

# New Forest Catchment Flood Management Plan

Summary Report December 2009

# managing flood risk



We are the Environment Agency. It's our job to look after your environment and make it **a better place** – for you, and for future generations.

Your environment is the air you breathe, the water you drink and the ground you walk on. Working with business, Government and society as a whole, we are making your environment cleaner and healthier.

The Environment Agency. Out there, making your environment a better place.

Published by:

Environment Agency  
Guildbourne House  
Chatsworth Road  
Worthing, West Sussex BN11 1LD  
Tel: 08708 506 506  
Email: [enquiries@environment-agency.gov.uk](mailto:enquiries@environment-agency.gov.uk)  
[www.environment-agency.gov.uk](http://www.environment-agency.gov.uk)

© Environment Agency

All rights reserved. This document may be reproduced with prior permission of the Environment Agency.

# Introduction

---



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

The New Forest 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, groundwater, 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 groundwater 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 main source of flood risk in the New Forest CFMP is from river flooding and the increasing effect of the tide due to sea-level rise. Flood risk is concentrated within the urban areas such as Brockenhurst, Lymington and Totton.

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 management flood risk in the future. Our partners we have worked with to carry out the actions to reduce flood risk include New Forest District Council, Natural England, Southern Water, Forestry Commission and the National Farmers Union.

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 Southern Region.

A handwritten signature in dark ink, appearing to read 'T. Willison'.

Toby Willison  
Regional Director, Southern Region

## Contents

The purpose of a CFMP in managing flood risk	5
Catchment overview	6
Current and future flood risk	8
Future direction for flood risk management	11
Sub-areas	
1 Milton/Milford	13
2 Lyndhurst	15
3 Brokenhurst	16
4 Lymington	18
5 Hythe/Fawley	19
6 Totton	20
7 New Forest	21
Map of CFMP policies	23

# 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:

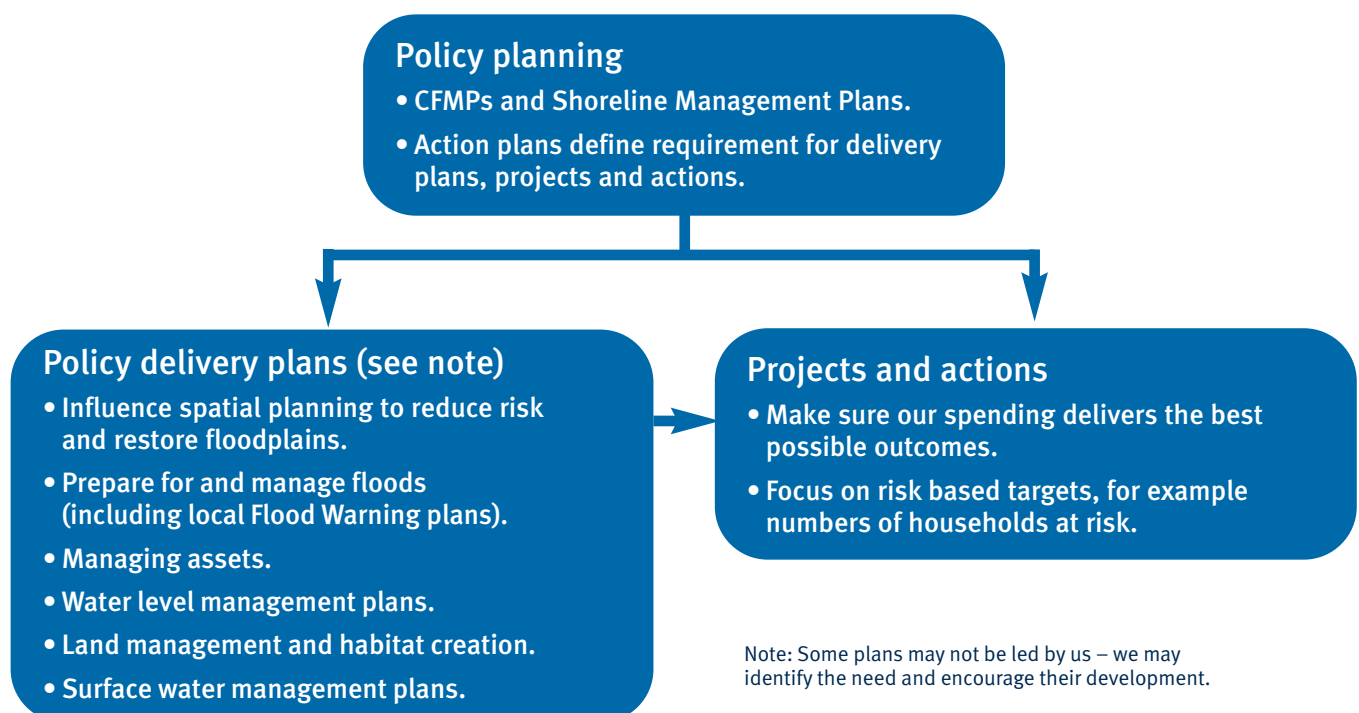
- The Environment Agency, who will use the plan to guide decisions on investment in further plans, projects or actions;
- Regional planning bodies and local authorities who can use the plan to inform spatial planning activities and emergency planning;

- IDBs, 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

---

The New Forest CFMP area covers 317 square kilometres and is home to nearly 169,000 people, with urban centres around the coast including Totton, Hythe, Fawley, Lymington and New Milton. Its unique landscape and natural beauty make it an important recreational and tourist destination. The majority of the catchment is included in the New Forest National Park. The area is environmentally rich, with protected areas covering around half of the catchment, including two Ramsar Sites and

Special Protection Areas (SPA), three Special Areas of Conservation (SAC) and 14 Sites of Special Scientific Interest (SSSI). Many of these sites support important wetland habitats and species sensitive to changes in water level, flow and quantity.

