory Group

Land managers

## The issues in this sub-area

This sub-area covers the floodplain of eight different streams which flow into the River Avon. More than half of the area is within the New Forest National Park.

The New Forest streams drain relatively rural catchments, with semi-natural vegetation. Lower down in the catchments there are fields and managed landscapes, many of these used for grazing. The highest rates of run-off are likely to occur when the soil in the forest becomes saturated, and so flooding is most likely during the winter months.

The most extensive, recent episode of flooding recorded was in December 2000/January 2001, affecting at least 10 properties. We estimate that around 100 properties

are at risk in a 1% annual probability flood event. The number of properties at risk is expected to increase to 120 in the future 1% annual probability flood event

Potentially there is flood risk to some significant road infrastructure (for example A338 and B3347) and to formal and informal amenity areas of the New Forest National Park.

## The vision and preferred policy

**Policy Option 2** - We can generally reduce existing flood risk management actions.

The implementation of this policy will allow any present actions to manage flood risk to be reviewed and reduced where appropriate and acceptable. However, in areas where flood risk is more concentrated, we will monitor future change.

Indications are that river restoration works elsewhere in the New Forest National Park may have reduced peak flows by up to 5% and delayed the time to peak by up to approximately seven hours. If similar work was promoted in this sub-area, it might provide some minor benefits downstream, though changes in timing could be important.

## Proposed actions to implement the preferred policy

- Extend hydrometric monitoring to improve flood warning for the New Forest Streams, and use awareness campaigns to increase the uptake of the flood warning service.
- Where river restoration is planned, investigate options for maximising potential for reductions in downstream flood risk, as part of restoring natural floodplains.



# Christchurch

## Our key partners are:

Christchurch District Council

New Forest District Council

Wessex Water

## The issues in this sub-area

The Christchurch sub-area presents a densely populated and very concentrated area of risk. Many properties along the River Avon, and lower extents of the Mude and Bure Brook, are considered to be at risk from a combination of both tidal and fluvial flooding. Historic flooding appears to be limited to the months of December, January and February, coinciding with the highest probability of high flows on the Avon (and Stour) and tidal surges entering the harbour.

A significant risk within Christchurch is the reliance on raised defences and it has been assumed that as sea levels continue to rise over the next 100 years, together with increasing flood flows, then any overtopping of defences could be very severe and have a major impact on over 1,000 properties.

The number of properties at risk in the 1% probability event is 1,080. The number of properties is expected to increase to 1,120 in the future 1% annual probability flood event.

## The vision and preferred policy

**Policy Option 5** - We can generally take further action to reduce flood risk.

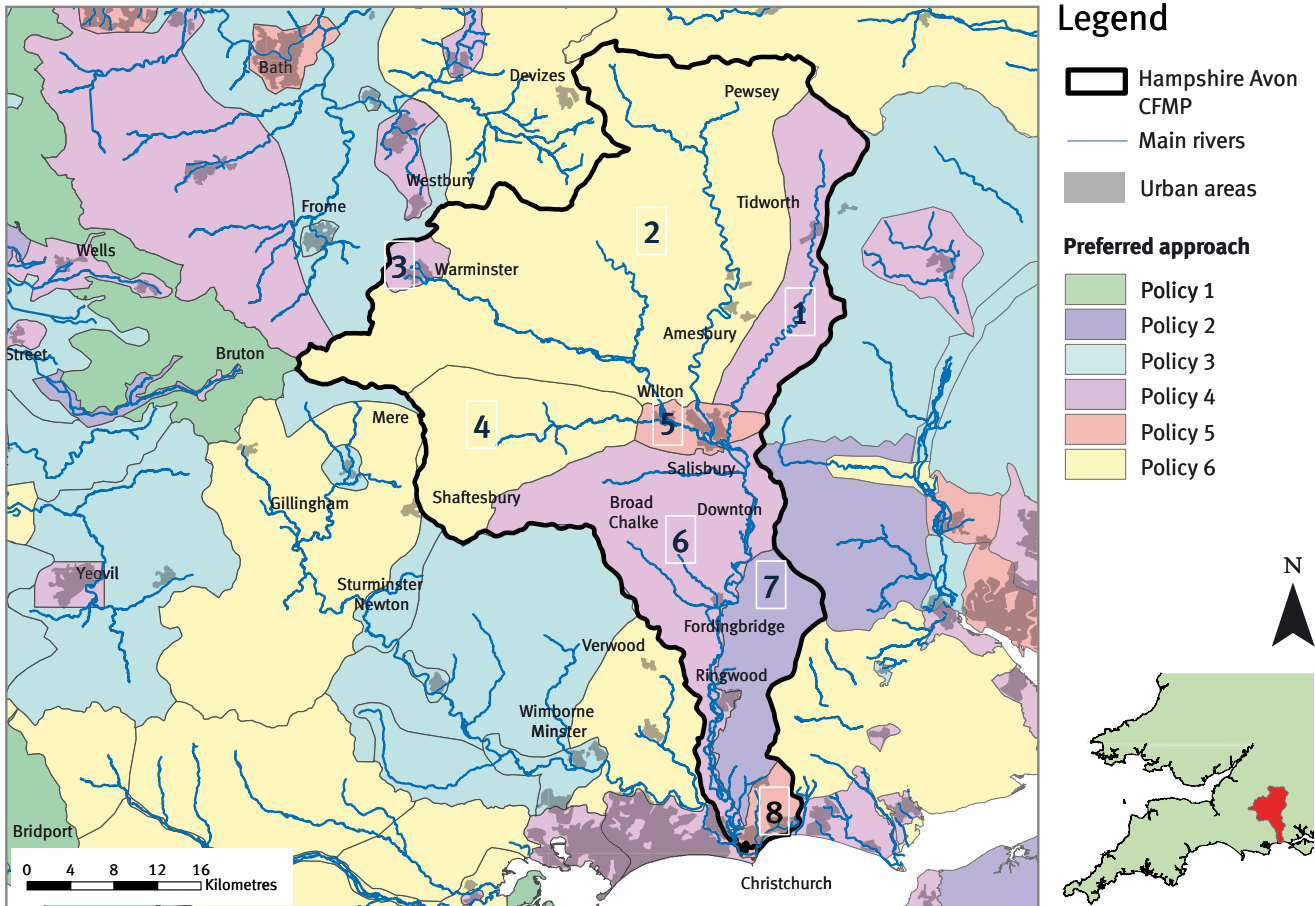
The implementation of this policy will ensure that flood risk is reduced and flood risk management response can be continued, while recognising that there is a need to do more in order to investigate whether existing defences can be maintained at an appropriate level, with residual losses mitigated once defences are overtopped and in particular that vulnerable sites and critical infrastructure are protected.

## Proposed actions to implement the preferred policy

- Investigate flood risk in Christchurch and develop a strategy to reduce risk. Ideally this study would look at the combined risk from the Avon, Stour, the harbour tributaries and the sea and urban drainage.
- Investigate impact of sea level rise and increased risk from storm surge to Christchurch Harbour.
- Identify and survey infrastructure at risk and take measures to increase flood resilience, including undertaking awareness campaigns.
- Use results of studies to encourage appropriate future development.

# Map of CFMP policies

Map of the policies in the Hampshire Avon catchment



## The sub-areas

- 1 River Bourne
- 2 Upper Avon and Wylde
- 3 Warminster
- 4 River Nadder
- 5 Salisbury
- 6 Lower Avon
- 7 New Forest Streams
- 8 Christchurch



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