The New Forest watercourses drain into either the Solent or Southampton Water. The two largest watercourses are the Lymington River and the Beaulieu River, which both flow through largely forested areas. Other watercourses of note

are the largely forested Avon Water, the mixed character Bartley Water and the relatively urbanised Danes Stream.

Due to the geology and overlying soils, the catchments of the New Forest are considered relatively impermeable, which generally leads to a quick response to rainfall and large fluctuations in river flows. The Danes Stream is the watercourse that responds most quickly to rainfall.

‘Many protected areas support important wetland habitats and species sensitive to changes in water level, flow and quantity.’



← Lymington River near Brockenhurst. Forested streams such as this are typical of the upper catchment.

Map1. Overview map of the New Forest catchment.



‘The catchments of the New Forest are relatively impermeable, which leads to a quick response to rainfall and large fluctuations in river flows.’

# Current and future flood risk

---

## Overview of the current flood risk

Flood risk is the combination of the likelihood of a flood occurring and the consequences when it does. Serious flooding does not occur very often in the New Forest CFMP area, and extreme flooding is very rare. In many parts of the catchment, flooding brings environmental benefits to habitats such as wet woodland and reed bed.

The main source of flooding in the New Forest CFMP area is from rivers with significant influence from tidal conditions. Risks are most significant in Brockenhurst, Milford on Sea, Lymington, Totton and Keyhaven.

There have been several large events over the last century, particularly on the Danes Stream.

Bartley Water and Lymington River catchments. The Calmore Canal passing through Totton exacerbates surface water flooding after heavy rain because culvert restrictions cause high water levels reducing the efficiency of the road drainage network.

## Where is the risk?

The map on page 10 illustrates the distribution of the flood risk consequences in the New Forest CFMP area.

The areas with the highest concentration of properties at risk from river flooding are tabulated opposite.



↑ This environmentally rich catchment offers a unique landscape and natural beauty.



## How we currently manage the risk

Flooding from fluvial sources does not pose a significant risk to most of the New Forest catchment and we are therefore looking for opportunities to revert the catchment back to its natural state. Our activity is prioritised on a risk basis and our main activities include:

- **Maintenance of existing and commission of new flood defences and structures** such as the flood storage reservoir on the Danes Stream which protects Milford-on-Sea and the recently completed Flood Alleviation Scheme for Lymington.
- **Flood forecasting and warnings**, which are currently sent to approximately 840 properties and aim to give at least two hours lead time ahead of river flooding.
- **Development control** to influence spatial planning so that new developments are sited away from flood risk areas, or take appropriate mitigation measures.
- **Flood risk mapping.**
- **Strategic planning** to plan long term investment.
- **Environmental improvements.**

**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
>1000	None
500 to 1000	None
100 to 500	Brockenhurst, Totton, Lymington
50 to 100	Milton/Milford, New Forest
25 to 50	Hythe and Fawley

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

1 emergency service, 11\* electricity sub stations, 1 sewage/water treatment works

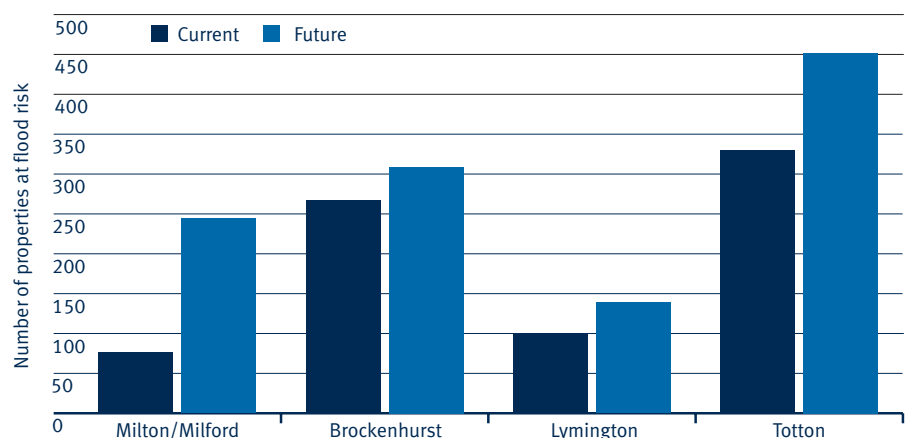
\* Considered to be tidal flooding, except for 1 site in Lymington

**Table 3. Designated sites at risk:**

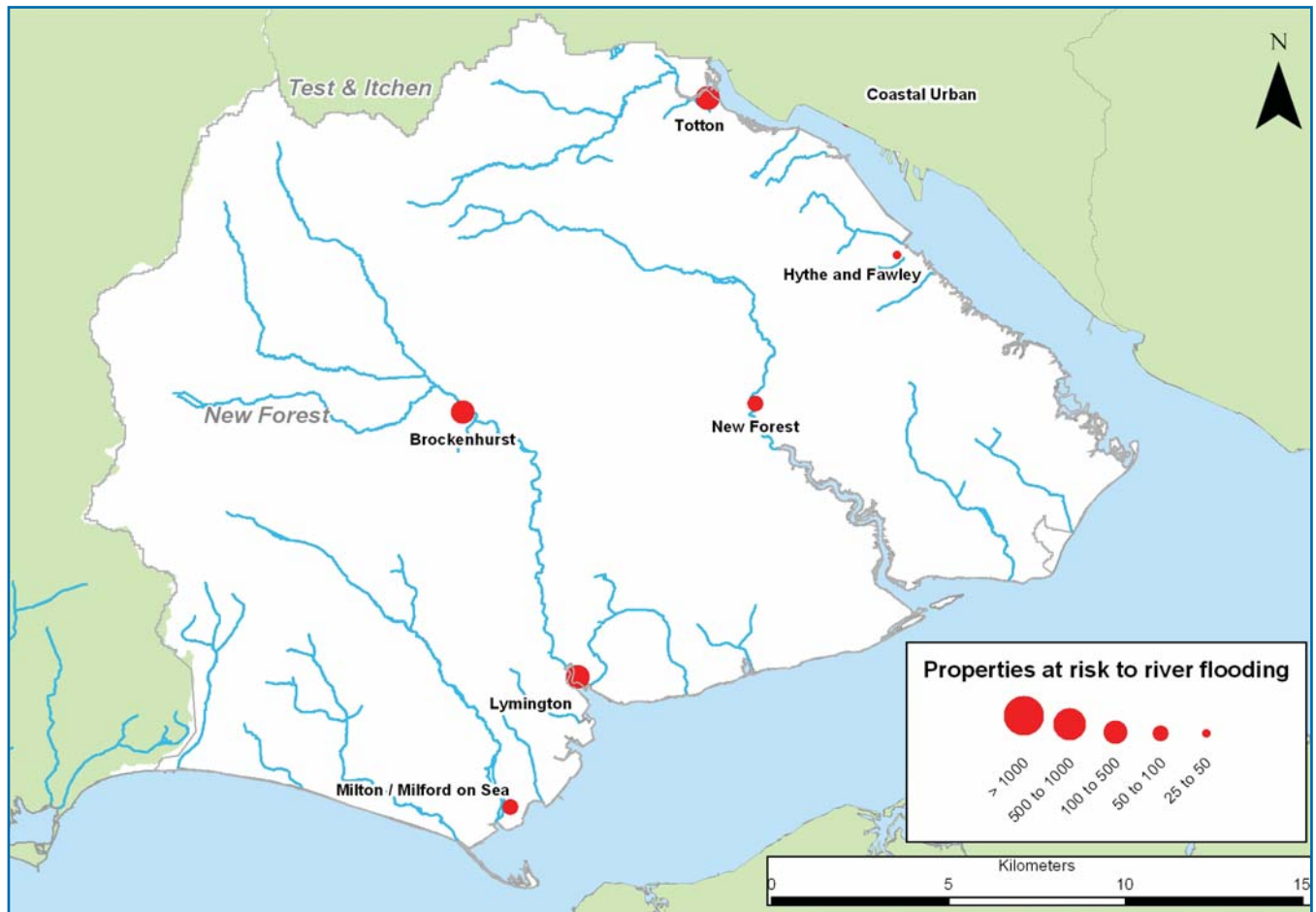
New Forest RAMSAR, SAC, SPA

\* Considered to be tidal flooding, except for 1 site in Lymington

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



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



## The impact of climate change and future flood risk

The effect that flooding will have in the future is influenced by a range of issues such as climate change, changes in land use such as development and changes in how land is managed.

Predictions of future change are based on understanding the existing condition of the catchment, an extrapolation of trends over the long term (up to 100 years), and a high level review of likely future change based on research findings and knowledge. Present urban development plans within the CFMP area are limited, with the major constraint to development being that the majority of the catchment is now a National Park. Therefore the effect

on flood risk at a catchment scale is likely to be minimal. The land use change projections increase flood peak flows on the upper catchments and on the Lymington River, but less so on the Avon Water and in all cases they are significantly less than the values resulting from increased flows due to climate change. We have found that whilst land use change is likely to have an impact on flood risk locally, this is not significant on a catchment scale. We have therefore decided not to include land use change further in our scenarios. The scenario which has the greatest effect on future flood risk is climate change with up to 20% increase in peak flood flows. This scenario is used to assess likely impacts in the catchment. In

the New Forest catchment the future flood risk is likely to be from river flooding. Our appraisal of the future risk in the catchment reveals the number of properties at risk to the 1% annual probability event will increase from 897 to 1299 properties by the year 2100. The majority of these properties are located in Brockenhurst, Lymington and Totton.

The key trends are:

- More frequent and intense storms causing more widespread and regular flooding from drainage systems and some rivers.
- More rain in winter, increasing the likelihood of large scale flood events.

# Future direction for flood risk management

## Approaches in each sub-area

We have divided the New Forest catchment into seven 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 4.

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.

Map 3. Sub-areas of the New Forest Catchment.

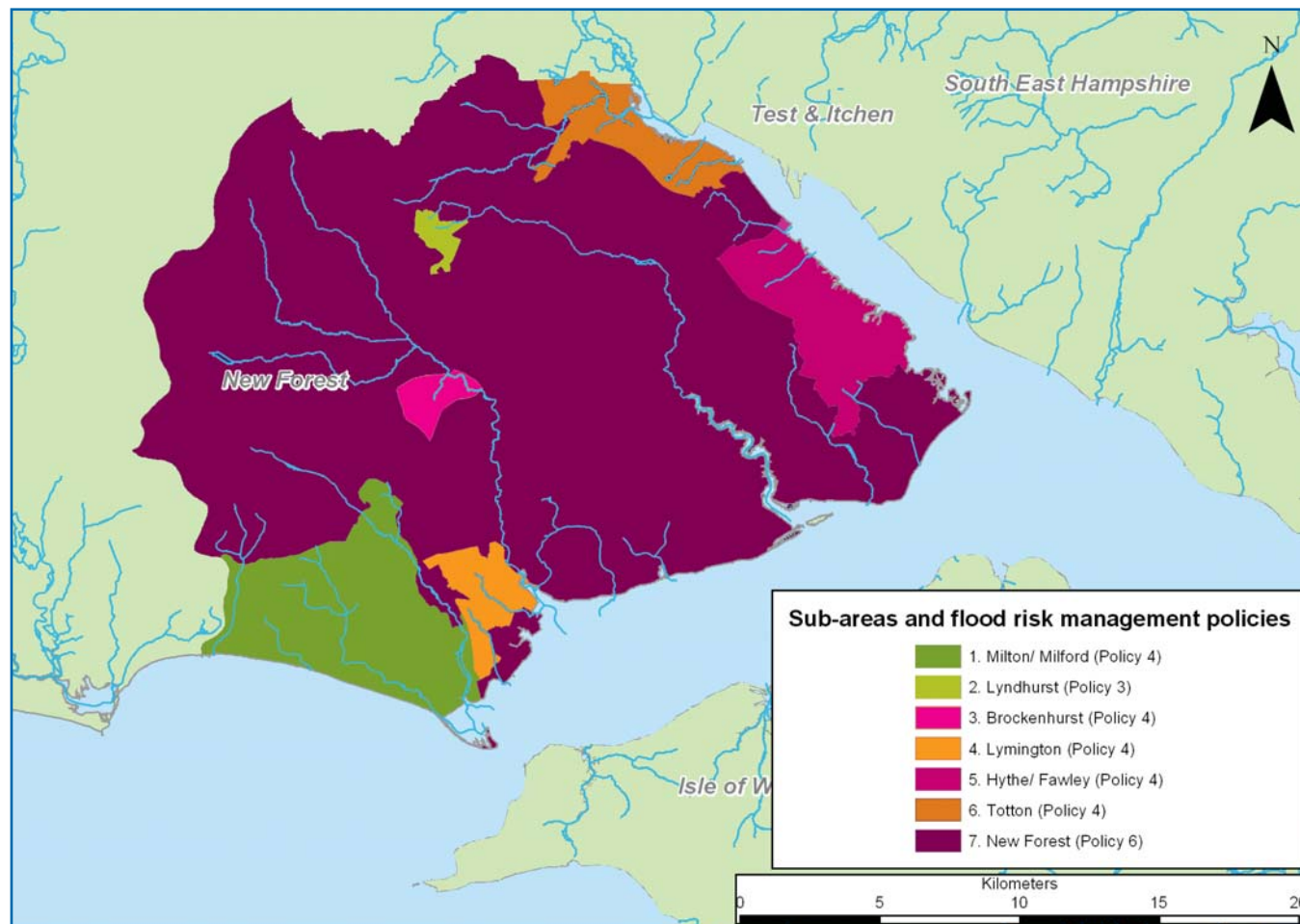


Table 4. Policy options.

### → 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.

---

### → 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.

---

### → 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.

---

### → 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.

---

### → 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.

---

### → 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.

---

# Milton/Milford

## Our key partners are:

New Forest District Council

Natural England

## Impact of a 1% annual probability flood event

	Today	Future (2100)
Number of properties at risk	77	244

## The issues in this sub-area

The key risk in this sub-area is from river flooding in the Sway, Keyhaven and Milford-on-Sea. A flood attenuation scheme on Danes Stream offers protection to Milford-on-Sea. Near the coast river flooding may be affected by high tide levels, which will get worse with predicted future sea level rise. Only modest development is planned within the policy unit, however any new development could act as an additional source and/or receptor of flooding.



↑ Flood attenuation dam upstream of Milford-on-Sea.

## The vision and preferred policy

**Policy Option 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.

## The key messages

This policy applies where the current risk is acceptable but future changes are expected to have a significant impact. Flood risk management activities need to respond to the potential increases in flood risk.

Any actions will have to be undertaken in accordance with the Pennington and Keyhaven Water Level Management Plan (WLMP) and due to the proximity of the unit to the coast be in accordance with the North Solent Shoreline Management Plan (SMP).

## Proposed actions to implement the preferred approach:

- Undertake System Asset Management Plans (SAMPs) to review maintenance regimes, to assess future investment needs and to maintain current level of risk.
- Review the Pennington and Keyhaven Water Level Management Plan (WLMP) to identify and agree water level management that meets the need of flood risk management and the enhancement of wetland habitat.
- Investigate opportunities to work with developers to implement local drainage improvements providing part of a strategic solution, or to obtain contributions to wider flood mitigation schemes, as well as implementing Sustainable urban Drainage Systems (SuDS).



← Danes Stream,  
Milford-on-Sea.

# Lyndhurst

## Our key partners are:

New Forest District Council

## Impact of a 1% annual probability flood event

	Today	Future (2100)
Number of properties at risk	24	26

## The issues in this sub-area

There is a relatively low risk of fluvial flooding to areas in the north and south of Lyndhurst. Surface water flooding occurs in some urban areas due to the capacity of drains being exceeded. Only modest urban development is planned.

## Proposed actions to implement the preferred approach:

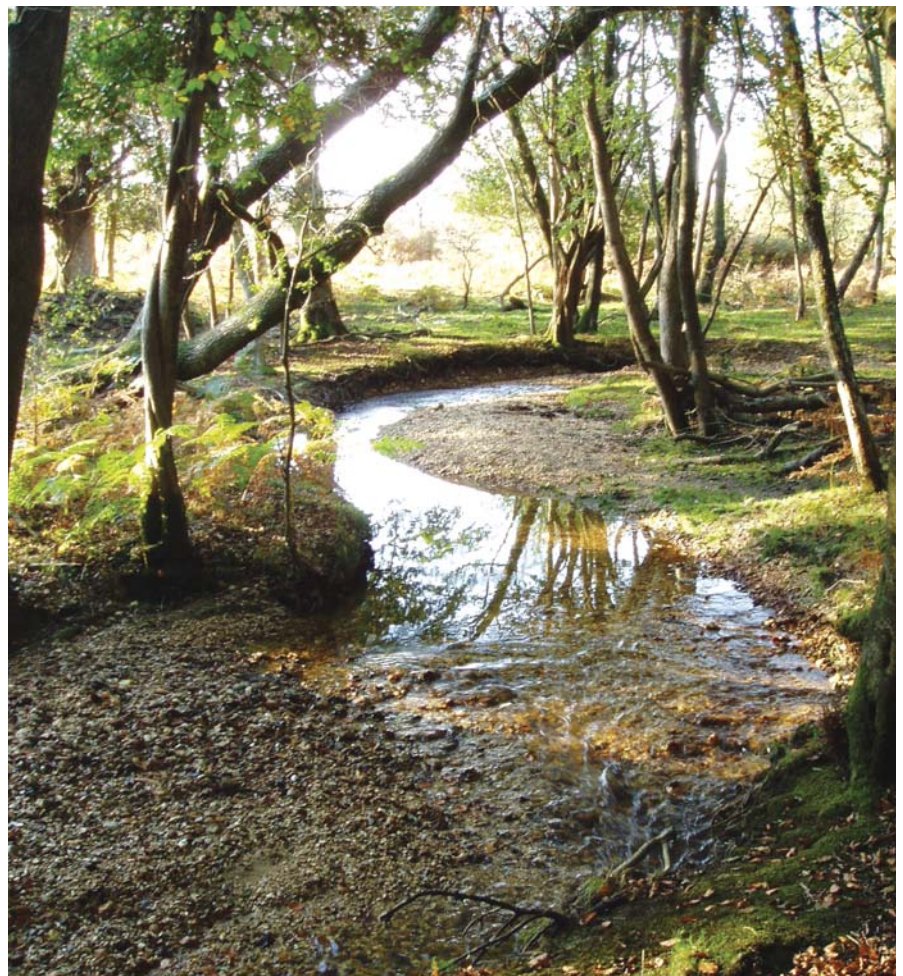
- Undertake a System Asset Management Plan (SAMP) to review maintenance regimes, and to maintain the current assets. Links need to be made with upstream attenuation on the New Forest.

## The vision and preferred policy

**Policy Option 3** – areas of low to moderate flood risk where we are generally managing existing flood risk effectively.

## The key messages

The chosen policy supports economic and social sustainability by prioritising significant gains elsewhere with the acceptance for some potential for future minor losses within the sub-area.



↑ New Forest Life Project.

# Brockenhurst

## Our key partners are:

New Forest District Council

## Impact of a 1% annual probability flood event

	Today	Future (2100)
Number of properties at risk	267	309

## The issues in this sub-area

The Lymington River catchment upstream of Brockenhurst is responsive to rainfall with three upstream tributary catchments. High flood levels in the Lymington River may affect levels in The Weir. Floodwater flows from the Weirs can have a high velocity and the limited channel capacity causes flooding.

## The vision and preferred policy

**Policy Option 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.



← A tributary of the Lymington River near Brockenhurst.



## The key messages

This policy applies where the current risk is acceptable but future changes are expected to have an impact. Flood risk management activities need to respond to the potential increases in flood risk.

Where possible, any response should seek to extend floodplain storage creating wetland habitat, and providing ecological enhancements such as improving the condition of the Lymington River SSSI.

## Proposed actions to implement the preferred approach:

- Undertake System Asset Management Plans (SAMPs) to review maintenance regimes, to assess future investment needs and to maintain current level of risk.
- Links need to be made with upstream attenuation on the New Forest. Any necessary works will be subject to a habitats regulations assessment to ensure compatibility with the interest features of the European designated sites and that there is no net loss of habitat.



← New Forest LIFE project.

# Lymington

## Our key partners are:

New Forest District Council

Natural England

## Impact of a 1% annual probability flood event

	Today	Future (2100)
Number of properties at risk	100	139

## The issues in this sub-area

Lymington lies at the downstream tidal end of the Lymington River. There are also drainage channels with small urban catchments in the Lymington and Pennington urban areas. Flooding in Lymington may be affected by high tide levels and risk will increase with predicted future sea level rise. New flood defences were completed in 2008.

The impact on flooding of new development depends on the implementation of Sustainable urban Drainage Systems (SuDS), which is of particular importance as surface water flooding due to overloaded drainage, is already a problem.

## The vision and preferred policy

**Policy Option 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.



↑ Flood alleviation scheme at Lymington, completed in 2008.

## The key messages

This policy applies where the current risk is acceptable but future changes are expected to have an impact. Flood risk management activities need to respond to the potential increases in flood risk.

Any actions will have to be undertaken in accordance with the Lymington Reed Beds Water Level Management Plan and due to the proximity of the sub-area to the coast must also be in accordance to the North Solent Shoreline Management Plan (SMP).

## Proposed actions to implement the preferred approach:

- Develop the Lymington Water Level Management Plan to identify and agree water level management that meets the need of flood risk management and the enhancement of wetland habitat.
- Undertake System Asset Management Plans (SAMPs) to review maintenance regimes, to assess future investment needs and to maintain current level of risk.



↑ High tide at Keyhaven

# Hythe/Fawley

## Our key partners are:

New Forest District Council

Partnership for Urban South Hampshire

## Impact of a 1% annual probability flood event

	Today	Future (2100)
Number of properties at risk	42	46

## The issues in this sub-area

This sub-area is relatively urban and responsive to rainfall. Near the coast, river flooding may be affected by high tide levels, which prevent flood waters from discharging into the sea. This is predicted to worsen with future sea level rise. Hythe urban drainage is currently pumped during high tides.

## The vision and preferred policy

**Policy Option 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.



↑ Culverts under road to Hythe Village Marina.

## The key messages

This policy applies where the current risk is acceptable but future changes are expected to have an impact. Flood risk management activities need to respond to the potential increases in flood risk.

Planning guidance should be applied to the new development in the sub-area to ensure this is directed away from the higher risk areas and storm water is effectively managed.

Opportunities need to be sought to minimise catchment run-off and use developer contributions to mitigate flood risk both now and in the future.

## Proposed actions to implement the preferred approach:

- Undertake System Asset Management Plans (SAMPs) to review maintenance regimes, to assess future investment needs and to maintain current level of risk.
- Work in partnership with New Forest District Council and the Partnership for Urban South Hampshire to encourage local planning authorities to apply PPS25, avoiding inappropriate development in the floodplain, and influence local development frameworks to effectively manage flood risk.



↑ Outfall at Hythe.

# Totton

## Our key partners are:

New Forest District Council

Partnership for Urban South Hampshire

Hampshire County Council

Southern Water

Natural England

## The issues in this sub-area

For Totton and Ashurst, the upstream river catchment includes the relatively small and responsive Bartley Water (mainly rural) upper catchment as well as the urban lower catchment. The watercourses in Marchwood have small mainly urban catchments. Near the coast river flooding may be affected by high tide levels, which will get worse with predicted future sea level rise. Surface water flooding is also present in this sub-area and there is significant urban development planned in Totton and Marchwood.

## The vision and preferred policy

**Policy Option 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.

## Impact of a 1% annual probability flood event

	Today	Future (2100)
Number of properties at risk	330	452

## The key messages

This policy applies where the current risk is acceptable but future changes are expected to have a significant impact. Flood risk management activities need to respond to the potential increases in flood risk.

## Proposed actions to implement the preferred approach:

- We will need to work in partnership with New Forest District Council and the Partnership for Urban South Hampshire to encourage local planning authorities to apply PPS25, avoiding inappropriate development in the floodplain, and influence local development frameworks to effectively manage flood risk.
- Undertake System Asset Management Plans (SAMPs) to review maintenance regimes, to assess future investment needs and to maintain current level of risk.
- Undertake flood forecasting modelling on Bartley Water to increase lead times and improve the flood warning service.
- We will need to work in partnership with New Forest District Council, Partnership for Urban South Hampshire and Southern Water to develop a collaborative Surface Water Management Plan (SWMP) to address current and future pressures on the drainage network. This plan should be linked to the Surface Water Management Plan (SWMP) for Southampton in the Test and Itchen CFMP.



↑ Ealing Tide Mill.

# New Forest

## Our key partners are:

New Forest District Council

Forestry Commission

Natural England

England Catchment sensitive Farming Delivery Initiative

National Farmers Union

## The issues in this sub-area

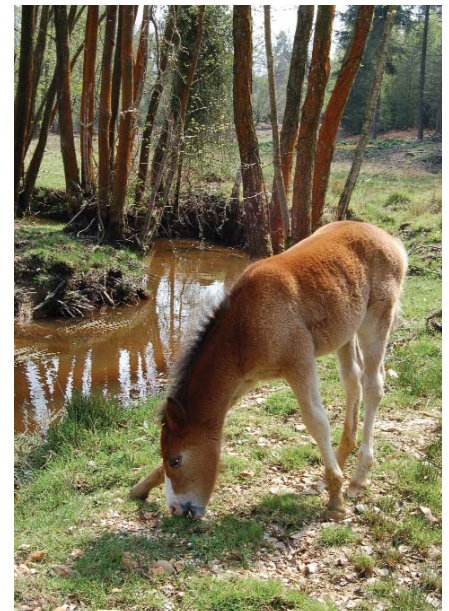
The New Forest sub-area includes the Beaulieu urban area at the downstream end of the Beaulieu River, and some smaller settlements. Downstream urban areas of this sub-area can be affected by high flows. Near the coast, river flooding may be affected by high tide levels and risk will increase with predicted future sea level rise.

## Impact of a 1% annual probability flood event

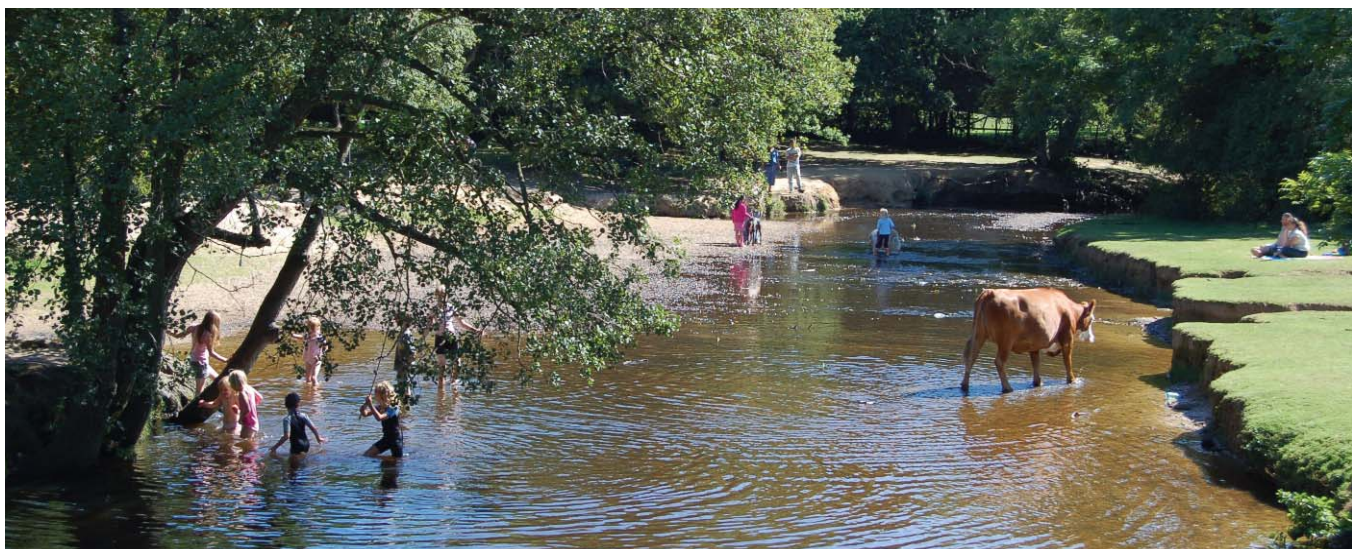
	Today	Future (2100)
Number of properties at risk	57	83

## The vision and preferred policy

**Policy Option 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.



↑ New Forest pony.



↑ Lymington River at Brockenhurst.

## The key messages

The chosen policy supports economic and social sustainability by providing the possibility for what are estimated to be significant environmental gains and flood risk reduction.

Any losses incurred by implementing this policy would be minimised by careful choice of location and design.

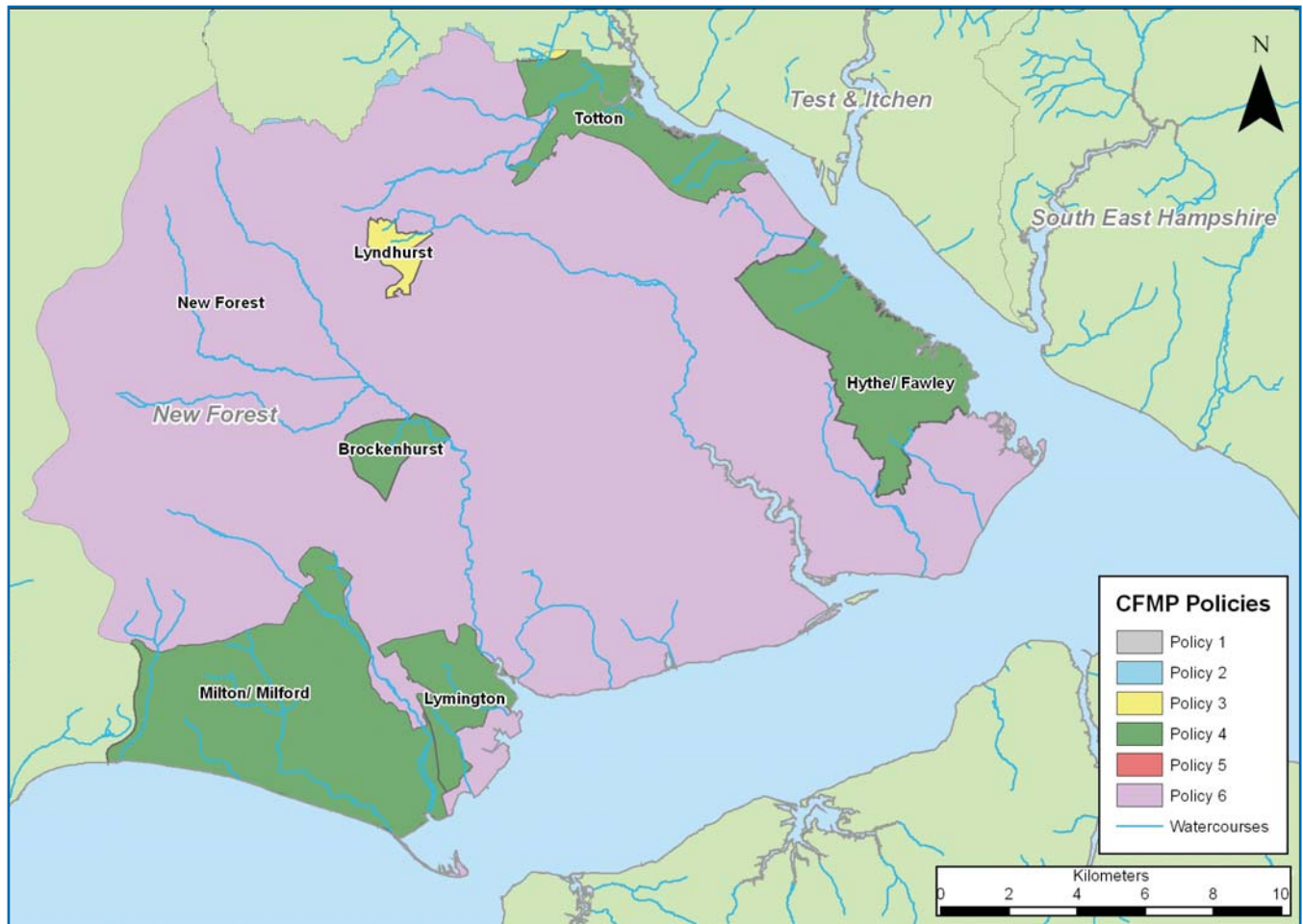
The implementation of this policy will assist in controlling or reducing flood risk in the downstream urban areas such as Brockenhurst, Lyndhurst, Sway, and Totton. The duration and severity of impacts upon transport, infrastructure, public assets and amenities, as well as historically and culturally significant sites, within the downstream policy units would also be reduced.

## Proposed actions to implement the preferred approach:

- Monitor existing initiatives, such as the Life3 project, ensuring that these schemes inform the habitat creation action and help to minimise the flood risk to communities within the New Forest and downstream. This should include hydrological monitoring as well as habitat surveys.
- Work in partnership with Forestry Commission, Natural England and landowners to create wetland habitat. These opportunities must consider joint flood risk management benefits such as reducing run-off from the forest and increasing upstream attenuation.
- Undertake a System Asset Management Plan (SAMP) to review maintenance regime, maximising attenuation on the forest and restoring sustainable, natural river functions.
- Work in partnership with England Catchment sensitive Farming Delivery Initiative, Natural England, National Farmers Union and the Forestry Commission to develop a land management plan to explore the potential for land use and management practices throughout the New Forest.
- Review the Pennington and Keyhaven Water Level Management Plan to identify and agree water level management that meets the need of flood risk management and the enhancement of wetland habitat.

# Map of CFMP policies

Map of the policies in the New Forest catchment.



**Would you like to find out more about us,  
or about your environment?**

**Then call us on**

**08708 506 506** (Mon-Fri 8-6)

**email**

**enquiries@environment-agency.gov.uk**

**or visit our website**

**www.environment-agency.gov.uk**

**incident hotline 0800 80 70 60** (24hrs)

**floodline 0845 988 1188**

\* Approximate call costs: 8p plus 6p per minute (standard landline).  
Please note charges will vary across telephone providers

**Environment first:** Viewing this on screen? Please consider the  
environment and only print if absolutely necessary.

If you're reading a paper copy, please don't forget to reuse and recycle.